Charting a Course for the Future of Women’s and Perinatal Health

Volume II: Reviews of Key Issues

Holly Grason, John Hutchins, and Gillian Silver
Editors

Women’s and Perinatal Health Policy Working Group

A Collaborative Initiative of the
Women’s and Children’s Health Policy Center
Department of Population and Family Health Sciences
Johns Hopkins School of Public Health
and the
Maternal and Child Health Bureau
Health Resources and Services Administration
U.S. Department of Health and Human Services

May 1999
Foreword

The dimension and impact of current societal and environmental conditions bring the Nation face-to-face with critical new challenges for women’s and perinatal health. These challenges stem from altered approaches for financing and delivering health care, advances in medical technology, devolution of responsibility to State and local communities, trends toward privatization of governmental services, and reexamination of public health functions, coupled with a growing emphasis on women’s health. Not infrequently, women’s health and perinatal health have been addressed as separate entities; recently, this perspective has been called into question.

These intense changes, present emphases, and the anticipation of a new century prompted the initiation of Charting a Course for the Future of Women’s and Perinatal Health, a collaborative effort of the Johns Hopkins University Women’s and Children’s Health Policy Center and the Health Resources and Services Administration’s Maternal and Child Health Bureau. Recognizing that prior paradigms no longer serve us well, this work was developed to assess the health needs of women of reproductive age and to formulate recommendations for future directions in policy, practice, and research.

The Bureau and the Center are pleased to present a two-volume compendium that reflects findings from the literature and the opinions of experts utilized throughout the initiative. This compendium is distinguished by two features: 1) its examination of perinatal health within the context of women’s overall health across the reproductive lifespan; and 2) its public health orientation, addressing population health in the context of social, environmental, and behavioral factors. Volume I reports on the conceptual foundation, findings, and a wide array of recommendations for change. Volume II presents the background papers for the initiative which offer detailed literature reviews of selected health issues.

I believe this document will be useful in educating constituencies, developing and implementing new policies and practices, and guiding efforts to monitor the impact of systems changes on women of reproductive age. I also hope that Charting a Course for the Future of Women’s and Perinatal Health will stimulate extensive action among maternal and child health and women’s health professionals, advocates, and policymakers to advance women’s and perinatal health for this and future generations.

Peter C. van Dyck, M.D., M.P.H.
Acting Associate Administrator for Maternal and Child Health
Maternal and Child Health Bureau
# Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreword</td>
<td>iii</td>
</tr>
<tr>
<td>Acknowledgments</td>
<td>vii</td>
</tr>
<tr>
<td>Introduction: Toward a New Vision of Women’s Health</td>
<td>1</td>
</tr>
<tr>
<td>The Social Context of Women’s Health</td>
<td>5</td>
</tr>
<tr>
<td>Health Care Services and Systems for Women of Reproductive Age</td>
<td>25</td>
</tr>
<tr>
<td>Public Health Roles Promoting the Health and Well-Being of Women</td>
<td>41</td>
</tr>
<tr>
<td>Women’s Reproductive Health and Their Overall Well-Being</td>
<td>57</td>
</tr>
<tr>
<td>Pregnancy Planning and Unintended Pregnancy</td>
<td>81</td>
</tr>
<tr>
<td>Issues in Pregnancy Care</td>
<td>103</td>
</tr>
<tr>
<td>Women’s Experience of Chronic Diseases</td>
<td>137</td>
</tr>
<tr>
<td>Depression in Women</td>
<td>147</td>
</tr>
<tr>
<td>Abuse Against Women by Their Intimate Partners</td>
<td>167</td>
</tr>
<tr>
<td>The Nutritional Status and Needs of Women of Reproductive Age</td>
<td>183</td>
</tr>
<tr>
<td>Women’s Physical Activity in Leisure, Occupational, and Daily Living Activities</td>
<td>209</td>
</tr>
<tr>
<td>Effects of Drug and Alcohol Use on Women’s and Perinatal Health</td>
<td>225</td>
</tr>
<tr>
<td>Effects of Smoking on Women’s and Perinatal Health</td>
<td>253</td>
</tr>
<tr>
<td>Epilogue</td>
<td>271</td>
</tr>
<tr>
<td>Appendix</td>
<td>273</td>
</tr>
</tbody>
</table>
Acknowledgments

This initiative seeking to uncover new viewpoints and stimulate new partnerships towards the goal of a women’s and perinatal health policy agenda provided us enriching opportunities to work with many highly talented researchers, policy analysts, providers, and promoters of health care for women from across the United States. Regardless of their post or specific role in the Charting a Course for the Future of Women’s and Perinatal Health initiative, they are all advocates, committed to improving the health and quality of life for America’s 135 million women, and those to be born in the next century. Their contributions were essential to the development of this publication and its companion documents. We will long remain grateful for their generous assistance and support.

Participants in the April 1998 working meeting were particularly critical in shaping our work. These individuals, representing a diverse array of local, state, and national level public agencies, policy research institutions, and professional and advocacy organizations, are listed in the Appendix. Not only did they engage in extensive deliberations over the two days of the meeting, they also reviewed preliminary versions of recommendations documents, and provided insightful feedback and suggestions for refinement. The quality of the commentary we received, both in April and in subsequent communications, was impressive and infinitely helpful. The extra efforts of those who led workgroup discussions and presented their synthesized findings are particularly appreciated; these individuals were Maribeth Badura, Donna Barber, Claire Brindis, Sally Fogerty, David Gagnon, Bernard Guyer, Ellen Hutchins, Donna Hutten, Lisa Kaeser, Cynthia Minkovitz, Helen Rodriguez-Trias, William Sappenfield, Richard Schwarz, Terrence Smith, Donna Strobino, Carol Weisman, Deanne Williams, and Gail Wilson. Our appreciation also is extended to our colleagues who presented their reflections on the deliberations at the conclusion of the meeting—Catherine Hess, Milton Kotelchuck, and Sheryl Burt Ruzek.

Special recognition and thanks are due our colleagues who served as reviewers for the thirteen papers that provide the foundation for our work. Their perspectives on draft documents and suggestions regarding additional information sources strengthened enormously the comprehensiveness and quality of this work of the Women’s and Perinatal Health Policy Working Group. In this regard, we thank the following individuals: Mary Applegate, MD, MPH (New York State Department of Health); Claire Brindis, DrPH (University of California, San Francisco); Martha Bruce, PhD, MPH (Cornell Medical College); Trudy Bush, PhD (University of Maryland); Wendy Chavkin, MD, MPH (Columbia University); Carolyn Clancy, MD (Agency for Health Care Policy and Research, DHHS); Sue Calvert Finn, PhD, RD (Ross Laboratories); Sally Fogerty, BSN, MEd (Massachusetts Department of Public Health); Julie Gazmararian, PhD (Prudential Center for Health Care Research); Charlotte Gish, CNM, MSN (U.S. Public Health Service, Region VIII); Arden
As always with our work, this publication would not be possible without the contributions of a talented and committed team of staff and students at the Johns Hopkins Women’s and Children’s Health Policy Center. Lori Friedenberg and Kristie Susco coordinated the many meetings—internal and external—wherein policy considerations were debated and our thinking and writing refined. These women also spent countless hours in libraries and at their computers unearthing and organizing source documents for the reviews. Two students at the Johns Hopkins School of Public Health also deserve special recognition for assisting the Working Group in specific research and writing tasks—Ms. Kendra Rothert, MHS (chapter on Women’s Reproductive Health), and Ms. Sarah Inglis-Baldy, RN (Issue Summaries). WCHPC Secretary, Jackie Tyson, was invaluable throughout, providing capable hands in all aspects of the initiative.

The initiative was funded by the Maternal and Child Health Bureau, Health Resources and Services Administration, DHHS, under Title V of the Social Security Act. Federal project leadership for this entire effort was provided by Ann M. Koontz, CNM, DrPH, to whom we are greatly indebted.

_Holly Grason, John Hutchins and Gillian Silver for the Women’s and Perinatal Health Policy Working Group_
Women’s and Perinatal Health Policy Working Group

Katherine M. Baldwin, MSW: Ms. Baldwin is a Project Manager at the Johns Hopkins Women’s and Children’s Health Policy Center.

Yvonne Bronner, ScD, RD, LD: Dr. Bronner is an Assistant Professor and a Nutritionist within the Department of Population and Family Health Sciences, Johns Hopkins School of Public Health.

Charlyn E. Cassady, BSN, MEd, PhD: Dr. Cassady is a Research Associate in the Department of Population and Family Health Sciences, Johns Hopkins School of Public Health.

Holly Allen Grason, MA: Ms. Grason is Director of the Women’s and Children's Health Policy Center, and an Associate Scientist on the faculty of the Department of Population and Family Health Sciences, Johns Hopkins School of Public Health.

Bernard Guyer, MD, MPH: Dr. Guyer is Professor and Chair of the Department of Population and Family Health Sciences at the Johns Hopkins School of Public Health.

Melissa Hawkins, MHS: Ms. Hawkins is a doctoral candidate in the Department of Population and Family Health Sciences, Johns Hopkins School of Public Health.

John E. Hutchins: Mr. Hutchins is Senior Editor for the National Campaign to Prevent Teen Pregnancy and an independent communications consultant.

Ann M. Koontz, CNM, DrPH: Dr. Koontz is Associate Director for Perinatal Policy in the Division of Perinatal Systems and Women’s Health, Maternal and Child Health Bureau, Health Resources and Services Administration, DHHS.

Cynthia Minkovitz, MD, MPP: Dr. Minkovitz holds faculty appointments in both the Department of Population and Family Health Sciences, School of Public Health and in the School of Medicine Department of Pediatrics, Johns Hopkins University.

Dawn Misra, PhD: Dr. Misra is an Assistant Professor in the Department of Population and Family Health Sciences, Johns Hopkins School of Public Health.

Wanda Nicholson, MD, MPH: Dr. Nicholson is Director, Community-Based Obstetrics and Gynecology and an Assistant Professor in the Department of Obstetrics and Gynecology, Johns Hopkins School of Medicine.

Patricia O’Campo, PhD: Dr. O’Campo is an Associate Professor in the Department of Population and Family Health Sciences, Johns Hopkins School of Public Health.

Virginia Poole, MA: Ms. Poole is a doctoral candidate in the Department of Health Policy and Management, Johns Hopkins School of Public Health.

Marjory Ruderman, MHS: Ms. Ruderman is a Project Director at the Johns Hopkins Women’s and Children’s Health Policy Center.

Gillian B. Silver, MPH: Ms. Silver is a Research Assistant for the Johns Hopkins Women’s and Children’s Health Policy Center.

Donna M. Strobino, PhD: Dr. Strobino is a Professor in the Department of Population and Family Health Sciences, Johns Hopkins School of Public Health.

Carol Weisman, PhD: Dr. Weisman is a Professor in the Department of Health Management and Policy at the University of Michigan School of Public Health, and Director of the Interdepartmental Concentration in Reproductive and Women’s Health.
Introduction:  
Toward A New Vision of Women’s Health

The turn of the century offers an opportune time to take stock of the current state of the field of women’s and perinatal health and to make plans for the future. Women’s and perinatal health have seen many changes this century—particularly in the last thirty years—reflecting social, cultural, and economic transformations in the lives of women. Recent trends in women’s demographics—educational attainment, employment status, reproduction, family composition, and access to health care—point to an increasingly complex context influencing women’s health. This context is marked by women’s multiple roles as workers, parents, and caretakers, and by health care and social welfare systems that have not been sufficiently responsive to women’s unique needs. Until recently, little consideration has been given to the complex and long-term interplay of health across a woman’s lifespan, particularly with respect to perinatal health. Historically divergent perinatal health and women’s health agendas further complicate current and emerging issues.

In the last ten years, the field of women’s and perinatal health has been confronted by a host of new challenges and opportunities: a rapidly changing health care delivery system driven by cost containment and reduced public health care expenditures, social welfare policy reforms that profoundly alter the lives of poor women and children, continuing trends toward devolving responsibility for health and social programs from the federal government to the states and from states to communities, and a resurgence of women’s activism that has changed health and research policies and priorities. How should the field of women’s and perinatal health respond to these emerging issues in the next decade? How should it work to ensure that the health of women is guaranteed?

To contribute to public discourse on such questions, the Women’s and Children’s Health Policy Center (WCHPC) at the Johns Hopkins University School of Public Health, in collaboration with the federal Maternal and Child Health Bureau (MCHB), reviewed the current state of women’s and perinatal health and invited experts to help develop recommendations for the coming decade. Several publications were generated in the context of this initiative. Among these is a compendium entitled Charting a Course for the Future of Women’s and Perinatal Health, of which this document is the second volume.

Volume I: Concepts, Findings and Recommendations presents the scope and guiding principles of the initiative and background on the field of women’s health, and summarizes key findings from thirteen literature reviews on topics ranging from smoking to pregnancy
care, from domestic violence to chronic diseases. Volume I also outlines recommendations on health policy, quality assurance, organization and financing of services, education, workforce development, and research. *Volume II: Reviews of Key Issues* presents the full text of the review papers.

**Guiding Principles**

Early research and initial deliberations of the Women's and Perinatal Health Policy Working Group gave consideration to the evolving nature and scope of the women's health field, which is increasingly being shaped by a philosophy that recognizes the impact of women's multiple social roles on health, that rejects a false dichotomy between reproductive and non-reproductive health, and that focuses on women's health assets rather than just health problems. Accordingly, the Charting a Course initiative is guided by four main perspectives:

- **A holistic perspective** that considers the multiple influences of biological, psychological, and social factors on women's health and that embraces a wellness approach, rather than being problem-focused. Such a perspective focuses on women's assets, stressing their resiliency and positive factors that affect their health.

- **A lifespan perspective** that recognizes that women have different health and psychosocial needs as they encounter transitions across their lives and that the positive and negative effects of health and health behaviors are cumulative across a woman's life. A lifespan perspective also means conceptualizing perinatal health within the context of women's overall health. Pregnancy is recognized as an important event in the life of a woman, although not the only important event.

- **A social role perspective** that recognizes that women routinely perform multiple, overlapping social roles.

- **A women-centered perspective** that considers women's gender-specific experiences as normative and recognizes the diversity among women in their health care needs and access to adequate health resources.

Public health perspectives are applied throughout, addressing population health in the context of social, environmental, and behavioral factors.

**Overview of the Review Papers**

The 13 papers comprising this volume present reviews on women's physical health, mental health, and health behaviors, and on the effects of health services, systems, structures, organization, and financing on women's health. Literature specific to perinatal health was incorporated within the broader context of women's health. These papers discuss epidemiological trends, predictors of health and risk factors, interventions, and policy and research implications.

The review papers provide recent information on a range of women's health concerns. The first three chapters focus on the social context of women's and perinatal health
and the health care system as a whole, describing the current state of health services for women and explaining the role of public health in promoting their health and well-being. The next three concentrate on women's reproductive health, including diseases of reproductive organs, issues of pregnancy planning and unintended pregnancy, and the current state of pregnancy care. The remaining seven chapters examine specific issues in women's health: chronic diseases, depression, domestic violence, nutrition, physical activity, drug and alcohol use, and smoking.

The topics chosen for review are not meant to represent the entirety of women's health. Other health conditions, behaviors, and aspects of the health care system deserve study as well. Some of the health conditions reviewed were selected on the basis of their prevalence among women. Others were chosen because they represent behaviors or conditions that have effects on women’s health across the lifespan, that affect women of different socioeconomic levels, and that can be influenced by health promotion interventions.

Multiple data sources informed the literature reviews, including peer-reviewed literature, U.S. government publications, such as census data, relevant textbooks on women's health, program reviews, policy reports and other sources as appropriate. These publications are cited in the individual chapters. When available, recent data are provided for women of different ethnic and racial groups. However, the availability of such data varies by topic, and not all studies and reports provide comparable information, nor do they all use the same categories and labels for race and ethnicity. Similarly, as the initiative’s focus is on women from menarche to menopause, most data are limited to women in this age group. However, data sources vary in their specific age delineations and these distinctions are noted in the specific chapters.

The recommendations in *Volume I* are grounded in good part by the findings herein. These chapters offer a perspective on the state of the field of women's and perinatal health, and provide a rationale to implement the recommendations and thus work towards improving the health of women in this country.
A review of the social and demographic trends affecting women is essential for understanding the context of women's and perinatal health in the United States. Social, economic, and political forces affect the health of women by influencing education, employment, reproduction, family composition, and household economic status. In turn, these demographic trends help shape the roles women maintain in their families, the workforce, and in society in general.

While women as a group have achieved significant improvements in such socio-demographic indicators as educational attainment and economic earnings, substantial variation persists among women of different races and cultural backgrounds. These differences are important for understanding the overall health of women, designing health services, formulating policies affecting women, and prioritizing research issues related to health.

Socio-demographic factors, such as educational attainment, household income, occupation, marital status, and race contribute to health by affecting predisposition to health-promoting behaviors as well as to chronic disease, access to medical care, personal health beliefs, and responses to the stresses of ill health. Many of the factors that contribute to health are inter-related. Limited educational achievement constrains job opportunities and earnings. For some women, low levels of literacy impair their understanding of health promotional materials. Many social factors, including poverty and its attendant environmental conditions, affect how women recognize and address their health care needs. However, even among women in households with comparable incomes, attention to non-acute health care issues may vary widely due to cultural norms and personal beliefs.

It is important to recognize the limitations of reviewing socio-demographic trends and associating them with measures of health status. First, many of these indicators, such as race, have had varied definitions over time. In addition, only recently have data been available for small but growing proportions of the population, such as Asian women. Second, reporting of trends may obscure the diversity within and among subgroups of women. For example, the category Asian and Pacific Islanders includes over 25 groups, representing recent immigrants as well as established populations. Third, one cannot infer local community needs from national data. Fourth, relationships between socio-demographic factors and health are associations rather than causal links, and some measures,
such as income, education, and race, may be closely related. However, an examination of national trends is important in measuring the social context for women across the lifespan. Moreover, improving the health of women may require reducing discrepancies among subgroups of women with regard to education and economic status; these factors are among those most able to be influenced by social policies.

Population

As of July 1, 1996, there were 135.5 million women and 129.8 million men in the United States. Nearly 60 million (44 percent) of these women were of reproductive age (15-44 years), 28 million were 45 to 64 years, and 20 million were 65 years and older (Figure 1). Since 1995, the number of women has increased by more than 2 million, and it is anticipated that by the year 2010 there will be more than 152 million females residing in the United States. In the 1990s, the population distribution has been concentrated among adults in their thirties and forties as Baby Boomers (born 1946 to 1964) have grown older. The Baby Boom generation, currently accounting for 38 percent of the population aged 15 years and older, is a main driving force behind the aging of the population.

The aging of the population has important consequences for health resource allocation and workforce training. A growing number of women will live longer with chronic illnesses and functional limitations. Minority women will comprise a growing proportion of the aging population. Social factors also may affect the health of older women. In the future, women increasingly will be without partners due to rising divorce and decreasing marriage rates; women also will have fewer children. Counterbalancing these effects and contributing to women’s improved health will be increased education, longer employment histories, and higher incomes among women.

Life Expectancy

Throughout the past century, the average life expectancies for both women and men have been increasing. However, the gender gap in life expectancy has widened—with women living, on average, several years longer than men. In 1996, life expectancy at birth was 79.1 years for women and 73.1 years for men. Women comprise 52 percent of the population aged 55-64 years, 55 percent of those aged 65-74 years, 60 percent of those aged 75-84 years, and 71 percent of those aged 85 years and older. Thus, women comprise a growing proportion of the aging population. Among individuals 85 years and older,
there are only 39 men for every 100 women. Older women have particular needs regarding physical, social, and emotional health. These needs vary by race and socioeconomic status. As with younger women, low-income and minority group membership among older women is associated with increased mortality and activity limitations from chronic illness as well as decreased preventive health behaviors.¹⁰

Life expectancy also varies notably by race. In 1996, life expectancy at birth was 74.2 years for Black females and 79.7 for White females. The absolute gap in life expectancy by race narrows but persists as women age. For women at 65 years, life expectancy is 17.2 years for Black females and 19.1 years for White females. At 75 years, life expectancy is 11.2 for Black women and 12.0 for White women.⁴

In addition to gender and race, differences in life expectancy also are associated with socioeconomic status. Women with higher family incomes live longer. For example, at age 45 years, Black women with family incomes $25,000 or more (in 1980 dollars) could expect to live 3.8 years longer than those with family incomes less than $10,000. Among White women, differences in family income among comparable groups contributed a difference of 2.7 years.¹ This is of particular interest, since socioeconomic status is one of the few variables amenable to social policy interventions.

<table>
<thead>
<tr>
<th>Specified Age And Year</th>
<th>All Races</th>
<th>White</th>
<th>Black</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ALL</td>
<td>M</td>
<td>F</td>
</tr>
<tr>
<td><strong>At Birth:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1900</td>
<td>47.3</td>
<td>46.3</td>
<td>48.3</td>
</tr>
<tr>
<td>1950</td>
<td>68.2</td>
<td>65.6</td>
<td>71.1</td>
</tr>
<tr>
<td>1996</td>
<td>76.1</td>
<td>73.1</td>
<td>79.1</td>
</tr>
<tr>
<td><strong>At 65 Years:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1900</td>
<td>11.9</td>
<td>11.5</td>
<td>12.2</td>
</tr>
<tr>
<td>1950</td>
<td>13.9</td>
<td>12.8</td>
<td>15.0</td>
</tr>
<tr>
<td>1996</td>
<td>17.5</td>
<td>15.7</td>
<td>19.0</td>
</tr>
<tr>
<td><strong>At 75 Years:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1990</td>
<td>10.9</td>
<td>9.4</td>
<td>12.0</td>
</tr>
<tr>
<td>1996</td>
<td>11.1</td>
<td>9.8</td>
<td>12.0</td>
</tr>
</tbody>
</table>

Source: Adapted from National Center for Health Statistics, Health, United States, 1998, Table 29.200.
Race

Of the 135.5 million women in 1996, 82 percent were White, 13 percent Black, 10 percent Hispanic, 4 percent Asian or Pacific Islander, and 1 percent American Indian or Alaska Native.

<table>
<thead>
<tr>
<th>Race</th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>111,696 (82%)</td>
<td>108,052 (83%)</td>
</tr>
<tr>
<td>Black</td>
<td>17,600 (13%)</td>
<td>15,903 (12%)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>13,750 (10%)</td>
<td>14,519 (11%)</td>
</tr>
<tr>
<td>Asian or Pacific Islander</td>
<td>5,024 ( 4%)</td>
<td>4,719 ( 4%)</td>
</tr>
<tr>
<td>American Indian or Alaska Native</td>
<td>1,152 ( 1%)</td>
<td>1,136 ( 1%)</td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>99,179 (73%)</td>
<td>97,799 (73%)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>135,474</td>
<td>129,810</td>
</tr>
</tbody>
</table>

Source: Adapted from National Center for Health Statistics, Health United States, 1998, Table 1.169-170. Percents add to more than 100% and numbers add to more than the total due to duplication within race groups. The race groups White, Black, American Indian or Alaska Native, Asian or Pacific Islander, include persons of Hispanic and non-Hispanic origin. Persons of Hispanic origin may be of any race.

Since 1990, the number of women increased by more than 8 million; from 1995 to 1996, the number of women increased by 1 million. This growth has been greatest among women of non-White races. From 1995 to 1996, population growth rates for women were higher among the Hispanic population (3.2 percent) than among non-Hispanic White women (0.2 percent) or Black women (1.0 percent). The distribution of women by race likely will shift over time with an increasing proportion of women being Hispanic, primarily because the Hispanic population is younger and includes more individuals in the prime childbearing years. Growth rates among Asian or Pacific Islander (4.7 percent) and the American Indian or Alaska Native (1.8 percent) female populations also have been relatively high, although these subgroups comprise a smaller proportion of the total population of women. It is estimated that White women will make up only 60 percent of the population in 2030, and 53 percent in 2050.

These shifts in the composition of population are important since disease susceptibility and access to care vary among racial and ethnic subgroups. Death rates from heart disease, stroke, and cancer are higher among Black women, than among their White, American Indian, Hispanic, and Asian or Pacific Islander counterparts. These variations in death rates may reflect differences in disease incidence as well as access to medical care.

Financial and other barriers to health care utilization often prevent appropriate use of preventive services, such as mammography, among minority women. Among women 40 years and older, Hispanic women are less likely to have received mammography during the past two years; they also are less likely than Black and White women to have seen a physician during the past year and are more likely to have no health insurance coverage. Barriers to access contribute to delayed or forgone receipt of needed health care. As a
result of delayed or forgone care, avoidable hospitalizations and exacerbations of chronic conditions may occur. These demographic shifts in the population of women in the United States should influence discussions about the allocation of health care services and about health care workforce training.

**Educational Attainment**

Historically, women have obtained fewer years of education than men. While a larger proportion of men than women hold college degrees (26.2 percent vs. 21.7 percent), significant advances in the educational attainment of young women must be noted. In 1970, 13 percent of women between 25 and 29 years of age received bachelor’s degrees compared with 20 percent of men in that age group. By 1997, the proportion of women who received college degrees exceeded that of men (29.3 percent vs. 26.3 percent). Similarly, a larger proportion of women than men were high school graduates (88.9 percent vs. 85.8 percent) in 1997.

Educational attainment varies by race as well as by gender. In 1997, high school completion rates among women aged 25-29 years were 89.4 percent for White women, 87.1 percent for Black women, and 64.9 percent for Hispanic women. Differences in college completion by race are even more striking; among women aged 25-29 years, 30.7 percent of White women, 16.4 percent of Black women, and 12.7 percent of Hispanic women held bachelor’s degrees in 1997.

Some gaps in educational attainment by race have narrowed while others persist. Differences in educational attainment between Black and White women have decreased, particularly with regard to high school completion. In 1940, three times more White women than Black women graduated from high school; by 1997, nearly equal proportions graduated (89.4 percent for White women vs. 87.1 percent for Black women).

Racial differences in educational attainment remain prominent for the young adult Hispanic and Asian populations. The Hispanic population has experienced gains over the past 10 years, but a smaller proportion of Hispanic women hold high school and college degrees relative to Black and White women. Asians, at
the other extreme, have the highest proportion of college graduates. Among men and women, 86.2 percent of Asian and Pacific Islanders hold high school degrees and 50.5 percent hold bachelor’s degrees.12

Educational attainment is a strong determinant of economic well-being. As such, these persisting gaps in educational attainment may contribute to restricted employment opportunities and decreased earning potential for women, particularly Black and Hispanic women. While 75.5 percent of individuals with professional occupations hold college degrees or higher, less than 10 percent of those working as precision production workers and machine operators completed college.12 Efforts to enhance occupational opportunities and earnings for women may require improving opportunities for educational advancement.

**Employment**

Many facets of employment affect the health and well-being of women, including rates of labor force participation, earnings, and type of occupation. Differences in employment status are closely related to other demographic factors, including gender, race, education, and family type.

The U.S. Census Bureau reports a dramatic increase in the proportion of women in the labor force since 1950. In 1950, about 30 percent of women aged 16 and older were employed. By 1990, this figure had nearly doubled to 57 percent. Subsequently, the rate of growth of women’s participation in the labor force has declined. Throughout the early 1990s, women’s participation has increased only slightly, reaching 59 percent in 1994.13

This growth in labor force participation has occurred among women of all ages (Figure 5). For example, about 35 percent of women born between 1926 and 1930 worked between the ages of 25 and 29. However, 74 percent of women born between 1961 and 1965 worked in this stage of life.14 Across all ages, women’s increasing participation in the labor force underscores the change in women’s roles and the need to evaluate the impact of paid employment on women’s health. Trends in employment of women of childbearing age highlight the need to understand the impact of work outside the home on women’s multiple roles, including caregiving for children and aging parents, as well as the impact on the health of women.
While there have been dramatic increases in the number of women of all ages entering the workforce, employment disparities persist among minority women. Black and Hispanic women are more likely than White women to be unemployed. As of 1994, the unemployment rate among women was 6 percent, which represented an 18 percent decrease since 1980. However, the unemployment rate among Black, American Indian, and Hispanic women in 1994 was twice that of White women. Despite significant differences in unemployment rates by race, labor force participation rates in 1994 varied less by race (59 percent for White and Black women and 53 percent for Hispanic women).

Despite increasing proportions of women entering the labor force and a faster growth in women’s earnings relative to men’s since 1975, gaps persist in earnings for women compared to men. As of 1994, women comprised 46 percent of the U.S. labor force. However, men’s wages exceed those of women across all ages, and the gap widens for middle-age women (Figure 6).
By 1996, the median earnings for full-time workers were $32,144 for men and $23,710 for women. Although this represents the largest female-to-male earnings ratio, median earnings for women continue to be only 74 percent of those for men. Gender discrepancies in earnings have been attributed, in part, to interruptions in employment for childbearing and caregiving and to sex-segregation of jobs. (Women have been disproportionately represented in lower-paying clerical work, nursing, teaching, and assembly line production.) Recent increases for women in the earnings ratio have been attributed to a decline in men’s wages rather than to any increase in women’s earnings.

Earnings for women have increased with higher levels of education both across the population and within each racial subgroup. The wages of minority women are less than their male or non-Hispanic White counterparts with equivalent education. In 1997, among those with high school diplomas (no college) in full-time jobs, median earnings were $18,152 for Black women—75 percent of that of Black men ($24,118) and 89 percent of that for White women ($20,272). Median incomes for Hispanic women ($17,512) also fell short of those for White women. The disparities for more educated women are less, but still exist. Among college-educated women, Black women earned 83 percent of that earned by Black men ($29,984 vs. $36,330), and 95 percent of what White women ($31,638) and Hispanic women ($31,477) earned.
Earnings vary with family type as well as by gender, race, and education. While median income in married-couple households was $49,858 in 1996, it was only $21,564 for female-headed households with no husband present. Family incomes are greatest for married couples with wives in the paid labor force followed in declining order by married couples without wives in the paid labor force, male-headed households with no spouse present, and female-headed households with no spouse present.

Socioeconomic status is linked with health; women of all races with lower incomes are more likely to report being in fair or poor health, have activity limitations, engage in selected high-risk behaviors, and experience acute health conditions. This linkage of socioeconomic status and health begins in childhood. Among adolescents, the prevalence of being overweight and the adoption of sedentary lifestyles are greater among teens in low-income households. Being overweight in adolescence is a risk factor for being overweight as an adult and for developing heart disease, some cancers, and diabetes. Lack of physical activity increases the risk of chronic diseases, including heart disease, stroke, and diabetes, and detracts from optimal mental health.

The types of jobs held by women have changed somewhat over the last two decades. Between 1980 and 1994, the proportion of women in administrative support positions decreased from one-third to about one-quarter of working women. During the same time, the proportion of women in executive, administrative, and managerial positions increased from 6.9 percent to 12.4 percent. It has been suggested that the growing participation of women in managerial and professional jobs reflects both a willingness of employers to promote women in the workplace and an opportunity for women to assume greater control over their work lives. Such positions also are likely to offer higher compensation and to be more highly regarded. It is important to note, however, that the distribution of occupations among women varies by race. Larger proportions of Black and Hispanic women than White women held service industry and assembly line positions and a smaller proportion were employed in executive, administrative, and managerial positions in 1993.

Work conditions may affect the health of working women through occupational injuries, chemical exposures, and physical and emotional stress. More than 735,000 women report work-related illnesses and injuries each year. Nearly one-fourth of working women report exposure to substances they believe are harmful if breathed or placed on the skin. In addition, 40 percent of working women in 1988 reported spending more than 4 hours a day bending or twisting hands or wrists, and more than 40 percent reported work-related activities involving repeated bending, twisting, or reaching. Self-reported job-related health problems are higher among Black and Hispanic women than among White women and higher among those with less education. This likely reflects an increased concentration of less-educated workers in less-desirable jobs exposing them to musculoskeletal trauma. For some women, some of the ill effects of employment may be mitigated by increased self-esteem and financial independence.

The impact of employment on health likely varies with type of occupation, the extent of conflicting personal responsibilities (i.e., caregiving roles), and the availability of social supports. Women employed in low-skill jobs may have less access to on-site child care, flexible work schedules, and employer-sponsored fitness and health promotion activities. These benefits contribute to supportive work environments and promote women’s health.
In a growing proportion of two-parent families, both the husband and wife work outside the home. In 1997, both parents were employed outside the home in 64 percent of two-parent families with children under 18 years of age. Between 1996 and 1997 alone, there was an increase of 113,000 families in which both spouses worked. Less than one-third of all two-parent families were composed of an employed father and “unemployed” mother, and a high proportion of these families had children under 6 years of age.

During the past few decades, growing proportions of women with children have entered the labor force. Recent data from the U.S. Bureau of Labor Statistics highlight the growth of mothers’ participation in the labor force, especially among women with older children. In 1997, 65 percent of all mothers with preschool-aged children and 78 percent of those with children aged 6-17 were in the labor force (Figure 7).

Labor force participation affects the health of mothers of infants and toddlers. Overall, 58 percent of women with children under 1 year of age and 66 percent of women with children under 2 years of age were employed outside the home in 1996. It is likely that women’s concurrent caregiving and employment responsibilities contribute to the smaller proportion of women than men reporting working full-time, year round (55 percent of women vs. 71 percent of men 15 years and older who reported working in 1996). The increasing participation of women in the labor force and the passage of federal welfare reform in 1996 highlight the need to address child care issues and support systems for women with multiple responsibilities. This legislation replaced Aid to Families with Dependent Children (AFDC), an entitlement program, with Temporary Assistance for Needy Families (TANF). TANF places a two-year limit on consecutive years of assistance and a five-year lifetime limit on assistance. In addition, work requirements have been incorporated into the program. These changes will have significant implications for

---

1Despite the fact that two-parent families are not exclusively composed of heterosexual couples, data on same-sex parents are not available.
women’s health because they require the participation of low-income women in work (or work-related activities). This participation generally means low-skilled positions that pay minimum wage and provide few, if any, benefits. While TANF regulations promote self-sufficiency, which may boost psychological health, few provisions address the issue of child care responsibilities in relation to work requirements. Increased employment of women in low-skilled jobs may reduce access to health care by eliminating coverage under Medical Assistance and by increasing the difficulty of obtaining medical care for themselves and their children during regular health care facility business hours. Increasing child care strains and reduced access to health care may negatively impact the health of poor women—an already vulnerable population.

The demands of employment outside the home affect the lives of an increasing proportion of women. Addressing issues related to women in the workforce is an important step in improving women’s health. Among these issues are race and gender discrepancies in earnings and promotions, exposures to occupational hazards, and lack of affordable child care.

**Births and Fertility**

Birth and fertility rates have declined over the past decade. In 1997, the birth rate was 14.7 births per 1,000 total population with 3.9 million live births in the U.S. that year. The corresponding fertility rate was 65.3 births per 1,000 women. This 1997 birth rate was the lowest in two decades, and the 1997 fertility rate was the lowest in a decade. Fertility rates vary by race, with highest rates among Hispanic women.

| BIRTH AND FERTILITY RATES BY RACE, 1997† |
|-----------------|-----------------|-----------------|
| Race            | Birth Rate      | Fertility Rate  |
| White           | 14.1            | 64.3            |
| Black           | 17.8            | 70.7            |
| Hispanic        | 24.8            | 104.9           |
| Asian or Pacific Islander | 17.0        | 65.9            |
| American Indian | 16.6            | 68.7            |
| TOTAL           | 14.7            | 65.3            |

*Source: Adapted from National Center for Health Statistics, Health United States, 1998, Table 3.*

†Birth rates reported as live births per 1000 population. Fertility rates reported as live births per 100 women, ages 15-44.

In addition to varying by race, birth rates also vary with maternal age as women delay childbearing. During the 1990s, the teenage birth rate has declined, while birth rates among older women have increased. Between 1991 and 1997, the birth rate for women 15-19 years of age has decreased by 15 percent. Between 1995 and 1996 alone, birth rates declined for women ages 15-19 years while rising for women ages 20 and older.

| BIRTH RATES BY AGE, 1995 - 1996 |
|-----------------|-----------------|-----------------|
| Age Range       | 1995            | 1996            |
| 15-19           | 56.8            | 54.7            |
| 20-24           | 109.8           | 111.1           |
| 25-29           | 112.2           | 113.9           |
| 30-34           | 82.5            | 84.5            |
| 35-39           | 32.4            | 35.4            |
| 40-44           | 6.6             | 6.8             |

*Source: Vital Statistics, 9′97*
The 1996 birth rate for women ages 40-44 was higher than any year since 1971, reflecting a growing propensity toward delayed childbearing. Of particular note are the differences in teen birth rates per 1,000 women by race—48.4 for Whites, 91.7 for Black, and 101.6 for Hispanics. Further efforts to reduce teen pregnancy will need to consider cultural attitudes toward childbearing and educational differences among Hispanic and Black women and their White counterparts.

Since the 1970s, the number and proportion of first births to women in their thirties has increased dramatically. The first birth rate for women between 30 and 34 years of age increased from 7.3 births per 1,000 women in 1970 to 17.5 in 1986, rising 140 percent. For women between 35 and 39 years of age, the first birth rate increased from 2.1 in 1970 to 4.7 in 1986, a change of 124 percent. Since women between 35 and 39 years of age have higher risks of poor child health outcomes and more than twice the risk of maternal death than women between 20 and 24 years of age, unintended consequences of delayed childbearing may arise.

In 1994, there were twenty-five million women between 15 and 44 years of age who were childless. Of these women, it is estimated that 9 percent expected to have no children in their lifetimes, 15 percent expected to have one birth, and 43 percent expected to have two births. In 1995, there were 5.4 million women who had no children and expected none in the future. Most of these women (4.1 million) had voluntarily chosen not to have children. Since 1982, the percentage of all women of reproductive age who are voluntarily childless has increased (6.6 percent in 1995 vs. 4.9 percent in 1982), whereas the percentage of women who are involuntarily childless has remained constant (2 percent in 1982 and 1995). These data contradict the popular notion that the United States is suffering from an “infertility epidemic.” Recent media attention focusing on couples seeking fertility treatment sends the message that more couples are having difficulty conceiving. Two other possible reasons infertility may appear to be on the rise: (1) more women are postponing childbearing into their thirties, when women are naturally less fertile, and (2) couples able to afford the high costs of treatment tend to have higher socioeconomic status, so the issue receives more attention from the media.

In 1995, college-educated women 22-44 years of age were considerably less likely to have been pregnant or to have had a live birth than women who had not completed high school. Approximately 49 percent of female college graduates in this age group reported no live births compared with 8 percent of women who did not have a high school diploma. This pattern was observed among Black, White, and Hispanic women alike; women with less education were more likely to have given birth than those with a college degree.

Births prior to first marriage occurred among about 16 percent of women 15-44 years of age in 1995, and births prior to first marriage are significantly related to family background. About 42 percent of women raised by a single parent from birth had a baby before their own first marriage, compared with 12 percent of women raised in a two-parent household from birth. The overall proportion of births to unmarried mothers in 1996 was 32.4 percent. Again, however, this proportion varies by race, with Hispanic women (40.9 percent) and Black women (69.8 percent) having higher proportions than White women (25.7 percent). Contrary to popular notions that births to unwed mothers are limited to minority teens, the growing numbers of children born to unmarried mothers have occurred among women of all ages and racial groups.
Evidence suggesting that many women are choosing to delay childbearing, to bear children prior to marriage, and to remain voluntarily childless highlights the need to shift from an exclusive focus on women’s reproductive health to a more comprehensive approach to their health care needs. Limiting the focus of women’s health to reproductive issues may fail to identify and meet the needs of a growing proportion of adult women who may not enter the health care system for childbearing-related services. Moreover, a more holistic approach to women’s health care should address not only reproductive but also acute and preventive general health concerns. Such an approach would recognize the growing proportion of women who balance the demands of employment and caregiving and confront health consequences related to delayed childbearing.

Family Composition

The Census Bureau divides families into three broad categories of households. In 1997, there were 53.6 million married-couple families, 12.8 million female-headed households (no husband present), and 3.8 million male-headed households (no wife present). The Census Bureau does not track data on family composition in households with families composed of same-sex partners.

Increasingly, women and men are delaying marriage. In 1994, the median age at first marriage was 26.7 years for men and 24.5 years for women, compared with 23.2 years for men and 20.8 years for women in 1970. There also has been a substantial increase in the proportion of young men and women who have not yet married. Between 1970 and 1994, the proportion of people aged 30 to 34 who had never married tripled from 6 percent to 20 percent for women and from 9 percent to 30 percent for men. The proportions of never-married men and women ages 35 to 39 also dramatically increased between 1970 and 1994—from 5 percent to 13 percent for women and from 7 percent to 19 percent for men.

In recent decades, there has been an increase in unmarried couple households. Since 1970, the number of these households has grown from 523,000 to 3.7 million in 1994. Results from the 1995 National Survey of Family Growth suggest that about one-half of women 25-39 years of age have cohabitated with a man at some point in their lives, and about one-third of women in this age range lived with a man before their first marriage. In addition, the survey reported that 57 percent of cohabitating couples eventually marry each other.

Currently, one out of two marriages ends in divorce, with certain subgroups of women being more likely to experience divorce. The divorce rate is highest among young men and women—20-24 years of age for men and 15-19 years of age for women. It is estimated that about 33 percent of all first marriages result in divorce within five years if the woman married before age 18, compared with 14 percent of marriages among women married at age 23 or older. Similarly, 27 percent of marriages in which women have less than a high school diploma dissolve within five years compared with 13 percent of marriages among women who are college graduates. Divorce has significant implications for women with regard to childrearing, labor force participation, income, and social status. In addition, divorce may affect health more directly by eliminating health insurance and affecting emotional and psychological health.
Women bear a disproportionate responsibility for childrearing in single-parent households. The majority of children under 18 years of age who are living in one-parent households are living with their mothers. In 1994, only 12 percent of children living in one-parent households were living with their fathers. There has been a significant increase in the proportion of female-headed households since 1970. This trend is related both to the increase in the divorce rate and the increase in the proportion of out-of-wedlock births. In 1994, female-headed households accounted for 18 percent of all families, compared with 11 percent of all families in 1970. Among Black families, the proportion of female-headed households (48 percent) was notably higher than among White families (14 percent).

The fact that the vast majority of children living in one-parent households are living with their mothers may reflect a general societal attitude that women are the preferred or more responsible caregivers of children. Women are significantly more likely than men to be awarded custody of children in divorce settlements. In 19 reporting states in 1990, 72 percent of custody cases were awarded to the wife, 9 percent were awarded to the husband, and 16 percent were awarded joint custody. Women do not always receive the child support they are awarded. In 1991, over one million women due child support did not receive any payment. This represents 24 percent of the 4.9 million women who were owed support. In addition, among women awarded support, 66 percent received only partial payment. Despite the fact that women receive more child support than men, they still have lower incomes than fathers who receive child support. In 1991, women receiving child support were paid on average $3,011 for the year compared with $2,292 for men. These payments comprised 17 percent of the 1991 income for women, but only 7 percent for men. Men receiving child support had an average income of $33,579, compared with $18,144 for women. In 1992, 35 percent of custodial mothers and 13 percent of custodial fathers were poor. Incomplete child support collections contribute to the feminization of poverty.

Black families are much more likely than White families to be maintained by women without a spouse present (47 percent vs. 14 percent in 1993). As a result, a smaller proportion of Black children than White children reside in households with two parents (36 percent vs. 78 percent). As noted above, these differences in family composition have significant implications for the economic well-being of children, since children in single-parent households are more likely to live in poverty.

**Household Economic Status**

Female-headed households are at an economic disadvantage compared with male-headed and married-couple households—1997 median incomes for these households were $23,040, $36,634, and $51,681, respectively. The corresponding poverty rates are highest among female-headed families, followed by male-headed and married-couple families. Only 29 percent of female-headed households own a home, compared with 42 percent of male-headed and 72 percent of married-couple households. Within family types, income varies by race. Among female-headed households, poverty rates vary by race, with Hispanic (48 percent) and Black families (40 percent) more likely to reside in poverty than White families (28 percent). Alternatively stated, income per household varies by race—1997 median incomes for Hispanic, Black, and White female-headed households were $16,393, $17,962, and $25,670, respectively.
Not surprisingly, female-headed households are more likely than married-couple families to participate in major means-tested assistance programs. These programs include AFDC/TANF, general assistance, Supplemental Security Income (SSI), food stamps, Medicaid and housing assistance. A five-fold greater percentage of individuals residing in female-headed households participated in means-tested programs in 1993 than did individuals in married-couple families (43 percent vs. 8 percent). Among individuals in female-headed households, 24 percent received AFDC, 4 percent received SSI, 33 percent received food stamps, 35 percent received Medicaid, and 14 percent received housing assistance.34

Child care is quite costly for many women. Between 1986 and 1993, weekly child care costs rose by an average of $15—from $64 per week to $79 per week.35 Child care costs pose a greater burden for poor mothers. Women with incomes below the poverty level spend 18 percent of their monthly family income for child care, compared with just 7 percent for women with incomes above the poverty level.35 In 1991, women who had incomes above the poverty level, but below $1,500 a month, spent 22 percent of their income on child care.30

Child care costs vary depending on the type of care used. Typically, the least expensive care is provided by family day care ($52/week) or relatives ($42/week). Organized day care and in-home babysitters tend to be more expensive ($65/week each). According to the 1993 Survey of Income and Program Participation (SIPP), the proportion of preschool-age children in each type of child care arrangement were as follows: relatives (41 percent), organized facilities (30 percent), family day care (17 percent), mother cares for child at work (6 percent), in-home babysitters (5 percent), and other arrangements (1 percent).35

Women’s Roles

There has been an increasing recognition of the multiple roles of women in the United States including working for pay outside the home, performing unpaid work at home, and serving as caregivers for dependent children and aging parents. The vast majority of caregiving for the young and for the elderly is provided by women. Nevertheless, researchers and policy experts only recently have begun to explore the interrelated nature of women’s multiple roles at home and in the workforce and their impact on women’s health.

Demographic trends highlight shifts in family life. For instance, more women are delaying childbearing into their thirties, often because they are establishing careers in their twenties. In addition, economic necessity among both two-parent and single-parent households and increased social acceptance of mothers’ desires to advance in careers outside the home have resulted in an increase in the proportion of women with children who enter the paid workforce. These trends have significant implications for women’s health and caregiving roles. Increases in occupational risk and the stress of juggling multiple roles may be offset by increases in financial independence and self-esteem. The balance of these effects will depend, in part, on the type of occupation, social supports and responsibilities, and earnings. In turn, these mitigating factors are interrelated with socioeconomic status, cultural norms, and education. For example, it has been suggested that some Black caregivers have more support than White caregivers, and others have found that church attendance is a better predictor of support for Black caregivers than for White caregivers.30
Women’s caregiving roles have sparked controversy as society grapples with issues related to comparable worth, gender discrimination in the workforce, child care, and division of household labor among adults. Research has examined the impact of paid employment and caregiving on women’s physical and psychological health. Some studies have found an association between employment and good health as measured by self-esteem, perceived health, and physical functioning, suggesting that particular aspects of the work environment contribute to health for some women.\textsuperscript{37-40} However, with regard to paid employment, excessively demanding jobs and conflicting responsibilities are linked with poor health. Exacerbations of particular chronic diseases, such as hypertension, have been associated with such employment strains.\textsuperscript{41} High-demand and low-control jobs, the lack of employment, and absence of family responsibilities also have been associated with poor health.\textsuperscript{39,42,43} Psychological health also is affected negatively by time constraints, conflicting responsibilities, and non-supportive work environments.\textsuperscript{42}

The caregiving role of extended families has changed over the years due to trends in mobility, marital patterns, ethnic and cultural patterns, and immigration status. The decline of extended families, the decline in the proportion of men serving as primary wage earners in two-parent households, and the growth of single-parent households are trends that significantly have affected women’s caregiving roles. In addition to contributing solely or substantially to their families’ incomes by working outside the home, many women are also the primary caregivers of children and aging relatives.\textsuperscript{36,44,45} As with paid employment, extremes in caregiving are associated with the poorest physical health. Not surprisingly, caring for ill children or spouses is also associated with poor physical health. In addition to its impact on women’s physical health, stressful caregiving situations have been associated with diminished psychological and emotional health.\textsuperscript{46} For example, some caregiving situations have been associated with reduced self-esteem, increased role-conflict, and depression among women.\textsuperscript{40,43}

Despite recent efforts to study the relationship between women’s health and employment, the scientific literature is limited by lack of consensus on definitions, failure to address confounders that influence health, and dated studies. An overview of the literature illustrates the need for more rigorous research to better understand this relationship. Future studies should examine women’s resources to meet their own and their family’s psychological, emotional, economic, and social needs as factors affecting the impact of employment on women’s health. In addition, studies examining employment and health need to consider occupational characteristics, caregiving demands and tasks, women’s preferences, and marital roles, as well as health risks and behaviors.\textsuperscript{3,36} For women in the “sandwich generation,” providing care for both dependent children and aging parents is likely to increase the strains of employment, although this balance of roles has not been well studied.

Although the 1996 Family and Medical Leave Act was promoted as a policy to ultimately improve the health of families, its impact on women is largely unknown. This federal law provides wage-earners in medium and large firms the opportunity to take unpaid leaves for up to 12 weeks following the birth or adoption of children or to care for ill family members. Research is needed to identify how such leave policies influence the health of women by affecting career mobility, return-to-work decisions, support systems among colleagues who perform the work of the absent employee, and balance among family and work responsibilities.
Conclusion

This review of the social context for women's health identifies a range of issues that are likely to affect women's health and their need for health services. Despite significant gains in narrowing the gaps in social indicators for men and women and for women of different racial backgrounds, discrepancies persist with regard to life expectancy, educational attainment, employment, and earnings. Improving the social climate that affects women's health necessitates addressing these fundamental differences between women and men, as well as among women of different socioeconomic groups. The social context of women's health sets the stage for interpreting socioeconomic and racial differences in morbidity, mortality, the use of preventive services, the adoption of health promoting behaviors, and access to health-enhancing services. An understanding of this social context is also essential for designing, implementing, and evaluating policies aimed at improving the health of women in the United States. This review suggests that renewed efforts to boost educational attainment and related income and employment opportunities among all women may be a necessary step toward improving the health of women.
References


Health Care Services and Systems for Women of Reproductive Age

Carol Weisman and Virginia Poole

Any discussion of improving perinatal and women’s health within the context of the changing health care delivery system in the United States must address both how women access health care and the appropriateness and quality of the services they receive. Recent attention to women’s health issues has illuminated that women’s care is based on insufficient research and is fragmented in its delivery, particularly with regard to the separation of reproductive and non-reproductive services. This review considers the configuration of health care services for women of reproductive age and presents some key access and quality issues that need to be addressed in research and policy.

Health Care Services for Women of Reproductive Age: An Overview

Women in the U.S. obtain health care services from a wide variety of sources. And although they frequently enter the health care delivery system for either pregnancy-prevention or pregnancy-related services, reproductive health services often are provided separately from other components of women’s health care. The array of health service organizations serving women include both public and private entities, and some women use a combination of both. But unless a woman is enrolled in a managed care plan of some type, her use of multiple sources of health care is unlikely to be coordinated by any provider or payer. Therefore, the current health care delivery system for women results in both redundancies and gaps in services, with the potential for discontinuities as women age and change providers or health insurance plans.

Fragmentation of services in the health care delivery system for women likely contributes to inefficiencies such as higher costs to individual women and insurers as well as risks to women of both deficiencies and excesses in care. In particular, women may have access to reproductive health care but not to comprehensive care. Many women do not have access to the type of “primary care” characterized by first-contact care that is comprehensive, coordinated, and based on sustained partnerships between provider and patient. Furthermore, because health care providers have not traditionally been trained in, or responsible for, all aspects of women’s care, some women’s health concerns have
been neglected in both research and clinical practice. These concerns include eating disorders, domestic violence, sexual abuse, depression, sexual dysfunction, chemical dependency, the menopause transition, and gender-specific aspects of such chronic conditions as heart disease and diabetes.

While most women obtain health services from private physicians (including solo and group practices as well as in managed care plans), many women obtain specialty reproductive health services or routine care from public sector organizations or from private organizations that rely heavily on public funds (e.g., Planned Parenthood centers). Publicly funded health services tend to be targeted to minority women and women with lower incomes. These “safety-net” services include community health centers and the programs of public health departments, as well as prenatal care programs supported by Title V, the maternal and child health provisions of the Social Security Act, and family planning clinics supported by Title X of the Public Health Service Act. Title V and Title X programs grew out of the efforts of activist women in the early 20th century to create new services—prenatal care and family planning—not offered by mainstream providers. When these services later became incorporated into mainstream medical practice, public programs were established for segments of the female population lacking access to private physicians. While these public programs improve access to care for uninsured and other disadvantaged women in the short term, they may, in the long term, contribute to overall system fragmentation because they support only limited services.

Currently, the financial viability of safety-net health care services for women is threatened by two trends. The first is reductions in the public funding streams that support them, including Title X. The second is the growth of managed care plans that compete for Medicaid clients and may provide inadequate reimbursements, thereby reducing the ability of safety-net organizations to cross-subsidize care. In the case of family planning services, well-intentioned public policy designed to preserve the right of Medicaid enrollees to use these services through “carve-outs” may have had the perverse effect of slowing their integration into managed care networks. Many family planning centers are now playing catch up by negotiating contracts with either private or Medicaid managed care plans to provide specialized reproductive health services or, in some cases, primary care for women. Because some women depend on safety-net organizations as their usual source of health care, financial failure could leave these women medically homeless.

School-based health centers are a source of health care for some adolescent women. In 1995, there were over 700 school-based clinics in 41 states providing primary care and mental health services for adolescents who either did not have access to health care through other sites or preferred to obtain care in the school setting because of convenience, confidentiality, or other factors. Although reproductive health services, including contraception, are not always provided in these clinics and account for only a small proportion of utilization, studies have shown that adolescents who use these clinics are more likely to use contraception and are therefore at lower risk of unintended pregnancy. Because adolescents (both female and male) are low utilizers of health care generally, school-based clinics are critical to improving their access to care, even if they are enrolled in managed care plans. Concerns have been raised, however, that the growth of managed care threatens the financial viability of school-based clinics (through loss of Medicaid revenue), the mix of services clinics provide, and their ability to protect client confidentiality.
Another development in health care delivery is the emergence of new types of women's health centers, including hospital-sponsored and community-based entities, that provide services designed for and marketed to women. Between 1990 and 1994, the percentage of U.S. hospitals reporting sponsoring a women's health center of some type increased from 19 percent to 32 percent. In 1993, there were an estimated 3,600 women's health centers of various kinds nationwide, serving about 14.5 million women. Although the majority of these centers focused on reproductive health services, 12 percent were comprehensive primary care centers designed to integrate the reproductive and non-reproductive components in a "one-stop shopping" format, coordinated by a primary care provider or multidisciplinary team. The number of these comprehensive centers is thought to be growing.

Women's health centers offering primary care consist of three types: centers that are owned or operated by hospitals or health systems; community-based, not-for-profit centers (including some former reproductive health centers that have transformed themselves into primary care centers); and for-profit centers owned by physician groups, nurse groups, or other entrepreneurs. Some of these centers provide the most innovative models of women's primary care now available in the U.S. health care system, but they have rarely been evaluated to determine their impact on quality or costs.

A key policy issue in women's health care is how to preserve the safety net of publicly supported health services for underserved women while simultaneously improving the availability of comprehensive, integrated services for all women.

**Women's Health Care Utilization Patterns**

Surprisingly little is known about how women obtain basic health care in the United States. Ongoing national surveys—which include surveys of utilization of physicians' practices as well as community-based surveys of women—typically do not measure what combinations of providers women use for basic care or how patterns of care change over the health care career of a woman. No studies have adequately measured the combinations of service sites, including both private and public organizations, that women use for basic care. Similarly, surveys typically do not ask about women's use of non-physician providers (e.g., advanced practice nurses or physician assistants). Finally, because most utilization studies are cross-sectional, it is difficult to infer how women's patterns of health care use change across the lifespan. For example, while cross-sectional data show that older women are less likely than women of reproductive age to use obstetrician-gynecologists, it is not known whether the post-World War II baby-boom generation of women—who have had earlier and more sustained contact with obstetrician-gynecologists than previous generations—will continue using these physicians as they age.

Research consistently demonstrates that women make greater use of the health care system than men throughout adulthood. The gender difference is not fully explained by pregnancy-related care. Women are more likely than men to report having a usual source of care; they make more visits to physicians and hospital outpatient departments, have more hospital stays (even excluding obstetrical stays), and are more likely to use nursing homes and home health services. In 1994, women comprised 51 percent of the U.S. population and 52 percent of the population ages 18 and over, but they made 60 percent of
all visits to physicians’ offices and 61 percent of all visits to outpatient departments in non-federal hospitals.\textsuperscript{10,11} In 1994, females of all ages made 30.5 visits per 100 persons per year to hospital outpatient departments for non-urgent care, compared with 20.4 visits by males.\textsuperscript{11} In 1993, females accounted for 60 percent of all discharges from non-federal, short-stay hospitals.\textsuperscript{12} The most common inpatient surgical procedures for women in 1993 were procedures to assist delivery, cesarean section (23 percent of all births), repair of current obstetrical laceration, and hysterectomy.\textsuperscript{12} With regard to mental health services, women use more outpatient services than men, whereas men use more inpatient services.\textsuperscript{13}

Gender differences in utilization are greatest among persons of reproductive age, conventionally defined for women as ages 15 to 44. Women establish higher rates of health care use during the reproductive years for family planning services, routine Pap smears and other preventive care, or prenatal and obstetrical care. Obstetrician-gynecologists often provide these services, and visits to these specialists account for about one-third of office visits made by women in the reproductive years.\textsuperscript{14} Both the use of obstetrician-gynecologists for routine care and the use of publicly funded family planning and other agencies make women’s utilization patterns more complex than men’s.

Over 80 percent of women report in national surveys that they have a usual source of care, predominantly physicians’ offices. Having a usual source of care, however, does not necessarily imply that women receive comprehensive primary care. Three types of physicians—family or general practitioners, general internists, and obstetrician-gynecologists—provide most basic health care to women, although estimates of how much primary care each specialty provides vary widely.\textsuperscript{10,15-17} The only study to estimate the percentage of women who rely on multiple physicians concurrently found that 33 percent of U.S. women aged 18 and over (and 37 percent of women ages 18-44) use both an obstetrician-gynecologist and another primary care physician for their regular care. Women using two physicians tend to be more affluent than women who rely on only one physician, to have private indemnity health insurance or to be enrolled in private health maintenance organizations (HMOs), and to be under age 65. The largest segment of women (39 percent) rely on a family practitioner or internist for regular care, without seeing an obstetrician-gynecologist. These women tend to be age 65 or over and to have less education than other women. Sixteen percent of women rely on an obstetrician-gynecologist alone, 3 percent rely on other specialists (e.g., cardiologists), and 10 percent have no regular physician.\textsuperscript{18}

The types of physicians women see influence the services they receive. In the 1993 Commonwealth Fund Survey of Women’s Health, women who reported seeing two types of physicians concurrently made, on average, 25 percent more annual visits and received more clinical preventive services than women seeing only one primary care physician.\textsuperscript{19} Recent research also has demonstrated that women who do not see obstetrician-gynecologists—either as the primary physician or in combination with another physician—are more likely not to receive key preventive services (e.g., Pap smears, breast examinations, and mammograms) according to recommended guidelines.\textsuperscript{19,20} It is not yet known how the increased enrollments in various kinds of managed care plans affect the types of physicians women see on a regular basis.

Some women use multiple organizational sources of care concurrently or across the lifespan. Although longitudinal data are not available, it is likely that a substantial number
of U.S. women rely on publicly funded health care organizations at some point during their lives. Family planning clinics receiving Title X or other public funds probably account for many women’s contact with the public health sector. Overall, about two-thirds of family planning visits are to private physicians, and one-third are to family planning clinics. According to the 1995 National Survey of Family Growth, 26 percent of women aged 15 to 24 reported having used a family planning clinic for their first contraception-related visit. Among the nearly 6.6 million women served by subsidized family planning clinics in 1994, 32 percent were served by public health departments, 30 percent by Planned Parenthood sites, 16 percent by hospital clinics, 13 percent by independent clinics, and 9 percent by migrant health centers. Little is known about how women who use family planning clinics obtain their basic health care, whether within these clinics or elsewhere.

Seventy-six percent of all prenatal care visits are made to private physicians, 14 percent are to hospital outpatient departments, and 10 percent are to clinics. Uninsured women and women enrolled in Medicaid are more likely than other women to use non-hospital clinics. Among the unanswered questions about women’s health care patterns are how low-income women receive care following childbirth and to what extent prenatal, postnatal, and interconceptional care are coordinated for these women. The Medicaid program, for example, has no mechanism for ensuring continuity of care for women following childbirth: unless a woman qualifies based on pre-1997 welfare income level eligibility policies, she will generally lose Medicaid benefits 60 days following delivery.

As noted earlier, women also receive care from advanced practice nurses or physician assistants, although reliable use data are scarce. In the 1993 Commonwealth Fund Survey, fewer than 2 percent of women reported using providers other than physicians as their regular source of care. However, an estimated 100,000 advanced practice nurses are involved in the delivery of primary care, according to the American Academy of Nursing (1997). In 1994, 5 percent of all in-hospital births in the U.S. were attended by certified nurse-midwives. Studies that have compared care provided by nurse practitioners or certified nurse-midwives with that of physicians generally have concluded that these nursing professionals performed as well as physicians and that their communication skills were superior. Because advanced practice nurses are frequently members of teams in managed care plans that provide some components of women’s routine health care, some experts predict that their use will increase as managed care grows. However, the potential of these health professionals to provide a greater share of women’s health care is constrained by state regulations limiting prescribing practices, restrictions related to third-party reimbursement, admitting privileges, and resistance from physicians.

Barriers to Health Care Access for Women

Both financial and non-financial factors affect women’s access to health care, although the effects of gender on access and use of services are not well understood. The dominant research model of health care utilization, developed by Ronald Andersen and Lu Ann Aday, treats “sex” as a biological variable predisposing women to greater health care use, and the effects of gender are not specifically considered. Despite women’s greater overall use of care, they face unique barriers to access.
Gender is related to lack of health insurance and inadequate health insurance, two major barriers to access. Although women and men are about equally likely to have health insurance, women are more dependent than men on public insurance (especially Medicaid) and are more likely than men to be insured as dependents on a family member’s (usually the spouse’s) health insurance plan. Because most private health insurance is obtained through employment, women are at a disadvantage because they are more likely than men to work part-time or in jobs that do not provide health insurance benefits. Recent declines in employment-based health insurance and in dependent coverage could disproportionately affect women. Furthermore, low-income and minority women are more likely than other women to be uninsured or publicly insured.

Women spend more out-of-pocket on health care than men because of the structure of health care benefits. One study found that as a consequence of inadequate insurance coverage of reproductive and preventive services, women of reproductive age have out-of-pocket expenses that are 68 percent higher than men of the same age. For example, women pay 56 percent of the cost of contraceptives out-of-pocket. Poor women are disproportionately affected, with more than 25 percent having out-of-pocket costs for health care exceeding 10 percent of their incomes. In 1995, only 16 states and the District of Columbia covered abortion services for Medicaid recipients. Given that women are more likely to be financially disadvantaged than men, these findings highlight important gender inequities in health care coverage.

The expansions of Medicaid in the late 1980s and recent welfare and health insurance legislation also have implications for women’s access to health care. The Medicaid program targets women of reproductive age who also meet certain requirements based on economic need and family status. Medicaid expansions of coverage for pregnant women and young children resulted in enrollment increases of over 50 percent between 1988 and 1994 and in the provision of Medicaid-reimbursed pregnancy-related care by a larger number of providers. Currently, Medicaid is a key source of health coverage for women of reproductive age and covers about 40 percent of all births. However, poor women of reproductive age who are not pregnant, do not have young children, and are not disabled do not qualify for Medicaid benefits. Nearly one-third of poor and near-poor women are uninsured, and almost two-thirds of women losing Medicaid eligibility become uninsured.

Federal welfare reform (the Personal Responsibility and Work Opportunity Reconciliation Act of 1996) severed the automatic linkage between welfare and Medicaid eligibility. This law replaces the Aid to Families with Dependent Children (AFDC) entitlement with a block grant to states known as Temporary Assistance to Needy Families (TANF). As a result, there is likely to be considerable variation across states in how Medicaid eligibility is defined and in how enrollment procedures are administered, with the prospect of many needy women and children not receiving Medicaid benefits.

Private health insurance reform is proceeding incrementally following the failure of the Clinton health care reform plan in 1994. The Health Insurance Portability and

---

1The Equity in Prescription Insurance and Contraceptive Coverage Act, introduced in Congress in 1997 by Senators Snowe and Reid, requires insurance plans for federal workers that cover prescription drugs to cover contraceptive drugs and devices. In 1998, Maryland was the first state to enact such legislation.
Accountability Act of 1996 guarantees availability and renewability of group health insurance coverage through employers or unions, and it limits the use of exclusions for pre-existing conditions, including pregnancy. While this will help women maintain coverage when they change jobs, it will be of little assistance to women who are uninsured or unemployed, or whose employers do not provide health insurance.\(^{38}\)

Recent attention to health insurance reform sometimes creates the impression that only financial barriers stand in the way of access to health care. A number of non-financial factors, however, impede access to services, particularly in the case of women’s health. These factors include lack of services or appropriate providers in women’s communities, transportation, child care, and translator or interpreter services. Organizational features, such as inadequate hours of operation and long waiting times, also impede access. All of these problems are exacerbated by system fragmentation that requires women to visit more than one location for basic services.

The unavailability of reproductive health services is a major barrier to care. One study found, for example, that one-fourth of U.S. counties had no prenatal clinics for poor women.\(^{24}\) Regulations in some states that limit nurses’ scope of practice contribute to this problem by preventing these providers from offering reproductive services to women. In 1992, 84 percent of U.S. counties had no provider of surgical abortions; fully 30 percent of all women of reproductive age resided in those counties.\(^{39}\) Some providers decline to offer this service due to intimidation by anti-abortion groups. In 1992, among non-hospital facilities providing 400 or more abortions, 86 percent were subjected to anti-abortion harassment, including picketing, vandalism, and bomb threats.\(^{40}\) In addition, some states have legal restrictions on abortion, such as mandated waiting periods or counseling, which increase women’s travel burdens, costs, and the risks associated with delay of the procedure to later gestational stages.

In addition, the availability of a full range of reproductive health services is threatened in some communities by affiliations between non-sectarian health care organizations and those sponsored by religious groups that proscribe abortion, contraception, sterilization, or certain treatments for infertility. For example, abortion services may be discontinued at a non-Catholic facility following affiliation with a Catholic organization. In some cases, to preserve availability of proscribed services, they have been provided at a separate facility not overseen by the Catholic organization. This distancing strategy, however, further fragments women’s health care and may be resisted by consumers and women’s health advocacy groups.\(^{41}\)

Clearly, public policy that increases women’s financial access to health care would enhance their use of health services, but even universal health insurance would not eliminate the non-financial barriers. Both types of barriers, therefore, remain important targets for health care policy.

**Implications of the Growth of Managed Care**

The growth and increasing diversity of managed health care plans serving enrolled populations have produced much speculation about the implications for women’s health.
Charting a Course for the Future of Women’s and Perinatal Health

Currently, over 58 million Americans are enrolled in various types of HMOs, over 91 million are enrolled in preferred provider organizations (PPOs), and over 40 percent of Medicaid recipients are in some type of managed care. Women of reproductive age are slightly over-represented among HMO enrollees, compared with their proportion in the U.S. population, because of the tendency for HMOs to enroll younger populations, the growth of Medicaid managed care, and the tendency for employees to switch from traditional fee-for-service insurance to HMOs in anticipation of childbirth. Although there is little evidence that managed care plans compete with each other on the basis of benefits for women, this could be an emerging area of interest among the more entrepreneurial plans, particularly since women are thought to make the majority of household decisions about health plan purchasing and are more likely than men to identify specific factors (such as choice of specialists) as important in choosing a health plan.

Recently, a period of managed care backlash, fueled by largely anecdotal evidence, has prompted new legislation regulating managed care at the state and federal levels. Interestingly, some of these efforts have focused on women’s health care, including state laws requiring managed care plans to provide women with direct access to obstetrician-gynecologists and both state and federal legislation requiring health insurance plans to cover minimum postpartum hospital stays for mothers and newborns. Although women’s health advocacy and interest groups have neither initiated nor led these legislative efforts, it is clear that lawmakers and others favoring managed care regulation see women’s health as a good vehicle for promoting their policy objectives.

There is reason, however, to hypothesize that there are both benefits and risks to women who are enrolled in managed care. Although the term “managed care” is vague, its emphasis on cost control, coordination of services, and preventive care has the potential to improve prevention and screening, provide more effective prenatal care, lower out-of-pocket costs, and foster better integration of reproductive and non-reproductive care for women. For example, primary care providers serving as “gatekeepers” to a health care system could be expected to coordinate care more efficiently, including referrals and follow-up. The population-based, capitated approach to managed care provides financial incentives to providers to keep people out of the hospital and to improve controls on overuse of unproven or high-technology treatments. Accordingly, managed care might result in more preventive services and fewer unnecessary interventions for women, such as cesarean sections and hysterectomies. And because HMOs rely on copayments and do not have coinsurance or deductibles, out-of-pocket costs to women should be lower and more predictable.

Along with the promises of managed care, however, arise a number of concerns. These include possible reduced access to specialists (e.g., obstetrician-gynecologists, mental health providers), incentives to underserve patients, reduced time during visits for provider-patient communication, and the discontinuities in care that are associated with voluntary or involuntary plan switching. Concerns about reduced access to specialists and incentives to underserve must, of course, be weighed against the incentives for overtreatment in fee-for-service insurance, which have been historic concerns of women’s health advocates. Reduced time for communication and plan switching are potentially serious problems for women, who value communication and long-term relationships with
their physicians. Furthermore, effective prevention requires time for patient education and counseling to provide information and to motivate and sustain lifestyle changes and clinical preventive screening schedules.

Increasing enrollment of Medicaid recipients in managed care likely improves low-income women’s and children’s access to a regular source of health care, at least during the period of Medicaid eligibility. Some of the managed care plans serving Medicaid enrollees, however, may be unprepared for the special needs of low-income women and their children, who have not been traditional clients of private managed care organizations. Concerns have been expressed, for example, about the ability of plans to provide care for chronic conditions, disabilities, mental illness, and substance abuse in low-income populations and to provide linkages with needed social services. Research on managed care provides limited evidence on these issues. Studies have focused largely on comparing the original group and staff-model HMOs with traditional fee-for-service plans. However, hybrid plans and more loosely structured PPOs currently are the largest and fastest growing forms of managed care. Because the managed care market is rapidly evolving, research has not kept pace with the greater variation among plans and with the increasing heterogeneity of enrolled populations. For example, the research evidence that women enrolled in managed care received more clinical preventive services than those with indemnity insurance was from studies of the early forms of HMOs or from patient-reported data in which only the designation “HMO” was used to classify managed care enrollees. A recent study found that HMOs may have lost their comparative advantage between 1987 and 1992—at least with regard to Pap smears, breast exams, and mammograms. This could have occurred for a number of reasons, including the growing variation among HMOs, the increasingly diverse population of women enrolled in HMOs, or the likelihood that all providers became more prevention-conscious during the study period.

Another research gap that is particularly relevant to women concerns the phenomenon of carve-outs for mental health and substance abuse services in many managed care plans. In carve-outs, services are contracted to managed behavioral health organizations that assume the financial risk. While carved-out mental health care has been shown to contain costs, research on how carve-outs affect the process of care or patient outcomes is sparse. Research is needed on the impact of managed mental health care for conditions affecting women, such as depression (including depression associated with pregnancy and childbirth), substance abuse prevention and treatment (including during pregnancy), and conditions associated with domestic violence and sexual abuse.

Comparing types of managed care plans in their treatment of women presents important methodological challenges, since multiple dimensions of plans affect service delivery. McGlynn (1998) recently described the most important components of plans likely to affect women’s health care, including, for example, benefit structures, rules for accessing care (including specialists and diverse service options, such as women’s health centers), methods of provider payment and evaluation, and the nature of contractual arrangements. In order to understand how managed care affects women’s health care utilization, out-of-pocket costs, and quality of care, research is needed that compares various organizational arrangements along these and other dimensions and that follows women enrollees prospectively.
Quality Issues in Women's Health Care

Both increased interest in women's health issues and changes in the health care delivery system have drawn attention to the need to conceptualize “quality” in women's health care and to develop measures that can be used for quality assessment and improvement. Two general types of quality issues are important: those related to specific health services or interventions and those related to health care delivery models. First, the field must increase the knowledge base about the effectiveness of specific health services for women, including new tests or treatments as well as services that are routinely provided but not well-evaluated (e.g., routine prenatal care for low-risk women, routine family planning visits, episiotomies). Continuing pressures to contain health care costs and to reduce unnecessary utilization may encourage more research on the effectiveness of such services. Second, evaluation is needed of the effects of alternative health care delivery models for women, particularly within the context of the growth and diversity of women's health centers and managed care organizations. This type of research depends on the development of quality measures that can be used in comparative organizational studies, with adjustments for differences across organizations in the female populations served.

Currently there is no consensus on a definition of quality in women's health or on standards for the delivery of women's basic health care. Quality in health care delivery is usually considered in terms of three dimensions: structure, which refers to characteristics of the health care delivery system, organizations, and providers; process, which refers to the technical and interpersonal aspects of care delivery; and outcomes, which refers to the results of care, including clinical and functional status and patient satisfaction. Although attention has been devoted recently to outcomes research that focuses on disease management, much of women's health care (e.g., pregnancy prevention services, prenatal care) is not disease-related but is concerned instead with prevention and health maintenance. Furthermore, certain aspects of both structure and process are also critical to ensuring appropriate outcomes for women.

One of the most hotly debated issues in women's managed care—access to obstetrician-gynecologists—is essentially a structural issue. Although managed care plans vary widely in their policies and practices regarding women's use of different types of physicians as primary care providers (PCPs) and self-referrals to obstetrician-gynecologists, research to date has not investigated the implications of women's use of different types of PCPs either for the process of care or for outcomes. It is not known, for example, how the type of PCP or self-referrals affect the number of visits, preventive services received, prevention of unintended pregnancy or poor pregnancy outcomes, or patient satisfaction.

Two issues related to the process of care are particularly important for women's health: how do the comprehensiveness of services provided—including the degree to which reproductive and non-reproductive services are integrated—and the quantity and nature of provider-patient communication relate to patient satisfaction and other outcomes? For example, research shows that women are more dissatisfied than men with the quantity and quality of communication with their physicians. In the 1993 Commonwealth Fund Survey, for example, 41 percent of women aged 18 and over, compared with 27 percent of men, reported that they had ever changed physicians because of dissatisfaction. Among those who had changed, 45 percent of women, compared with 33 percent of men, cited
communication problems as the reason. Typical communication problems noted by women included not receiving enough information from physicians, perceiving that physicians did not listen to them, and feeling uncomfortable about discussing reproductive or emotional issues with physicians. Ironically, the pressures of market competition are driving providers to seek efficiencies that result in even shorter visits and less time for patient education and counseling. Relationships between communication and outcomes, including patient satisfaction, need to be examined within different types of organizational arrangements.

The kinds of data that are used in quality measurement at the organizational level include administrative data, clinical records, and surveys of patients and providers. While most information systems and quality analyses have the capacity to stratify patient populations by gender and to explore gender differences in care received, few studies have done so. Even less attention has been paid to conceptualizing how the care process might differ for women and men, or how women and men might differ in their perceptions of care received. Many existing measures of quality, including patient satisfaction survey instruments, were not developed with gender issues in mind.

Several initiatives to develop better indicators of quality in women’s health care are underway, including one by the National Committee for Quality Assurance (NCQA), which developed the Health Plan Employer Data and Information Set (HEDIS) in the early 1990s to assess the performance of managed care plans. HEDIS measures the availability of services, use of services, and effectiveness of and patient satisfaction with care in managed care plans. HEDIS has become widely used by health plans, and measures included in HEDIS tend to drive their quality monitoring and improvement efforts.

HEDIS currently includes several measures specific to women’s health, including indicators of breast and cervical cancer screening, early prenatal care, ongoing prenatal care, rates of cesarean section and vaginal birth after cesarean, birth-related average length of stay, and postpartum checkups. Data for these measures can be relatively easily retrieved from administrative or clinical records. Medicaid HEDIS, released in 1996, includes measures designed specifically for Medicaid managed care, including indicators related to pregnancy and childbirth as well as to plan linkages with social service agencies. Performance on women’s health measures varies considerably across plans and regions of the country, suggesting much room for quality improvement.

A number of new measures in women’s health are being tested for inclusion in HEDIS, including the stage at which breast cancer is detected, follow-up after abnormal Pap smear and abnormal mammogram, and assessment of how breast cancer therapy affects patients’ ability to function. The development of new measures in women’s health for HEDIS is likely to require more complicated data collection strategies, including more extensive use of patient surveys to measure women’s perceptions and behaviors. A Women’s Health Measurement Advisory Panel currently is exploring evidence for gender differences in HEDIS patient satisfaction measures and investigating available indicators and evidence on which to base new measures of quality in women’s health. A measure designed to assess the adequacy of counseling women about options for management of menopausal hormonal changes is in the testing phase.

†These data were analyzed by the first author and Stacey B. Plichta.
The Foundation for Accountability (FACCT) is developing outcome performance measures to help consumers make health care choices based on information about quality in health plans, health systems, and medical groups. The measures are meant to be meaningful to consumers of services and to the purchasers of services, including both private and public purchasers. Areas identified for measurement development include breast cancer and pregnancy care in addition to conditions that are prevalent in both women and men.

Because women receive health care from a variety of settings and often change their sources of care over time, quality measurement can be challenging. For example, if women receive care from multiple organizations concurrently, it could be difficult to disentangle the impact of a particular source on patient outcomes. Some measures that are well-suited to managed care organizations (e.g., the proportion of an enrolled population that receives Pap smears within a three-year time period) may not be appropriate for organizations such as family planning clinics that do not have enrolled populations or the capacity to monitor utilization or outcomes over time. If women switch plans more frequently than men, perhaps due to dissatisfaction with providers, they are harder to track for performance measures. Women's health centers that offer comprehensive primary care could provide useful laboratories in which to develop and test quality measures, because they serve large numbers of women, have high patient retention rates, have information systems for tracking referrals (particularly to sponsoring hospitals) and monitoring care over time, and provide a wide array of services, including reproductive and non-reproductive care, mental health services, and preventive and curative care.

Policy Implications in Women's Health

Policy implications typically are discussed with respect to removing the financial and non-financial barriers to access to care, ensuring quality of care, and providing care at reasonable cost to the individual and society. Public policy to improve perinatal health and the overall health of women must address two broad issues: first, the need for all women—regardless of age, income, employment status, or maternal status—to have access to a basic standard of health care in their communities at an affordable cost; and, second, the need to ensure that the health services provided to women are comprehensive and of high quality.

Specific policy objectives to reach these goals include:

1. ensuring that all women, regardless of their family status, have financial access to health care, by providing affordable health insurance with minimal copayments;
2. ensuring that health insurance plans provide adequate coverage of comprehensive health services for women, including a full range of reproductive services, physical and mental health services, and services related to conditions with a clear gender component (e.g., injuries associated with domestic violence, depression);
3. ensuring that safety-net health organizations are supported to serve women who do not have access to other providers;
4. ensuring the availability of comprehensive health care services and health information for women in the communities where they live, including a full range of reproductive health services;
5. encouraging the training of physicians and other health professionals in the science and provision of comprehensive women's health care.
(6) ensuring the availability of a range of health care options for women, including organizational alternatives (e.g., various types of managed care plans, women’s health centers offering comprehensive primary care, school-based clinics) and both physicians and other health care professionals who are trained and credentialed to provide women’s health care;
(7) ensuring public funding of biomedical and health services research on women’s health issues to increase the knowledge base for establishing standards and practice guidelines in women’s health;
(8) ensuring that health care delivery organizations are accountable for providing comprehensive, integrated, quality health care to women; and
(9) ensuring women’s capacity to make informed health care decisions by protecting women’s privacy and their rights both to obtain and decline health care, including when they are pregnant.

In addition, there is a need to reconceptualize and redesign public programs that persist in defining women’s health care narrowly in terms of specialized reproductive health services or that equate women’s health with their reproductive function or with the health of their children. Public funding streams that create or maintain specialized reproductive services without providing for their integration into comprehensive, continuous women’s health care programs help perpetuate fragmentation and inadequate care. Public programs that provide health care benefits to women only after they have become pregnant do not optimize health for either women or their newborns. There is a legitimate and important role for the public sector in identifying unmet needs for care and in providing safety-net services for women who are uninsured or cannot access health care for other reasons. These functions, however, need to be implemented in ways that improve women’s access to appropriate care and enhance the capacity of communities to provide high-quality care to women.
References


Public Health Roles Promoting the Health and Well-Being of Women

Holly Grason, Virginia Poole, Gillian Silver

Although clinical health services provided in the private sector account for most investments in women’s health, public health services—including surveillance of health status and needs, population-based health education and promotion, screening, standards development, and quality monitoring, as well as gap-filling personal health services—remain important to the overall system of health care for women over the lifespan. Over the years, a number of health issue-specific initiatives and services have been developed, primarily through agencies of the U.S. Department of Health and Human Services (DHHS) but also within other cabinet agencies such as Agriculture, Justice, and Labor. These activities pertain to all levels of government: many are implemented at the state and community level under the auspices of state and local public health departments but frequently also via non-profit community agencies. Concentrated public efforts have been created primarily as separate programs addressing such concerns as family planning, adolescent pregnancy prevention, smoking, drug and alcohol abuse, sexually transmitted disease/HIV services, prenatal and perinatal care for women and infants, nutrition, domestic violence prevention, and cancer prevention and early detection. Public health programming in these areas has evolved to address population concerns in ways that hospitals or office-based medical practice on their own could not.

With a mission to “fulfill society’s interest in assuring conditions in which people can be healthy,” public health agencies nationwide implement the broad functions of assessment, policy development, and assurance. Fundamental to improving the health of the population is public health’s longstanding orientation to social equity issues as well as its overarching perspective that addresses population health in the context of social, environmental, and behavioral factors. This perspective is significant in this review, particularly given the need to consider the social and developmental aspects of health unique to women.

The purpose of the chapter is to illustrate through several examples how public health activities are important to improving the health and well-being of women. Our aim is to explain why a focus on women’s health within public health is both needed and possible. This discussion should not be construed as documentation of effective women’s
health programming in the public sector. Rather, we offer a set of ideas that may be useful in guiding deliberations relative to women’s health concerns. At the end, we identify several opportunities and challenges for the public health field in furthering women’s health within the current political and health delivery systems environment.

Accountability for the Health of the Public: The Health of Women

The role of government (and public health in particular) in building, organizing, and maintaining activities and services that protect, promote, and preserve the health of its population is often not well-articulated or understood. Moreover, while medical interventions figure significantly in assuring improved health, overarching accountability for the health status of the population remains a public sector responsibility. Such accountability is codified in both state statutes and local ordinances in all areas of the country (as with, for example, the reporting and surveillance of cases of sexually transmitted diseases). Concerns both for the health of population groups and individuals not engaged in the health care system (uninsured persons and other socially, culturally, legally, and/or economically disadvantaged groups) and for primary prevention undertaken in relation to environmental matters and social policies affecting the entire population require the broad, objective view, and span of authority of government. Today, it is widely understood that the determinants of health are largely found in environmental, behavioral, biologic, genetic, and socioeconomic factors. Moreover, several cross-national studies document improved overall health status in countries where a strong, population-based public health infrastructure exists alongside universal medical care access (insurance) and primary care services policies.

Governmental roles include assuring an organizational locus for policy formulation and coordination of initiatives and services at the federal and state levels, and partnering with professional organizations and research institutions to set standards and monitor the quality of health and social services, whether provided in the private or public sector. State and federally-sponsored demonstration and research programs prompt the discovery of new strategies for improving health and well-being of populations of concern. Governmental surveillance of the health status of the population provides the information needed for sound policy development and alerts policymakers to emerging issues about which society needs to be concerned. Moreover, government functions related to environmental and global policies—such as in the areas of tobacco production and use, quality of public water supplies and control of toxic waste disposal, health and safety in employment settings, and access to firearms—play critical roles in improving population health through primary prevention.

Drawing on the U.S. Public Health Service’s “Ten Essential Public Health Services,” Grason and Guyer have developed a framework specific to maternal and child health. In the table below, we present an adaptation of those functions as they specifically relate to the health of women from the onset of menarche through the perimenopausal years. This framework is a useful tool as we consider the question: what is needed to ensure public accountability for the health of women?
Ten Essential Public Health Services to Promote the Health of Women in America

1. Assess and monitor the health status of women of reproductive age to identify and address problems.

2. Diagnose and investigate health problems and hazards affecting women through their reproductive years.

3. Inform and educate the public and families about women's health issues.

4. Mobilize community partnerships among policymakers, health care providers, families, the general public, and others to identify and solve the health problems of women.

5. Provide leadership for priority-setting, planning, and policy development to support community efforts to assure the health of women and their families.

6. Promote and enforce legal requirements that protect the health and safety of women, and ensure public accountability for their well-being.

7. Link women to health and other community and family services, and assure access to comprehensive, quality systems of care.

8. Assure the capacity and competency of the public health and personal health workforce to effectively address the health needs of women of reproductive age.

9. Evaluate the effectiveness, accessibility, and quality of personal health and population-based health services for women.

10. Support research and demonstrations to gain new insights and innovative solutions to the health-related problems of women from the time of menarche through the perimenopausal period.

Examples of Public Health Programming Specific to Women’s Health

This section illustrates public sector promotion of women’s health, drawing on three areas of women’s health programming. In the first example, focusing on perinatal care, federal and state governments have a longstanding track record of public leadership. We next describe governmental activities related to breast and cervical cancer, which, although relatively new, are developing quite rapidly. With respect to partner violence against women—the third example—government accountability has only recently begun to emerge. These examples do not comprehensively catalogue public health functions; rather they present a snapshot of several prominent public health programming initiatives related to women’s and perinatal health.

As introduction to this discussion, the table that follows outlines examples of the ten essential public health functions, activities, and services specific to these three women’s health concerns. Material that follows expands on these points and illustrates how public health functions are expressed differently across health issues and programs as well as in the context of their implementation at community, state, and federal loci of government.
# Examples of Public Health Functions Specific to Three Women’s Health Concerns

<table>
<thead>
<tr>
<th>Public Health Function/Activity</th>
<th>Perinatal Care</th>
<th>Cervical and Breast Cancer</th>
<th>Partner Violence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assess and Monitor Health Status</strong></td>
<td>Use vital statistics data to study birthweight-specific infant mortality and to monitor rates of maternal mortality.</td>
<td>Enhance state and local utilization of data from the national breast and cervical cancer surveillance system to monitor incidence, stage at diagnosis.</td>
<td>Initiate a national survey of family and intimate violence to address the lack of systematic tracking of violence against women (e.g., Centers for Disease Control and Prevention - National Institute of Justice survey).</td>
</tr>
<tr>
<td><strong>Diagnose and Investigate Health Problems and Hazards</strong></td>
<td>Extend and maintain existing initiatives, such as the Pregnancy Risk Assessment and Monitoring System, study of the rise in congenital syphilis from unidentified and/or untreated maternal syphilis, and Maternal Mortality Reviews, which uncover woman-specific and system factors contributing to poor pregnancy outcomes.</td>
<td>Conduct epidemiologic reviews of high incidence areas and populations.</td>
<td>Investigate “clusters” of cases to understand the risk factors for violence, including violence against women in the workplace and violence against pregnant women.</td>
</tr>
<tr>
<td><strong>Inform and Educate the Public</strong></td>
<td>Provide resources and technical expertise for the implementation of national and local public information campaigns on the importance of early and continuous prenatal care.</td>
<td>Produce and disseminate culturally-appropriate information in community agencies (e.g., senior centers, YWCAs) to improve risk awareness and encourage women to seek screening consistent with recommended guidelines.</td>
<td>Fund community organizations, such as domestic violence centers, shelters, and schools, to institute collaborative youth violence prevention education programs.</td>
</tr>
<tr>
<td><strong>Mobilize Partnerships</strong></td>
<td>Support community/grassroots consortia, such as Healthy Mothers, Healthy Babies Coalitions, which prompt local and state action on problems of infant mortality.</td>
<td>Maintain national and local partnerships among the Centers for Disease Control and Prevention, American Cancer Society, YWCA, National Association of Breast Cancer Organizations, and National Cancer Institute.</td>
<td>Develop partnerships with grassroots organizations, educators, employers, and health care providers for educating local and state legislators about the problem of partner violence and promising interventions designed to address it.</td>
</tr>
<tr>
<td><strong>Leadership for Planning and Policy Development</strong></td>
<td>Convene and support statewide commissions focused on perinatal health to heighten public and professional attention and to guide policy development and resource allocation based on scientific evidence.</td>
<td>Designate resources and program authority to assure implementation of the National Strategic Plan for the Early Detection and Control of Breast and Cervical Cancers.</td>
<td>Incorporate data and analysis related to rape and battering into required state MCH program needs assessments and annual planning.</td>
</tr>
<tr>
<td>Public Health Function/Activity</td>
<td>Perinatal Care</td>
<td>Cervical and Breast Cancer</td>
<td>Partner Violence</td>
</tr>
<tr>
<td>---------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Promote and Enforce Protections, and Ensure Public Accountability</td>
<td>Work with professional and hospital organizations to develop standards and designate units for risk-appropriate deliveries.</td>
<td>Establish medical advisory committees and dedicate state health agency resources to monitor mammography and cytological services consistent with the Clinical Laboratory Improvement Act of 1988 (CLIA) and American College of Radiology Standards.</td>
<td>Work with police departments to monitor implementation of legislation outlining legal penalties for and restrictions on handgun purchases by perpetrators of domestic violence against women.</td>
</tr>
<tr>
<td>Ensure Access to and Linkages Among Services</td>
<td>Provide prenatal care services for immigrant and other women without access to health care. Develop or maintain a regionalized system of perinatal services.</td>
<td>Establish systems under the National Breast and Cervical Cancer Early Detection Program to provide care efficiently from screening to diagnosis and follow up care.</td>
<td>Allocate resources for free post-trauma medical examinations for women who are victims of violence by intimate partners.</td>
</tr>
<tr>
<td>Assure the Capacity and Competency of the Public and Personal Health Work Force</td>
<td>Promote practice parameters and credentialing policies to expand and enhance use of advanced nurse practitioners and nurse-midwives.</td>
<td>Develop educational curricula for primary care physicians and other health care providers, as well as training materials and reminder systems.</td>
<td>Support training for prosecutors, police, and service providers in screening for partner violence in health care and judicial encounters.</td>
</tr>
<tr>
<td>Evaluate Personal and Public Health Services</td>
<td>Provide technical expertise to entities such as NCQA, JCAHO, and FAACT in the development of indicators/benchmarks for monitoring the delivery and quality of services provided to pregnant women and their newborns.</td>
<td>Identify barriers and factors facilitating the use of health services.</td>
<td>Examine the effectiveness of primary care providers practicing in managed care organizations in identifying and treating domestic violence against women (e.g., studies from the Agency for Health Care Policy Research).</td>
</tr>
<tr>
<td>Support Research and Demonstrations</td>
<td>Allocate discretionary resources for the development and testing of model approaches addressing urgent perinatal concerns such as substance abuse among pregnant women (e.g., Maternal and Child Health Bureau–Substance Abuse and Mental Health Services Administration Pregnant and Postpartum Women and Their Infants Program).</td>
<td>Fund clinical trials to determine treatment outcomes.</td>
<td>Convene expert panels, such as the Institute of Medicine Panel on Research on Violence Against Women, to analyze scientific evidence and make recommendations for improved policies and strategies for addressing partner violence.</td>
</tr>
</tbody>
</table>
Perinatal Care. The earliest public efforts to improve the care of pregnant women and promote safe births evolved in the late 19th century in public health agencies in large urban areas. Emerging from a tradition established with creation of the Children’s Bureau in 1912, federal government attention to health issues of women in their childbearing roles has remained vigorous throughout this century. Among the early accomplishments of the Children’s Bureau were the sentinel studies on maternal and infant mortality, the establishment of birth registries in the states, and development of a federal-state partnership program of state-based prenatal and infant care services. The federal leadership reflected in the functions and activities of the Children’s Bureau in its early years is maintained today in DHHS’ Maternal and Child Health Bureau (MCHB), within the Health Resources and Services Administration. This bureau administers national coordination, training, research and development, and oversight activities outlined in Title V of the Social Security Act, which was crafted in 1935 for the purposes of reducing infant mortality and the incidence of preventable diseases and handicapping conditions among children by assuring mothers and children access to quality health services (Title V, SSA, PL 74-271).

Over the years, the scope and complexity of addressing the health and social issues related to prenatal care and healthy births has prompted the creation of additional units in federal and state government that contribute significantly to these efforts—notably, the data collection and surveillance and research activities of the Centers for Disease Control and Prevention (CDC) and the National Institutes of Health. Important services related to the care of pregnant women, such as nutrition supplementation, have also been established in other federal executive agencies.

Even amidst the federal reductions in health and social spending of the 1980s, significant federal and state attention was given to expanding Medicaid income eligibility levels and the scope of covered services to ensure that pregnant women and infants had access to health care. Federal leadership in the Health Care Financing Administration and MCHB was prominent throughout in helping states implement new service and financing interventions. Important partnerships were established among advocacy and national professional organizations and federal units to disseminate policy guidance and information on best practices. A prominent player was the National Commission to Prevent Infant Mortality, established by Congress in 1987 to bring national attention and momentum to activities focused at the federal, state, and local levels for improving the health and well-being of mothers and children.

The Healthy People 2000 Objectives published in 1990 included over 35 specific goals and targets related to perinatal care. These specific goals helped focus attention and provided a means to guide and measure the efforts of health departments at all levels of government, community-based organizations, and the private sector toward solving pressing perinatal health care problems. In 1991, the national Healthy Start program was created, targeting substantial resources for prenatal and infant care services for fifteen communities with the highest rates of infant mortality. Concurrently, DHHS established a Secretary’s Advisory Committee on Infant Mortality. In the early years of the 1990s, a partnership was formed between MCHB and the Alcohol, Drug Abuse, and Mental Health Services Administration to develop state and community capacity and programs for substance-abusing pregnant women and their children. In 1993, concerns about managed care practices that discharged new mothers and infants within 24 hours of birth were addressed by a special DHHS initiative led by the MCHB.
National media campaigns promoting early prenatal care and national toll-free information numbers linked to state and community resources for women seeking prenatal services have been established over the past five years. Other recent federal efforts involve development and dissemination of perinatal-related guidelines reflecting the most current scientific knowledge, including targeted efforts in relation to folic acid intake for pregnant women and women contemplating pregnancy, recommendations on appropriate weight gain in pregnancy, and use of antiretroviral (ART) treatment courses for pregnant women who test positive for the human immunodeficiency virus (HIV).

Public agency organization, coordination efforts, and public-private partnerships at the state level largely parallel the federal initiatives but with more focus on the unique characteristics of each state’s demographic, cultural, economic, and health services system characteristics. Title V of the Social Security Act requires state health agencies to undertake comprehensive statewide annual planning bolstered by a five-year cycle of needs assessment. To help guide such processes, many states have established special commissions and advisory committees to examine data and foster public-private collaboration related to the concerns of pregnant women and their infants. These policy bodies and program activities provide the information necessary for creating public attention supporting public health problem-solving, and targeting resources in order to address issues related to maternal and infant health and well-being.

State Title V programs also play key roles in assuring the capacity and competency of provider networks serving women. State health departments, in particular, work with professional organizations, hospital associations, and individual medical facilities to promote system organization. State-level public health activities ensure availability of regional and statewide vital statistics and, in about one-third of the states, population risk status through the Pregnancy Risk Assessment Monitoring System (PRAMS). Operation of such activities as transport systems, development of standards for hospital designation and risk-appropriate clinical care, and regulation and monitoring of quality of care also typically fall under the auspices of state public health agencies. Local health agencies contribute to the effectiveness of regional perinatal systems through their targeted initiatives to identify and locate high-risk pregnant women and provide education and care coordination for them.

Public health contributions to improved delivery of perinatal care and reductions in maternal and infant mortality have been noted. Rapid and profound changes in today’s health care system, however, necessitate even greater emphasis on these important public health functions. Moreover, some have called for more concerted attention to the health of women when they are not pregnant as a strategy to further improve efforts nationally to reduce infant mortality.

Breast and Cervical Cancers. Until the mid-1980s, most insurance plans did not cover mammograms. During the final years of the decade, states increasingly mandated coverage by commercial insurers and HMOs, such that, by 1992, 42 states had such legislation in place. Self-funded insurers, which constitute close to 50 percent of all employer health plans, are exempt from such requirements under ERISA protections. Medicaid and Medicare now cover mammography screening; however, low reimbursement rates in many areas continue to limit private sector involvement in screening low-income women for breast cancer.
The 1990 Breast and Cervical Cancer Mortality Act (P.L. 101-354) represents one of the largest federal efforts in chronic disease prevention and control. The Act is designed to provide low-income minority women with improved access to screening and services. Spearheaded by the CDC, state-based efforts implemented under the National Breast and Cervical Cancer Early Detection Program (NBCCEDP) are designed to institutionalize early detection and follow-up services for women. Beyond screening services, these full-service programs include awareness strategies, professional education, quality control, surveillance systems, and program evaluation. While the screening services are aimed specifically at low-income women, the resulting improvements in resources, quality, and public and private partnerships benefit all women. By 1998, all 50 states, the District of Columbia, five U.S. territories, and 15 American Indian and Alaska Native tribes and tribal organizations were implementing programs.

States receive funds under the NBCCEDP for clinical breast and pelvic exams, screening mammograms, and Pap tests. Each state has designed screening systems congruent with both the unique characteristics of its health care system and of its specific target populations. At the local level, a range of public, private, and community partnerships have designed appropriate population approaches to education, outreach, and screening, including mobile mammography units and clinics, vouchers, special hospital clinics, and same-day appointments. In developing the public education and outreach component, the program places considerable effort on ensuring materials generated are culturally sensitive and aimed at the appropriate educational level. Follow-up with women having abnormal test results, in particular, has been challenging and has required a great deal of effort. Vellozzi and colleagues found the most effective strategy overall for reaching underserved women appeared to be the implementation of information management systems to track women with abnormal tests as well as to remind women when next exams are due for scheduling. Many states dedicate staff positions specifically for oversight of such efforts.

State health agencies undertake activities to improve quality assurance in mammography and cytological services. Medical advisory committees have been established to coordinate state technical assistance, assist with training, develop clinical protocols, and develop guidelines. State health agencies also provide training for physicians, nurses, and physician’s assistants in detection and diagnostic procedures, communication skills, clinical skills, guidelines for screening, and data collection and reporting. CDC is working through professional organizations to implement a broad national strategy that provides resources for the development of training materials, physician reminder systems, and educational curricula for primary care physicians in the areas of screening, quality assurance, communication, and counseling.

The CDC reports through March 1997 detection of over 23,000 cases of cervical intraepithelial neoplasia (CIN) I, II, or III, treatable precursors of invasive cervical cancer. In addition, through this national public health program, abnormal mammograms in nearly 40,000 women allowed for prompt treatment of breast cancer.

**Partner Violence.** Federal and state governments accelerated efforts throughout the 1990s to prevent and punish violence against women. In 1994, Congress enacted the Violence Against Women Act (as part of the Violent Crime Control Act), which provides each state with grants for the purpose of training prosecutors, police, and service providers in issues
related to domestic violence. The Act further ensures that assaulted women do not have to pay for their medical examinations, includes more stringent legal penalties for perpetrators of domestic violence, and establishes a national domestic violence hotline. Appropriations under this Act in FY 1998 totaled $270.7 million. In 1995, President Clinton created the Office on Violence Against Women within the Department of Justice. Concerns related to partner violence are evident in the Family Violence Option in federal welfare reform, which allows states to exempt women on welfare who suffer from domestic violence from the five-year lifetime benefits limit.

In 1995, the National Research Council (NRC) responded to a Congressional request for information and guidance by establishing the Institute of Medicine Panel of Research on Violence Against Women. The NRC made two broad recommendations: (1) designate a single lead agency to be responsible for tracking all federal research and expenditures on violence against women and for identifying research gaps to developing a coordinated strategy focused on prevention of violence against women and interventions for offenders and victims and (2) establish state and national research centers to integrate research and practice.23

The criminal justice system initially assumed primary leadership at the federal level for research into violence against women. To better address the lack of systematic evaluations of intervention programs, however, the CDC was directed in FY 1994 to undertake an overarching prevention program. The program was charged with describing and tracking the problem of violence against women, increasing knowledge about its causes and consequences, demonstrating and evaluating ways to prevent violence against women, supporting a national communications effort, and fostering a nationwide network of prevention and support services. To date, CDC’s Family and Intimate Violence Team has initiated a national survey of family and intimate violence, funded a comparative study of health care costs and utilization, and developed school-based interventions to reduce dating violence among adolescents. The CDC and the National Institute of Justice are funding the Center for Policy Research in Denver to perform a random-digit-dialed national telephone survey to determine levels of violence against women and the extent of related injuries, as well as costs of intimate partner violence in the U.S. The survey was conducted in 1995 and 1996, and data are currently being analyzed.24

The Agency for Health Care Policy and Research (AHCPR) also has taken steps to address this issue. This agency has allocated funds for community-based intervention projects and three state health department initiatives to inventory data sources and prevention programs, collect data on intimate violence, and assess their ability to address it. AHCPR also supports a multi-year effort to improve the ability of primary care providers in managed care settings to identify and treat domestic violence against women.25

Policy Challenges and Opportunities

Notwithstanding the increasing and important attention to women’s health within legislative bodies and governmental agencies nationally and at the state and local levels, a number of key issues demand attention and study as we approach the next century: coordinating governmental leadership and initiatives; appropriating the necessary funding to
ensure public accountability for health systems development and monitoring as well as population-based prevention activities; and sorting out public and private sector roles with respect to population health and prevention. All warrant careful consideration as women’s health issues become increasingly important in the public policy agenda.

**Stable and Rational Funding Base for Public Health Functions and Services.** In recent years, public policy debates related to health have focused almost exclusively on insurance strategies for improving health status. Legislation proposed and enacted both before and following the failed national health care reform initiative have entailed insurance reforms addressing access, parity, and portability concerns. While President Clinton’s Health Security Act incorporated provisions and funding for public health activity, no subsequent Congressional proposals of consequence have returned to this issue. Clearly, availability of insurance is not equal to availability of medical care, and neither insurance nor personal medical care addresses the core functions of public health.

Further, for many years, public health agencies have been able to support population-based prevention services and other public health functions (e.g., data/surveillance) with funds received from reimbursements for direct health care provided to publicly-insured and other underserved groups, such as Medicaid beneficiaries. However, as the publicly insured are increasingly being channeled into cost-managed private sector care, resources for public health activities have begun to dwindle. While it might be reasonable to assume that some MCOs (especially the larger ones) may be able to provide selected population-based services, the issue of public health funding is a critical issue both in the present and future. Will policymakers attempt a balance so that assessment, surveillance, policy structures, independent quality monitoring, and research and capacity building are maintained?

**Accountability Related to Prevention Services in the Managed Care Environment.** Increasingly, the U.S. population receives health services through some variety of managed care entity. Responsibility for clinical preventive services (often referred to as “secondary prevention” or early detection), such as breast and cervical cancer screening, has been clearly delineated for health plans through practice guidelines, regulation, and purchaser contracting mechanisms. Managed care organizations nationally have embraced accountability for these services through their incorporation of measures of prevention services in their Health Plan Employer Data and Information Set—HEDIS—performance reporting. Moreover, most insurance purchasers and health plan administrators acknowledge the individual and societal advantages of primary prevention services, such as health education and wellness programming. To date, however, financial incentives for promoting health plan accountability for such services have yet to be refined. Health education can be expensive if included in the payment rate for physicians and other highly-trained health professionals. Costs for primary prevention services are difficult to capture and, as a result, are not often included in capitated payments made to plans by employer or public sector purchasers. Given managed care’s strategic goals to reduce costs and bolster stockholder investments, combined with the protracted timeframe for realizing cost savings generated from prevention, commitment to health education and wellness programming in the private sector is not yet clear.
The inadequacy and instability of insurance coverage and the uneven distribution of health providers further complicate the question of relying on health plans to undertake responsibility for health education and promotion. As women move in and out of plans' enrollee populations (often with change of employer or residence), savings might not accrue to a plan that has made the investments in prevention. Standards development related to health education and promotion and their incorporation into insurance rules and managed care contracts may be useful public health tools for addressing these concerns for those in the population who remain publicly insured. Nonetheless, absent universal health insurance for the resident population, funding and organizational accountability for primary prevention cannot effectively rest exclusively in the private sector. Thus, if both public and private sectors are to share in this responsibility, the question remains—how are prevention and other population-based health services to be coordinated at the individual and community system levels?

Quality Assurance and Improvement at the Population Level. Measurement of quality at the community/state level represents an important set of functions traditionally assigned to public health. In order to ensure that populations achieve national standards of health status (e.g., Healthy People 2000 Objectives), specific activities are needed for assessing population health in geographic areas where multiple health care plans and provider networks deliver care and where some individuals remain uninsured or underserved. Because standard benefits and coverage protections may not evolve legislatively, great variability will continue to exist in service delivery and administration systems. Moreover, managed care strategies will be widely implemented to control health care expenditures. Therefore, accountability tools—such as surveillance, external review, and auditing of health data—will need to be applied to overcome the potential for a singular focus on cost savings and other private sector interests. At the same time that public health expertise and leadership are increasingly important in addressing environmental and social issues (primary prevention) and monitoring patterns of women's health care coverage and utilization, public health's access to relevant data is diminished as a consequence of market-driven, private sector health services organization. Marketplace competition is prompting health plans to limit sharing of encounter and other important data and is promoting an emphasis on internal/peer quality monitoring strategies to the exclusion of objective external assessment by public health entities. Ensuring population health for women in the future will involve protecting the ability of public health agencies to fully utilize their tools of the trade—epidemiologic, demographic, and statistical analysis of health data.

National Leadership for All Aspects of Women's Health. As women's health issues have gained prominence, federal agencies have sought to demonstrate their commitment to action by establishing organizational units specifically focused on women's health. DHHS, in particular, has dramatically increased attention to women's health concerns. The early years of the 1990s witnessed the creation of the Office of Research on Women's Health within the National Institutes of Health (1990), appointment of a Deputy Assistant Secretary for Women's Health (1993), and establishment of the Public Health Service Office on Women's Health (1991) and the Office for Women's Health Services within the Substance Abuse and Mental Health Services Administration (1992). Since then, six additional units focused on women's health have been established within the Health Resources and Services Administration, the CDC, and the Food and Drug Administration. These units function alongside two others within DHHS that have established roles in developing policy
and administering programs for women—the MCHB and the Office of Population Affairs. Beyond DHHS, the Departments of Labor, Justice, and Defense have created organizational loci and initiatives related to the health and well-being of women. In 1995, the White House established an Office for Women’s Initiatives and Outreach.

As welcome as this attention may be, the proliferation of organizational units creates new challenges for coordination and integration of efforts. In 1998, many federal programming efforts remain categorically focused, targeted on specific diseases or conditions (e.g., substance abuse, breast and cervical cancers, family planning) or on specific functions (e.g., research, surveillance, primary care services). Under the leadership of the Public Health Service Office on Women’s Health, representatives of the various DHHS women’s health offices convene regularly to address cross-cutting topics—such as the training of women’s health professionals and the effect of managed care on women’s health. Over time, it will be important that DHHS seize all available opportunities to create an overarching national policy agenda and maintain a locus of accountability for women’s health within the federal government.

Coordination and consolidation of efforts may, in fact, evolve more easily at the state and local levels. States’ movement towards integration can be assisted by requirements in federal statutes for inter-program coordination and by flexibility in use of funds. Even greater integration may then be possible as states design resource allocation strategies for funding community-based provider entities such as MCOs and local health departments to implement both population-based and personal health services.

The new attention to women’s health also raises questions about how traditional leaders in the field of women’s reproductive health—and their policies, programs, organizational structures, and statutory mandates—will work with newly emerging entities and policies. As Weisman (1998) notes, the field of maternal and child health, with its roots established in the progressive movement of the early twentieth century, and the women’s health movement that emerged in the 1960s have most often pursued independent avenues for their work and different constituencies for their growth. Key constituent groups promoting women’s health (e.g., the National Organization for Women, the National Family Planning and Reproductive Health Association, the National Breast Cancer Coalition, and the National Women’s Health Network) are themselves diverse in their focus, and they interact infrequently with organizations that traditionally provide advocacy related to maternal and child health (e.g., the March of Dimes, the American Academy of Pediatrics, the American College of Obstetricians and Gynecologists, the Children’s Defense Fund, the Child Welfare League of America, the National Healthy Mothers, Healthy Babies Coalition, and the Association of Maternal and Child Health Programs). And, until recently, administrative units within the federal government addressed these issues independently.

Whether maternal and child health should be distinguished from women’s health, and, if so, how so, is demanding increased consideration in public health policy deliberations. While the potential for synergy between the two is clear, the differences in professional cultures, policy interests, and relative emphasis on women’s roles and rights vis-a-vis those of their children (particularly in policy deliberations related to substance abuse, welfare reform, and domestic violence) must be addressed as the fields evolve. DHHS is particularly well placed to bring together the broad array of constituency groups concerned with
women’s health, maternal health, and child welfare to consider organizational structures and roles among government and constituent coalitions that can strengthen all efforts on behalf of women and families.

**Conclusion**

Clearly, a strong argument can be made for major roles for public health in current and future efforts to improve the health of women in the United States. Health is cumulative; habits formed early in a girl’s life affect her future health, both reproductive and non-reproductive. Therefore, public health’s longitudinal and data-driven perspective and leadership are critical in promoting women’s health on a population basis. Moreover, public health’s traditional focus on social justice and equity provides a logical locus of activity for examining and addressing health disparities among diverse populations of women, as well as the gender differences between men’s and women’s experience of health. Equally important in the current context of American women’s lives is public health’s broad definition of health and the scope of interventions that address not only medical concerns, but also the health influences of an individual’s or population’s social milieu.

Nonetheless, as the year 2000 approaches, we observe the field of public health challenged by diminished resources, marginalization in national public policy debates related to health, and increasingly limited control of data and analysis. Moreover, intense political debate about women’s rights—particularly with respect to reproductive health, to equitable access to economic resources, and to women’s role in childrearing—dramatically complicates public health action on behalf of the health of women.

Many groups influence women’s health and are concerned with their well-being. Public health entities have the historical mandate and potential capacity, perspective and knowledge to provide leadership to assure the wellness of all women through both partnerships and science. Today’s challenge is to rekindle the mandate, infused with a more appropriate share of the political attention and resources available for health care in this country today.
References


Traditionally, “women’s health” meant women’s reproductive health, and the only health concerns considered unique to women were those related to their reproductive organs and to childbearing. While health care providers, researchers, and policymakers have begun to move beyond this limited view, women’s reproductive health remains undoubtedly important, with enormous consequences for women’s overall physical and mental health, well beyond its relation to childbearing.

Gynecological disorders represent a wide spectrum of conditions from the relatively benign (e.g., bacterial vaginosis) to the life-threatening (e.g., breast cancer), from acute problems (e.g., chlamydia) to chronic ones (e.g., endometriosis, herpes). Some result from a single pathogenic cause (e.g., syphilis) and others are multifactorial (e.g., breast cancer). Most affect women’s fertility and pregnancy. While a woman’s reproductive health profile certainly changes over her lifespan, most of the conditions adversely affecting women occur after the onset of menarche.

This chapter must, due to space constraints, focus on several key policy issues rather than comprehensively describe all issues related to reproductive health. Using a public health rather than clinical medicine framework, this review concentrates on modifiable risk factors in these areas: infections, breast and cervical cancer, and the cesarean delivery procedure. These problems are particularly important because they are not rare, their risk factors are modifiable, or effective screening has been developed for them or is easily integrated into primary care. While other women’s health problems may have fit within this focus, the field’s knowledge about risk factors and effective prevention, screening, and treatment mechanisms is more mature in these three areas—allowing for more specific policy discussions. Based on this review, we conclude by identifying several relevant policy issues in these areas. However, the discussion of policy should be seen only as the backdrop for formulating specific policy objectives. We do not endeavor here to develop or recommend specific strategies for change.
Infections

Vaginal infections are a major source of reproductive health morbidity. Most of the sexually transmitted infections are primarily vaginal infections (e.g., chlamydia, gonorrhea, and genital herpes) although they may progress and develop into systemic infections (e.g., HIV and syphilis). Some sexually transmitted infections that start in the vagina can have serious “non-infectious” consequences — for example, human papillomavirus developing into cervical cancer and chlamydia leading to pelvic inflammatory disease.

Women are disproportionately affected by sexually transmitted infections. Compared to men, they are more easily infected, more likely to be asymptomatic, less easily diagnosed, and more likely to experience adverse sequelae.¹ Vaginal infections that are not necessarily sexually transmitted (e.g., bacterial vaginosis and yeast infections) are also important sources of morbidity for women.

The rates of all sexually transmitted infections are much higher in the United States than in any other developed country, and the rates of many sexually transmitted infections have been increasing.¹ For example, the total number of women diagnosed with AIDS between 1991-1995 increased by 63 percent, more than any other group, regardless of race or mode of exposure to HIV.² While sexually active women of all ages are susceptible to such STD infections, younger women are at the highest risk, with two-thirds of all cases occurring in persons under 25 years of age. Young women are the fastest growing segment of the population infected with HIV.¹ The increased burden of infection for young women is related, in part, to high-risk behaviors, but it may also have a biological component. There are differences in the bodies of younger women, particularly in the reproductive tract tissues, which may make them biologically more susceptible to these infections.¹ Rates of HIV and other sexually transmitted infections are also higher among poor women and minority women.¹

<table>
<thead>
<tr>
<th>INFECTIONS AND RELATED CONDITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition</td>
</tr>
<tr>
<td>Chlamydia¹</td>
</tr>
<tr>
<td>Gonorrhea³</td>
</tr>
<tr>
<td>Syphilis³</td>
</tr>
<tr>
<td>Genital herpes⁴</td>
</tr>
<tr>
<td>HIV⁵</td>
</tr>
<tr>
<td>Human papillomavirus⁶</td>
</tr>
<tr>
<td>Bacterial vaginosis⁷</td>
</tr>
<tr>
<td>Pelvic inflammatory disease⁸</td>
</tr>
</tbody>
</table>

¹Decreased 14.8% from 1995.
²Ranging from 9-28%.
Impact. Approximately $7.5 billion is spent annually on women and men in the U.S. for the treatment of sexually transmitted diseases (STDs) and their effects, excluding HIV. An additional $5.1 billion annually is spent on HIV and its sequelae. No estimates exist for the costs associated with infections that are not sexually transmitted, like bacterial vaginosis and group B streptococcus disease.

The ultimate impact of infections are often not realized until years after the infection occurs. For instance, infections are a major cause of infertility in women due both to acute effects and to the subsequent development of pelvic inflammatory disease (PID). Infections also are related to the risk of ectopic pregnancy, a rare complication that is very dangerous for the mother and that the fetus cannot survive. The ectopic pregnancy rate has been climbing steadily since 1970; it is now the leading cause of maternal death in the first trimester for U.S. women. Pelvic inflammatory disease and prior infection with chlamydia are strongly associated with an increased risk of ectopic pregnancy. Among women who experience an ectopic pregnancy, 20 to 40 percent will be unable to conceive again.

While infections have long been a concern for non-pregnant women, their adverse effects on pregnancy have only recently been fully realized. They affect not only the mother but also the outcome of her pregnancy. A two- to three-fold increase in the risk of preterm delivery has been associated with reproductive tract infections (chlamydia, gonorrhea, group B streptococcus, and bacterial vaginosis) during pregnancy. The neonate can also be directly affected by infection, either systemically (e.g., syphilis, group B streptococcus, herpes, and HIV) or locally (e.g., gonorrheal and chlamydial ophthalmia). In 1994, there were 55.6 cases of congenital syphilis per 100,000 live births overall—and the rate was nearly four times higher for infants born to Black women than those born to White women. Neonates born to women with untreated group B streptococcal infection are at greatly increased risk for sepsis and death. In mothers who are HIV positive and not receiving antiretroviral treatment, perinatal transmission of the virus occurs among approximately 23 percent of infants.

Risk Factors. Wasserheit discusses macro- and microenvironmental risk factors related to infection. Microenvironment factors include a woman’s sexual activity, drug use, and personal hygiene behaviors. Multiple sexual partners, young age at first intercourse, failure to regularly use condoms, and drug abuse are all associated with risk of acquiring STDs. These factors also are indirectly associated with an increased risk of cervical cancer pursuant to its association with human papillomavirus, a sexually transmitted infection. It is important to note that AIDS incidence rates increased faster in women infected through heterosexual contact than through intravenous drug use. Women who have contracted other STDs are at increased risk of HIV infection as well. Women with gonorrhea are nine times more likely to become infected with HIV, and women with syphilis are six times more likely. Effective prevention and treatment programs for syphilis, gonorrhea, and other infections could indirectly reduce HIV transmission by over 40 percent, according to the Institute of Medicine.

Less is known about risk factors for infections that are not sexually transmitted, but recent studies have suggested that douching may increase the risk of bacterial vaginosis. Research also has linked douching to an increased risk of chlamydia, gonorrhea, and pelvic inflammatory disease.
Macroenvironmental factors also contribute to the current epidemic of STDs. As is the case with so many diseases, poverty, lack of education, and social inequity are linked to STD rates. Drug use also has been linked on a population level to STD rates. Particular subpopulations of women are at high risk for STDs: sex workers, homeless, adolescents and adults in detention, and migrant workers. Finally, the secrecy with which sexuality is treated in our society hinders the effectiveness of sexuality education for adolescents, communication between sex partners, mass media messages, and availability of preventive clinical services.

While it is not known whether pregnant women are more or less susceptible to acquiring infections, the need for early detection among pregnant women is acute because of adverse effects of infections for the fetus as well as the woman.

**Primary Prevention.** Many effective and efficient behavioral and biomedical interventions are available to address the epidemic of sexually transmitted infections. According to the Institute of Medicine, a rapid and dramatic drop in the rates of disease could be realized if resources were allocated to implement all that is known today about prevention.

While much of the morbidity and mortality of infections can be reduced or eliminated with treatment, primary prevention of the infection is more efficacious. For example, while there are some non-infectious factors associated with infertility and ectopic pregnancy (including smoking, endometriosis, and polycystic ovaries), the prevention of infections is essential to efforts to reduce these outcomes.

Having knowledge of the etiology of a disorder aids in designing effective ways of preventing it. Because most infections of the reproductive tract are caused by distinct bacterial or viral pathogens that are sexually transmitted, prevention strategies should be straightforward. However, sexual behaviors that might reduce the risk of transmission—like condom use—often are not adopted by women and their partners. There are many reasons why these behaviors are not adopted, some of which relate to the unequal status of women in our society and related limitations in negotiating with their partners use of appropriate protection.

Therefore, the promotion of healthy sexual behaviors is critical to successful prevention. The Institute of Medicine (IOM) has proposed a long-term national campaign to promote “a new norm of healthy sexual behaviors” to combat the hidden epidemic of sexually transmitted diseases. The IOM emphasizes that while individuals must be personally responsible for their actions, their decisions about sexual behavior can be influenced by actions taken by policymakers, private sector organizations, health professionals, managed care organizations, university medical centers, hospitals, and the media. Primary prevention of vaginal infections could also be emphasized more vigorously as part of primary care (well-woman care), preconception care, and pediatric care.

Wasserheit recommends STD prevention programs based on “an appreciation of the role of risk factors and macroenvironmental forces,” using companion clinic-based and community-based services. Primary prevention of STDs requires interventions that both reduce high-risk behaviors and promote safe practices. The effectiveness of behavioral
interventions in reducing self-reported high-risk behaviors and improving protective behaviors has been established by research. While most studies are not sufficiently precise to document a link to reduced STD rates, two of the most recent studies provide evidence that behavioral interventions can be effective in reducing STD risk.30,31

The IOM report1 describes behavioral interventions as either individual- or community-based. For individual-level interventions, social learning theory32 is the dominant theoretical model, in which the focus is on acquisition of specific skills to modify risky behavior. Community-level interventions most often use models of diffusion of innovation33 or social marketing. In the diffusion model, popular opinion leaders endorse norm change and educate others in the community. In the social marketing approach, mass media is used to promote attitudes, norms, and behavior change. School-based interventions, which can be either individual- or community-based, have shown either improvements in healthy sexual behaviors (e.g., increased age at first intercourse and more condom use) or no change. Community-based interventions have been found to be particularly effective for adolescents and other high-risk groups.1

Early Detection. While primary prevention is the preferred strategy, the value of early detection cannot be ignored. Regular screening is critical for diagnosing sexually transmitted infections as they often occur without symptoms. For example, chlamydia, the most common STD, is asymptomatic in 75 percent of women.1 Furthermore, even symptomatic infections may go undiagnosed and untreated because women fail to recognize their symptoms as potentially related to infection. In addition to preventing other health problems, such as pelvic inflammatory disease, infertility, HIV, and cervical cancer, screening for these infections can prevent their spread to other people. By reducing duration of infection through early detection and effective treatment, the likelihood of transmission to others is decreased.

Three basic screening strategies are used to stem the spread of STDs: (1) increasing awareness of the problem; (2) ensuring access to screening; and (3) increasing health care-seeking behavior for symptoms of STDs.1 Increasing the population’s awareness of a problem is critical to a successful screening program. In a recent study, 77 percent of high-risk women were not concerned about acquiring an STD.1 Awareness can be improved by increasing women’s ability to recognize symptoms of infection. However, the asymptomatic nature of some of these diseases means that women must first be convinced that they may be at risk even when they may not experience symptoms. In some instances, women may realize they are at risk but place little importance on it because they do not understand the consequences of infection or because the effects often occur years after the initial infection. Therefore, women need to be educated about the dangers of undiagnosed and untreated infections. Unfortunately, the continuing stigma of STDs inhibits public discussion and reduces women’s awareness of this problem.

Screenings for infection can be provided in several settings, including family planning clinics, sexually transmitted disease clinics, outpatient primary care sites, or outpatient gynecology sites. The variety of provider settings in which these services can be delivered offers both an opportunity and a challenge. If screening for infections is part of the package of services provided by a gynecologist, it will need to be integrated with other services like breast and cervical cancer screening. Issues of coordination of women’s health care are discussed in greater detail in Weisman and Poole’s chapter on health care delivery services and systems.
Insurance reimbursement policies also play a role in determining services. The Alan Guttmacher Institute found that only 70 percent of conventional insurance plans covered chlamydia screening as compared with nearly all point-of-service and health maintenance organization plans. The IOM advocated the inclusion of STD performance-related measures in the Health Plan Employer Data and Information Set (HEDIS), a guide employers use when choosing which health plans to offer, and HEDIS 3.0 now incorporates such measures.

But for many women the question is not which provider to use but how to access any medical care at all. Infection screening can only improve health outcomes if women have access to the services and perceive a need to use them routinely. Therefore, any strategy to increase early detection requires either improved access to medical care or creation and promotion of community-based public health screening programs. Services also need to be culturally appropriate to maximize access. Because screening and treatment services are provided in a range of settings—from public STD clinics to community-based health clinics to private physicians’ offices—different (and sometimes overlapping) population groups with different needs must be addressed. Women are under-represented as clients in public STD clinics and over-represented in community-based health clinics (which include family planning clinics). This has important implications for determining how to allocate screening and treatment resources.

One screening initiative that has had success in reaching women is the Infertility Prevention Program funded by the federal Centers for Disease Control and Prevention (CDC). Begun in 1988, the program screens and treats chlamydia and gonorrhea within community-based family planning clinics. In the four states in which the program has been implemented, the proportion of women testing positive for chlamydia has declined substantially. CDC estimates a savings of $12 in subsequent health care treatment costs for every $1 spent on chlamydia control. Unfortunately, lack of funding has prevented the CDC from expanding the program nationwide.

While new and better screening methods have been developed for many vaginal infections, providers are often unaware of them, cannot use them due to cost constraints, or do not have access to the equipment and laboratory expertise needed. Thus, dissemination of information and investment in infrastructure are both required in order to improve early detection and subsequent treatment. New screening technologies can have hidden costs, however. For instance, a more sensitive test might require longer analysis, necessitating clients to make return visits for results; the ensuing loss of follow-up and treatment for the clients who don't return would negate the benefits of the improved test.

Regardless of the access and cost issues that exist, even women who believe themselves at risk may not be motivated to seek screening services. Therefore, another important component to improving infection screening is to change women’s health care-seeking behaviors. This is not a problem unique to infections but is made more difficult by the public stigma attached to STDs. The same woman who might seek care for a breast lump may avoid screening for symptoms of an infection—which only underscores the importance of integrating infection screening with other medical care for women.

Early detection of infections, coupled with treatment as a final goal, has been the focus of most efforts for pregnant women. Guidelines on screening for infections during
prenatal care have been adopted by professional organizations. However, the effectiveness of these guidelines may be limited because of the lower rates of prenatal care among women at the highest risk for infection. For these women in particular, the focus should shift to primary prevention. Because stillbirth, preterm delivery, or neonatal sepsis may still occur if treatment is initiated too late in pregnancy, screening should also be undertaken preconceptionally in order to reduce risk to the pregnancy as well as to the woman. There are two major opportunities for interaction between a woman and the health care system prior to conception: well-woman care and family planning services.

*Treatment.* Newer treatments requiring just one or two doses of medication are now available for some infections, thereby reducing the likelihood of patients not adhering to a therapeutic regimen. Unless these short courses of treatment are integrated with screening services, however, the benefits offered by early detection quickly evaporate. Providers must also be alert to the potential for reinfection. To prevent recurrence following treatment, partners should be treated and women counseled about avoiding risky behavior (e.g., unprotected intercourse and douching).

The goal of early detection of infections in pregnancy is to provide effective treatment to prevent negative consequences for women and their pregnancies. Treatment is beneficial even when it is not curative. Prenatal treatment of HIV-positive women with zidovudine can dramatically reduce the risk of perinatal transmission, from 23 percent to just 8 percent. In general, the newer viral diseases, like herpes and HIV, cost more to treat and some require multiple medications because they are, in essence, chronic conditions. Treatment of these kinds of incurable conditions might more broadly be thought of as including measures such as changes in management of labor and delivery, which can influence risk to the newborn. For instance, a cesarean delivery would be recommended for a pregnant woman with active herpes to reduce the risk of transmission to the neonate.

**Breast and Cervical Cancer**

While less common than vaginal infections and their consequences, cancers of reproductive organs are more feared by women because they are generally more deadly. We focus here on cervical and breast cancer because the other gynecologic cancers are either very rare or are predominantly found in postmenopausal women, who are not the subject of this review.

Since the introduction of the Papanicolaou screening test (Pap test) in the 1940s, cervical cancer mortality rates have decreased by 75 percent. Still, cervical cancer is one of the most common malignancies in the United States; in 1997, 14,500 women will be diagnosed with invasive cervical cancer, and 4,800 women will die from the disease. The rate of invasive cervical cancer had declined to 8.2 cases per 100,000 women by 1993. The mortality rate from cervical cancer is more than twice as high for Black women as for White women.

An estimated 180,200 new invasive cases of breast cancer were predicted for 1997, with an estimated 43,000 deaths occurring in that year. The incidence of breast cancer in the U.S. increased between 1982 and 1987 by about 4 percent annually, which has been attributed to improved recording of cases, improved screening and diagnosis, and partly a
true increase in incidence.41-44 The rate of new breast cancers appears to have leveled off since 1987 to approximately 110 cases per 100,000 women. Overall breast cancer mortality rates continued to decline in White women under age 80, at an average rate of 3.1 percent per year within the period 1989-1992, while remaining the same or increasing slightly among Black women of all age groups and White women over age 80.44 These decreases may be due to earlier detection and advances in treatment.58

**Risk Factors.** Sexual activity and related behaviors influence a woman’s risk for breast and cervical cancer. The most important risk factor for cervical cancer is infection with the sexually transmitted human papillomavirus (HPV).45-50 According to recent research, up to 46 percent of all college-age women are infected with HPV,1 although not necessarily the subtype leading to cervical cancer.47,51 Having first intercourse at an early age, multiple sexual partners, or a partner who has had multiple sexual partners all increase a woman’s risk of cervical cancer.47,51 Women who have never borne children are at an increased risk for breast cancer, as are women who delay having their first birth until after age 30.47,52,53 Long-term use of oral contraceptives may slightly increase the risk of premenopausal breast cancer but has either no effect on or only slightly increases the risk of postmenopausal breast cancer.47,52-56 Oral contraceptives do not increase the risk of cervical cancer.51 The duration of breastfeeding is associated with a decreased risk of breast cancer in some studies (the longer one breastfeeds the lower the risk),57-59 and with no difference in risk in others.60,61

Obesity increases the risk of postmenopausal but not premenopausal breast cancer.62,63 Huang and colleagues63 in their cohort study show a strong positive association between weight gain and breast cancer incidence in postmenopausal women who never used hormones, with relative risks of 1.61 for weight gain from 10 to 20 kg, and 1.91 for weight gain of more than 20 kg, compared with women with minimal weight change. Among current and past hormone users, however, women with greater weight gain did not experience an elevated risk of breast cancer.63 Obesity is associated with larger tumor size and greater nodal involvement at diagnosis of breast cancer, as well as poorer survival.63
However, because women who are obese premenopausally usually remain so as they grow older, obesity in young women should be an important factor to consider. The association between dietary fat intake and breast cancer is quite controversial, with some investigators asserting an increased risk associated with increased intake and others arguing that there is no effect. A national prevention trial is currently evaluating the effect of reduced fat intake on the risk of breast cancer. There is no evidence that weight or diet influence cervical cancer risk.

Some recent studies have suggested that women who engaged in regular physical activity had a reduced risk of breast cancer, and, in a recent meta-analysis, recreational exercise was found to decrease risk of breast cancer by 12 to 60 percent. The intensity and frequency of physical activity required to reduce risk are not yet clear as few conclusive studies have been done. As with obesity and diet, there is no reported association between physical activity and cervical cancer.

In contrast to its deadly role in lung cancer and heart disease, smoking appears to have little effect on the risk of breast cancer. Smoking may increase the risk of cervical cancer, however. There is no consensus as yet on the role of alcohol on risk of breast cancer. Some studies report an increased risk of breast cancer associated with consumption of moderate amounts of alcohol while other studies have found no such effects. No published reports link alcohol consumption with risk of cervical cancer.

Primary Prevention. As with infections, primary prevention is critical. Prevention of breast cancer, however, is compromised by the absence of clearly identified modifiable risk factors. While further research is clearly needed, strategies to promote healthy lifestyle behaviors that may prevent breast cancer, such as physical activity, must be pursued. Primary prevention of cervical cancer is more straightforward because its cause has been linked to a known sexually transmitted infection (HPV).

Reducing women's alcohol and fatty food consumption and increasing their physical activity may be important targets for behavioral change to achieve reduced rates of breast cancer. Strobino's chapter on substance abuse discusses more fully the health issues for women related to alcohol consumption. Bronner and Baldwin's chapter on nutrition describes fatty food intake in the context of overall nutrition, and their chapter on physical activity provides information about the role of physical activity in women's health.

While early childbearing and breastfeeding are linked to a decrease in the risk of breast cancer, these are not "behaviors" that can be appropriately recommended for all women to adopt. If a woman chooses to have children, however, breastfeeding should be encouraged to reduce her risk of cancer and to improve the infant's health.

Promoting healthy sexual behaviors (e.g., using condoms and limiting number of partners) and increasing public awareness about the link between the human papillomavirus and cervical cancer can reduce cervical cancer risk substantially. A prophylactic vaccination against HPV-16, the strain thought responsible for half of all cases of cervical cancer, will enter Phase I of human testing this year. A therapeutic vaccine that will trigger an immune response against cells that are already infected is also in Phase I trials. Both of these vaccines have the potential to greatly reduce the prevalence of cervical cancer in this country.
**Early Detection.** Much of the mortality due to cervical cancer is preventable through Pap test screening. The primary goal of cervical cancer screening is to increase detection and treatment of precancerous cervical lesions and thus prevent the occurrence of cervical cancer. Cervical cancer *in situ* (a precancerous condition) now occurs more frequently than invasive cervical cancer; this shift is likely due to the increased rates of Pap screening. While Pap testing has increased in recent years, promoting the participation of women in screening programs is a persistent challenge in cervical cancer control.

For women over age 50, mortality from breast cancer has been shown to be reduced by early detection with mammography. However, the evidence for recommending mammography for women 40- to 49-years-old is currently a subject of intense debate. The potential benefits of mammography for women in their forties include earlier diagnosis and the option to choose breast-conserving therapy. These benefits must be weighed against the impact of false-negative screens and the lower sensitivity of mammography for women in their forties. The American Cancer Society recommends that all women conduct a monthly breast self-exam, undergo a clinical breast exam annually, and begin a regular program of mammogram screening at age 40, followed by mammograms every one to two years. Clearly, though, early detection of breast cancer in younger women is an elusive goal at present. The debate over the value of mammography for younger women should not deter efforts to discover better screening methods.

Many studies have attempted to determine why some women are less likely to get routine screening for breast and cervical cancers. Personal characteristics that correlate with lower levels of cervical cancer screening among women include: older age, being unmarried, and having lower socioeconomic status. Studies examining factors related to women’s participation in breast cancer screening show similar effects of age, marital status, and socioeconomic factors. Another study also showed that uninsured women were less likely to obtain Pap testing and mammograms compared to women in a Medicaid managed care program and women with other forms of health insurance.

However, women with health insurance may still experience financial barriers to screening. A 1994 survey by the Alan Guttmacher Institute found that only 65 percent of conventional insurance plans covered routine Pap tests, as compared with 75 percent of preferred provider organization plans and nearly all point-of-service and health maintenance organization plans. Mammograms were covered by 75 percent of conventional insurance plans compared with 82 percent of preferred provider organization plans and nearly all point-of-service and health maintenance organization plans. According to data from the Health Plan Employer Data and Information Set (HEDIS) 3.0, there is great variation in mammography and screening rates among health plans. Rates of screening for breast cancer vary from 27.7 percent to 89.0 percent, and rates for cervical cancer screening vary from 24.0 percent to 100 percent.

Individual barriers to getting adequate screening include feeling healthy; denial of the danger of cancer; lack of understanding of the preventive purpose of Pap testing; fear; and embarrassment. Having a usual source of care or a regular physician has been found to be a significant predictor of recency of screening for both breast and cervical cancer. However, even when women have a usual source of care, their physician doesn't
always recommend or refer them for a mammogram or Pap test. Having an obstetrician- 
gynecologist as a primary care physician\textsuperscript{84,85} and receiving regular check-ups\textsuperscript{85,91} are also sig-
nificant positive predictors of cancer screening behavior.

Beliefs regarding breast and cervical cancer screening intervals,\textsuperscript{79,89} accurate 
knowledge regarding risk factors for cervical cancer,\textsuperscript{79} and the belief in one's ability to 
reduce one's chances of developing cancer\textsuperscript{78} have been found to be positively related to 
adequate screening. An important and consistent predictor of screening for both breast 
and cervical cancer is receiving a recommendation from a health care provider to obtain 
such screening.\textsuperscript{80,81,85} Smith and Haynes\textsuperscript{85} grouped physician-related factors associated with 
breast cancer screening into three categories: predisposing factors (including physician 
specialty), gatekeeping decisions (physician knowledge and attitudes) and structural fac-
tors (physicians' forgetfulness, time constraints, pace of work.) For cervical cancer screen-
ing, studies have documented the role of the physician's type of practice arrangement on 
screening practices.\textsuperscript{72}

The Breast and Cervical Cancer Mortality Act, enacted by Congress in 1990, is 
designed to increase access to and utilization of screening services for low-income, minority women.\textsuperscript{93} Spearheaded by the CDC, the state-based programs seek eventually to institu-
tionalize early detection for all women. The CDC programs include infrastructure devel-
opment for public and professional education and awareness strategies, quality control, 
surveillance, education, and outreach.\textsuperscript{93,94} While aimed specifically at low-income women, 
the improvements in resources, quality, and public/private partnerships resulting from the 
program will benefit all women. Fifty states, the District of Columbia, five U.S. territories 
and 15 American Indian and Alaska Native tribes and tribal organizations now participate 
in this program. Each year the number of women screened under the program has 
increased, but the total still only accounts for about 1 to 2 percent of eligible women.\textsuperscript{93}

Treatment. When detected in the early stages, the survival rate for cervical cancer is ninety 
percent. Nearly 100 percent of women diagnosed with cervical cancer in situ (detected 
only by a Pap test) survive. Similarly, early detection and treatment of breast cancer results 
in very high rates of survival (93 to 100 percent). However, the survival rates for both cer-
vical and breast cancer plummet when the diseases are detected in their later stages.\textsuperscript{34} 
Racial and economic differences in survival persist—likely due to later detection and less 
access to effective treatment for poor and minority women.\textsuperscript{34} It is clear that early detection 
and treatment can yield substantial dividends in terms of breast and cervical cancer sur-
vival, but funding for screening and adequate treatment must be available for the dividends 
to be realized.

Cesarean Deliveries

Cesarean deliveries (c-section) in the United States have increased five-fold since 
1970, although decreases have been consistently seen in the 1990s.\textsuperscript{95} Still, the U.S. rate 
exceeds that of many other developed countries,\textsuperscript{96} although their rates may be on the rise. 
Nevertheless, there has been increasing concern that the U.S. rate represents inappropriate 
use of the procedure in some cases. Cesarean delivery is more costly than vaginal delivery 
both in terms of dollars and its effects for the mother.\textsuperscript{97} The increased recovery time 
required may complicate family life by delaying a woman's return to child care and work 
responsibilities. The long-term health effects on mothers have not been well-studied; given
the high rates, this is an important question to resolve. Further, controversy has recently re-emerged about the level of reduction of cesarean delivery rates that can be sought without compromising quality of care.98

**Risk Factors.** The risk factors for cesarean delivery are complex and multi-layered, including social factors as well as medical indications. Clinical risk factors include biological or medical characteristics of a woman or her pregnancy that may put her at increased risk for complications of labor and delivery or poor pregnancy outcome. Nonclinical factors include women’s perceptions and the constraints and interests of providers and the systems in which they operate.

Clinical risk factors for cesarean are relatively easily measured and are generally supported by biological foundations or standard medical practice. Maternal age is associated with increased risk for cesarean delivery, with older women being more likely to be delivered abdominally.100 This may be due to increased risks of complications of pregnancy in older women, but is also probably linked to increased provider and patient concern over the outcome of pregnancy in older women.100 Parity is also associated with cesarean delivery, with women giving birth for the first time and women who have had more than five births being at increased risk of cesarean delivery.101-103 Women with extremely small shoe size104 or short stature105-107—indicating small bone structure and narrow pelvic capacity—are more likely to have a cesarean delivery. Women with a high body mass index106,107 or who experience greater weight gain during pregnancy are also at increased risk.107 Gestational age is also linked to cesarean, with both pre- and post-term fetuses at higher risk of being delivered abdominally.103 Finally, malpresented fetuses, particularly breech presentations, are almost exclusively delivered by cesarean.103,108 A final “clinical” indication for cesarean delivery is repeat cesarean. Despite guidelines advocating a trial of labor and the established safety of vaginal birth after cesarean delivery, more than 30 percent of cesareans are repeat cesareans.109

Clinical risk factors alone cannot account for the variation in cesarean delivery rates among groups of women or between nations, nor for the rise in rates over the past 20 years. Important nonclinical factors include social and demographic characteristics of women, provider characteristics, and structural characteristics associated with birth and health care settings. Findings consistently show that White,110 married,103 and higher income/more educated110 women are more likely to be delivered by cesarean. One interpretation of these findings is that they reflect a class bias, either in the demand for treatment (that is, affluent, educated White women demand cesarean deliveries) or in the availability of services and specialized care.

In general, obstetricians have higher cesarean rates than do family practitioners and nurse-midwives, even among low-risk women.111-113 Older, more experienced providers are less likely to deliver by cesarean.114 Women with private insurance are most likely to have
a cesarean delivery, while uninsured women are least likely, which may reflect an interest in assured reimbursement for the more costly surgical delivery. Findings also show higher rates of cesarean during daytime and weekday hours.

The setting of care also influences the use of cesareans. Cesareans are more common in hospitals, and are associated with hospitals that are large, privately owned, and affiliated with a medical school. Fear of malpractice actions has also been linked to the practice of defensive medicine, including increased use of cesarean delivery. Some work suggests that technology, such as electronic fetal monitoring, is used more than is medically warranted, and that any obstetric invention can lead to a cascade of technology, ultimately resulting in cesarean delivery. Finally the cesarean delivery rate varies by geographical region, with the highest rates in the South and Northeast, which may reflect differences in professional training or core shared values, or underlying population risk.

Policy Implications

This broad assessment of three specific areas of women’s reproductive health reveals several consistent themes related to prevention, early detection and treatment, and research policies. Too often, however, there is little overlap in our prevention, treatment, and research strategies and approaches to improving women’s health in relation to infection, breast and cervical cancer, and cesarean deliveries. Our society needs a broadened focus addressing common threads that influence women’s health, including the lower social status of women relative to men, which affects access to financial resources, attention in policy development, and power and control in personal relationships. Reluctance to engage in open discussion of issues related to sexual health and reproduction, and in particular, social stigma associated with STDs, limits action even on interventions known to be effective, and may contribute to inadequate public funding. Beyond the seemingly intractable challenge of improving women’s overall position in society or influencing cultural inhibitions related to sexuality (and hence, reproductive health), several policy and programming strategies surface that may be more amenable to immediate action. These include strategies to increase awareness among both providers and the general public; risk reduction through promotion of healthy behaviors related to nutrition, fitness, and sexual activity; and improved detection and prompt treatment through enhanced training for providers, more rational financing policies, and creative service delivery strategies.

This discussion represents only a first step toward formulating specific policies. We do not endeavor here to develop or recommend specific strategies. In fact, it may be necessary in many instances to develop community-specific strategies because there is no single, effective strategy to achieve change in an area.

Increased Awareness

Women, their families, and health care providers must understand that infections, breast and cervical cancer, and overuse of cesarean methods pose serious risk to the health of women. This means not only understanding the acute effects of the conditions but their long-term consequences as well—for example, the infertility that can result from sexually transmitted infections. Education must not be targeted only to women as consumers of
health care; family members can help raise a woman’s awareness of an issue. Education to raise awareness must be culturally appropriate. Cultural sensitivity is particularly important in dealing with issues related to reproductive health. Because women seek care from a wide range of providers, health care professionals—especially those who do not specialize in women’s health—must also be better educated about these issues and in a culturally competent manner.

Absent proper knowledge, women are unlikely to adopt preventive behaviors. For example, women who do not understand how infections are transmitted and what their consequences are may not pay attention to messages about condom use. Providers who are unaware of, say, the link between cervical cancer and HPV infection, are unlikely to provide patients with the proper information. Women who recognize their vulnerability because of their awareness of the issue may seek out early detection. Providers who understand the importance of these conditions may be more likely to offer screening. Efforts to increase awareness of these health conditions need not be narrowly focused, but could be packaged within initiatives focused on women’s health generally.

Increased awareness may also influence rates of cesarean deliveries. Provider and patient knowledge and awareness of how seemingly routine use of technology can quickly cascade and end in a cesarean delivery may reduce the demand for technological intervention and thereby reduce the use of cesarean delivery.

Increasing awareness among those who finance care may also lead to innovative strategies to improve women’s health. For example, the prevention of cesarean deliveries may depend more on changes in structural factors than changes in the behavior of individual women and their providers. Elimination of reimbursement differentials between vaginal and cesarean delivery would remove financial incentives for abdominal delivery and thus might lead to fewer cesareans. Legal reforms could reduce the number of cesarean deliveries performed out of providers’ not unfounded fears of malpractice. Seventy-nine percent of obstetrician-gynecologists have been sued at least once for medical malpractice. For instance, the “accelerated-compensation” insurance system, which pre-identifies medical injuries that are normally preventable, considers both patient rights and provider concerns. This type of “no-fault” system may lead to fewer claims and help standardize malpractice awards, as well as provide some type of security for providers while protecting patient rights.

Promotion of Healthy and Risk-Reducing Behaviors

Efforts to increase awareness about these issues should be followed by promotion of healthy and risk-reducing behaviors for women by the public health establishment as well as by individual providers. While the recommendations may differ depending on the health condition, some general health behaviors would improve women’s health in a number of areas—for instance, increased physical activity.

Policymakers must invest in effective means of promoting healthy sexual behaviors (including condom use, monogamy, and abstinence) to limit transmission of infection. The Temporary Assistance to Needy Families program enacted in 1996 (welfare reform) included a $50 million provision to develop and implement abstinence-only education programs. These policies, while well-intended, may be detrimental to efforts to decrease infections.
Behavioral research has failed to demonstrate the effectiveness of such a narrow strategy. School-based education programs that provide both abstinence and contraceptive education and counseling do not increase sexual activity. Some of these programs increase both the age at onset of sexual activity as well as the likelihood that contraception will be used.¹

There are societal changes that must occur to truly effect change in sexual behaviors. The power dynamics of many sexual relationships make it difficult for women to negotiate either condom use or abstinence.¹²⁷ Individuals who feel guilt or embarrassment or who are in denial over their sexual behavior are less likely to practice protective behaviors.¹ Communicating messages about healthy sexual behaviors and their risks is difficult if sexual activity is considered an embarrassing topic of discourse. Not too long ago breast cancer prevention efforts confronted a similar obstacle when such interventions as breast self-exams could not be discussed openly in this country.

While further research is needed to determine the causes of breast cancer (particularly in younger women), some factors have already been identified that could be targeted for prevention efforts. First, breast cancer risk appears to be influenced by physical activity and possibly by diet and body weight. Adequate physical activity, a low-fat diet, and maintenance of healthy body weight have already been proven to reduce women’s risk of heart disease and yield many other physical and psychological health benefits. Furthermore, concerns about breast cancer might provide stronger motivation for women to adopt healthy behaviors. Breastfeeding can also be promoted as a risk-reducing strategy for women who bear children. Educating women about the connection between breast cancer risk and these health behaviors is an important strategy that could potentially benefit women’s overall health.

Higher weight gain during pregnancy is one alterable medical factor that predisposes a woman to cesarean delivery. Recent statistics show that total cesarean rates are lowest for women who gain between 16 and 35 pounds during pregnancy,⁹⁵ suggesting that clinical policy could be developed to encourage weight gain within this range.

Providers also need to know what they themselves can do beyond educating their patients about personal behavior changes. This is a particularly important issue in relation to reducing rates of cesarean delivery, where providers have more influence than their patients. For example, individual providers in group practice or who share obstetric responsibilities might be less motivated to use cesarean delivery to manage their time.

**Effective Detection and Treatment**

Effective screening, diagnosis, and treatment are available for infection and cervical cancer, but many women—particularly younger women—are not receiving that care. Effective breast cancer screening methods, when they become available, will not help young women if they do not utilize services.

**Provider Training.** Investment in provider training is needed in order to improve both early detection and treatment. In 1988, only 70 percent of primary care providers offered correct management of sexually transmitted diseases.⁹ Providers must learn to offer screening to all women, not just those who fit a profile of being “at risk.” For example, studies demonstrate a decrease in the prevalence of chlamydia in adolescent females due to
aggressive screening programs in family planning and managed care settings, yet recent surveys of primary health care providers confirm that STD screening of asymptomatic sexually active adolescent females has not been ubiquitously incorporated into the routine physical examination. Moreover, screening needs to be offered in all practice settings in which women are seen: primary care, well-woman care, and prenatal care. While data are not available on the proportion of women offered and given screening and treatment for infections, we do know how many women have not received a Pap test. For all women over the age of 18 years, 43 percent have not been screened for cervical cancer within the past year. Younger women do slightly better, with just 32 percent of 18- to 29-year-olds and 35 percent of 30- to 39-year-olds failing to receive screening. The picture is more bleak among women diagnosed with cervical cancer. Approximately half of all women newly diagnosed with cervical cancer have never had a Pap test and another ten percent have not had a Pap test within the past five years. Hicks and Robinson determined that alerting women in advance that their screener will be female significantly improves their likelihood of keeping their screening appointment. Providers and health system managers should give women their choice of screener to increase the rate of cervical screening compliance.

Providers also need more information about and access to the more sensitive screening tests now available. Single-dose treatments for infections could be used more often to ensure completion of treatment. Encouraging providers to counsel their patients about reinfection is also critical. Screening and treatment present critical opportunities for prevention. However, according to the Healthy People 2000 Review data for 1992, less than one-third of internists and family practitioners and just half of obstetrician-gynecologists routinely counseled patients regarding sexually transmitted disease prevention.

**Financing.** Limitations in insurance coverage, both in who is covered as well as what benefits are provided, also contribute to poor health outcomes in women. Women without insurance may have no access to needed screening and treatment services. This situation is likely to worsen with the recent passage of the Temporary Assistance To Needy Families Act of 1996, which is expected to reduce the number of women eligible for Medicaid. Even insured women face barriers to screening and treatment. Many insurance plans do not provide comprehensive coverage for screening, diagnosis, and treatment. Many employers are not aware of how the various insurance plans they purchase perform with regard to these issues. The recent inclusion of STD performance-related measures in the last version of HEDIS (Version 3.0)—may help alleviate this problem.

**Service Delivery Strategies.** Screening programs also must be integrated with diagnostic and treatment services in order to be effective and to overcome the barriers to treatment faced by women, whether financial or related to health care utilization. For example, screening may be free or inexpensive to the patient but the diagnosis and treatment services may be costly. Women may also be reluctant to return for follow-up care or be difficult to track so that they do not receive the results of their screening test.

Partner notification—historically the responsibility of local health departments—has always been an important component of sexually transmitted infection control. Without effective partner notification followed by treatment, the cycle of transmission begins anew. Public/private partnerships are needed for implementing successful partner notification efforts. If only one member of the couple is insured, financial or other access barriers to
obtaining treatment for the uninsured partner may exist. Further, men and women often use different providers, and one’s provider may be unwilling or unable to provide care to the partner. The IOM recommends that providers assume responsibility for partner treatment and that insurance plans provide reimbursement for partner treatment. Using a decision model to analyze hypothetical cohort data, Howell and colleagues determined that the cost effectiveness of partner notification to prevent pelvic inflammatory disease after chlamydial infection (of either partner) would be significant. Even in the best of worlds, some women may be unwilling to notify their partners and assist them in obtaining treatment. Patients’ fear of partners’ reactions to disclosure has prompted local health departments to institute confidential partner notification practices. Even anonymous notification, however, can lead to domestic violence or other problems for women. In the face of these issues as well as of recent cutbacks to public funds, creative and responsible solutions to the problem of effective partner notification are needed.

Early detection and treatment also require more targeted efforts to be effective. As noted earlier, there are identifiable subpopulations that are particularly vulnerable with regard to these health problems: homeless women, incarcerated women, adolescents, poor women, and minority women. Because the private sector is unlikely to reach these women, a public health population perspective is needed to provide services that will reach these groups effectively.

Research Implications

Currently, women must rely on condom use by their partner or abstain from sexual activity to prevent sexually transmitted infections. The next step in research is to explore more and better methods to stop transmission, especially female-controlled methods of prevention (e.g., topical microbicides and vaccines). For infections that are not sexually transmitted, such as bacterial vaginosis and group B streptococcus disease, the factors that influence risk of acquiring these infections need to be identified.

The failure to emphasize prevention as a tool in the fight against breast cancer is due, at least in part, to limited knowledge of the causes of breast cancer and to the relatively immutable nature of many risk factors (e.g., age at menarche and age at first birth). The focus by many researchers on the genetics of breast cancer also distracts from prevention efforts because genetic risk is a factor that cannot readily be altered. Further research is needed to determine more fully the etiology of breast cancer, particularly in younger women.

In order to plan preventive interventions, more epidemiologic information about many gynecologic health disorders is needed. For example, little is known about the etiology and natural history of relatively “benign” conditions, such as dysmenorrhea, endometriosis, and uterine fibroids. While these conditions are considered less dangerous than cancer, they nevertheless affect women’s quality of life. Continued research into amenable risk factors for reproductive cancers is also critical.

Less expensive and more rapid tests need to be developed for screening and diagnosing infections. Urine- or saliva-based tests, for instance, would enable more women to be screened in less traditional settings—which would be particularly helpful with vulnerable subpopulations like the homeless.
The recent debate over the effectiveness of mammograms for younger women highlights the need for technological improvements in screening for breast cancer in younger women. While there is consensus that early detection and treatment is essential, current screening methods have limited effectiveness for younger women. Furthermore, even when breast cancer is detected early, the physical, psychological, and financial costs are still great. Our current screening methods can also result in false positive findings, which then require invasive follow-up tests that are costly both psychologically and financially.

Finally, our field must also continue research into the most effective ways to deliver education, screening, and treatment services to women. There must be ways in which services can be better organized to maximize access to appropriate screening and treatment.
References


Pregnancy Planning And Unintended Pregnancy

Virginia Poole and Melissa Hawkins

An unintended pregnancy is defined as a pregnancy that is either mistimed or unwanted at the time of conception. In 1994, almost half of all pregnancies in the United States were unintended, and 50 percent of all unintended pregnancies ended in abortion.1 Rates of unintended pregnancy are higher in the U.S. than in other Western industrialized nations, and the U.S. Department of Health and Human Services has set a goal of reducing the proportion of all pregnancies that are unintended to 30 percent by the year 2000.2 This is an achievement several other Western industrialized countries have long since met.1 The majority of unintended pregnancies are not to adolescents, as is often assumed, but occur among women across a range of ages.2 The means to reducing unintended pregnancy is improved pregnancy planning.

The importance of pregnancy planning is self-evident when one considers that a woman’s reproductive years span close to half her lifetime. Access to contraceptive services, supplies, and education to assist in the selection and appropriate use of contraceptive methods is fundamental to helping women and couples reduce levels of unintended pregnancies, abortion, and unplanned childbearing. Pregnancy planning is also important because unintended pregnancy carries high costs, both social and monetary. Social costs include delayed prenatal care, poorer birth outcomes (including low birth weight and infant mortality), and greater numbers of abortions among women with unintended pregnancies.4,5 It is estimated that achieving the Year 2000 goal would result in some 800,000 fewer abortions each year. Assuming the average cost of a delivery in a managed care environment, $3,800, the 3.5 million unintended pregnancies that occur annually cost approximately $13 billion in medical expenditures alone.3 A recent study by the Alan Guttmacher Institute estimates that, among Medicaid recipients alone, every public dollar spent to prevent an unintended pregnancy saves approximately three public dollars that would otherwise be spent on pregnancy-related and newborn medical care alone.6

It is important to note the changing trends in this country related to childbearing and marriage. Over the past several decades births to unmarried women have increased, age of onset of sexual activity has steadily decreased, and marriage has been increasingly delayed.7 These trends represent social and cultural changes in lifestyles and sexual behavior in our society and account, in part, for the changes in rates of unintended pregnancy. This review presents an overview of unintended pregnancy, planned pregnancy, contraception, and
abortion in the U.S. today, with an emphasis on current policy issues (see the 1995 Institute of Medicine report for a more complete discussion of unintended pregnancy). This chapter touches on issues surrounding contraceptive methods, public programs, and policies that impact women’s reproductive autonomy, but concentrates on highlighting the current trends and health issues in need of greater public attention.

**Unintended Pregnancy**

Pregnancies typically can be classified into three categories: (1) intended, (2) mistimed—the woman did not want to become pregnant at time she conceived, but wanted to be pregnant at some time in the future, and (3) unwanted—the woman did not want to become pregnant at time she conceived or any time in the future. Categorizing pregnancies as unintended is complicated by limitations in distinguishing pregnancy intent, as well as the consequences of conducting research months or years after the pregnancy. For example, classifying pregnancies as intended, unwanted, or mistimed may be problematic for women who have not decided on lifetime reproductive preferences (e.g., young, unmarried respondents). Further, studies differ in their definitions of intendedness/wantedness, inclusion criteria, the timing of interviews, variation in survey questions, and underreporting due to abortion, making comparisons among surveys difficult. In addition, changing societal views regarding unintended pregnancy affect individual perception and reporting. Prior to the legalization of abortion in 1973, societal views held that all pregnancies within marriage were intended and all those out-of-wedlock were unintended. In the past three decades, the recognition that women experienced intended pregnancies outside of marriage and unintended pregnancies within marriage gradually increased.
<table>
<thead>
<tr>
<th>Survey</th>
<th>Year Conducted</th>
<th>Sample Population</th>
<th>Time of Reference Pregnancy</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Fertility Studies (NFS)</td>
<td>1965 and 1970 (reinterviewed in 1975)</td>
<td>3,247 White women in first marriage who were married at age &lt;25 and for &lt;20 years</td>
<td>Women asked about their last pregnancy, regardless of length of time since pregnancy</td>
<td>1970: 39% unplanned fertility</td>
</tr>
<tr>
<td>Surveys of Young Women</td>
<td>1971, 1976, 1979</td>
<td>National random sample of women ages 15-19</td>
<td>Women asked about pregnancy history, regardless of length of time since pregnancy</td>
<td>Unwanted pregnancy rate: 1971: 75.8%; 1976: 75.4%; 1979: 82.0%</td>
</tr>
<tr>
<td>National Longitudinal Survey of Youth (NLSY)</td>
<td>Initial cohort used since 1979; wanted-ness of pregnancy added in 1982</td>
<td>Initial cohort ages 14-21 in 1979</td>
<td>Participants interviewed every other year; questions refer to any pregnancies that occurred during the time period</td>
<td>1992: 50.9% unwanted, 7.0% wanted, 42.1% mistimed</td>
</tr>
<tr>
<td>Pregnancy Risk Assessment Monitoring System (PRAMS)</td>
<td>1987-present in selected states</td>
<td>Sample of women are selected each month from birth certificates</td>
<td>Women mailed a self-administered questionnaire 3-6 months after delivery</td>
<td>State specific example: OK (1988-1991 births): 44% unintended (13% unwanted, 31% mistimed)</td>
</tr>
<tr>
<td>National Maternal and Infant Health Survey (NMIHS) (1988)</td>
<td>1988 and a follow-up survey in 1991</td>
<td>Three random samples: women with a live birth; fetal deaths, or infant deaths in 1988</td>
<td>Women asked about last pregnancy; the mean interval time between delivery and interview was &lt;17 months for a live birth</td>
<td>1988: 47.9% wanted; 41.2% mistimed; 10.9% unwanted</td>
</tr>
</tbody>
</table>
The U.S. has one of the highest rates of unintended pregnancy among Western nations. Of all pregnancies in 1994 (excluding miscarriages), 50.8 percent resulted in intended births, 23.0 percent ended in unintended births, and 26.6 percent ended in abortion.\(^1\) (See Figure 1.) While the incidence of unwanted births increased throughout the 1980s, the incidence of mistimed births remained constant.\(^23\)

A disproportionate number of women who have unintended pregnancies are unmarried and/or at the lower or upper end of the reproductive age span, resulting in increased medical and social risks for the women, children, and their families.\(^2\) For example, it is unlikely that a woman with an unplanned pregnancy would have initiated strategies to minimize behavioral and medical risks to birth outcomes prior to conception.\(^2\) Thus, from a public health perspective, an unplanned pregnancy may represent a missed opportunity to provide preventive preconception and prenatal care. Among ever-married women, the incidence of unwanted births increases with age and parity—most likely reflecting women who have already exceeded their desired family size.\(^15\)

Teen pregnancy rates are much higher in the United States than in other industrialized countries: twice as high as in England or Canada and nine times as high as in the Netherlands, for instance.\(^24\) Notably, in 1994, among women aged 15-19, 22.0 percent of births were intended and 42.7 percent were unintended; 35.3 percent of pregnancies were terminated in abortion.\(^1\) Unintended pregnancy is approximately twice as high among teens as any other age group.\(^17\) Adolescents are less likely to use contraception at first intercourse than adult women,\(^25\) and 75 percent of females report having had intercourse by age 18-19.\(^26\) Teenage mothers are more likely to have lower educational and economic status.\(^27\) However, recent data show a decline in teen birth rates. The 1996 rate of 54.7 live
births per 1,000 women aged 15-19 decreased four percent from 1995, and 12 percent from 1991, when the rate was 62.1. The 1996 rate, however, is still higher than its nadir of 50-53 per 1,000 in the early to mid-1980s. Repeat childbearing among teenagers also has shown dramatic declines since 1991.29 To address the problem of teenage pregnancy, the federal government launched the National Strategy to Prevent Teen Pregnancy, targeting females ages 9-14, in 1997. The Strategy includes abstinence promotion under welfare reform, partnership-building at the community level, improved data collection, and research, evaluation, and dissemination of effective interventions—with a goal of having teenage pregnancy prevention programs in 25 percent of all communities in the United States. The strategy also focuses on boys and young men, as well as families.30

Benefits of Planned Pregnancy

Controversy and conflicting reports exist regarding the effects of unintended pregnancy on the birth outcomes and the health of infants and children. Some studies have found that unintended pregnancies are associated with an increased risk of adverse birth outcomes while others have found no relationship. It is often hypothesized that women who have unplanned pregnancies also are more likely to engage in poor health behavior, such as smoking during pregnancy or seeking late prenatal care. However, it has also been suggested that some studies reporting adverse pregnancy outcomes for women with unintended pregnancies may fail to control for differences in health behavior. A recent study by Kost and colleagues (1998)31 found that pregnancy intendedness has independent effects on pregnancy-related behavior including initiation of early prenatal care, smoking cessation, and recognition of pregnancy symptoms.

In terms of prenatal care, several studies32-35 (including the study by Kost and colleagues) have found that women who planned or who were happy about their pregnancies were more likely to initiate early and continuous prenatal care. Likewise, women who were ambivalent toward pregnancy as well as women with mistimed or unwanted pregnancies were less likely to initiate early prenatal care. In a recent study, Bitto and colleagues (1997) found that women with planned pregnancies were more likely to seek early prenatal care although they did not have more visits than women with unplanned pregnancies.36 The women with planned pregnancies, however, were more likely to report previous pregnancy losses, which may account for the planning and greater interest in prenatal care. Moreover, mothers with unwanted pregnancies are reported to be more likely to seek late prenatal care or not to obtain care.2

The evidence regarding the effect of planning status on pregnancy outcomes is mixed. In a sample of 2,828 mothers who participated in the Missouri Maternal and Infant Health Survey, Sable and colleagues (1997) found that 58 percent of the very low birth weight infants were born to mothers who did not intend the pregnancy. However, the authors found that unintended pregnancies are common in all categories of birth weight, and the evidence that unintended pregnancy as an independent factor in low birth weight was unsupported.1 Goldenberg and colleagues (1991), in a prospective study, also found no association between maternal pregnancy planning status and low birth weight, preterm birth, or intrauterine growth retardation.37 Bitto and colleagues (1997) concluded that there is a lack of evidence of an association between unplanned pregnancies and
adverse pregnancy outcomes after controlling for age, maternal employment status, paternal occupation, parity, history of previous miscarriage, and duration of natural family planning use. On the other hand, Bustan and Coker (1994) found that women who indicated that their current pregnancy was unwanted or mistimed were more than twice as likely as other women to deliver an infant who died within 28 days of birth. Most recently, Kost and colleagues found that while women with intended pregnancies were more likely than similar women to seek out early prenatal care and initiate smoking cessation, women with unintended pregnancies were equally as likely as other women to follow a prenatal regime, and, once initiated, to reduce alcohol intake and to follow clinician’s advice regarding vitamins and weight gain.

Several investigators have demonstrated a relationship between short birth spacing between pregnancies and poor pregnancy outcomes. Most studies report an increased prevalence of low birth weight and intrauterine growth retardation associated with intervals of less than six months between pregnancies. An increased prevalence of preterm delivery and increased perinatal mortality also have been linked to short interpregnancy intervals, although the mechanism of the adverse effects of short interpregnancy intervals has not been determined. According to data from the National Longitudinal Survey of Youth, approximately one-quarter of teenage mothers have a second child within 24 months of their first birth. Furthermore, African-American women are approximately 1.6 times as likely as White women to have an interval of less than 18 months between deliveries. The prevalence of closely-spaced second births is greatest among young women whose first birth occurred prior to age 17.

Preconception care, in which conditions and behaviors are identified prior to pregnancy that may affect pregnancy outcomes, is an important intervention for all women at risk of pregnancy. Preconception care is defined as “health care before conception which may optimize the outcome of a given pregnancy.” Preconception care can include health education and promotion, counseling on nutrition and substance abuse, and the identification and treatment or management of existing medical conditions. Strobino and colleagues discuss various aspects of preconception care and opportunities to increase access to pregnancy care in their chapter on this topic. The importance of the detection and treatment of sexually transmitted diseases (STDs), which may influence birth outcomes as well as the ability to conceive and carry a fetus to term, is covered in detail by Misra and colleagues in their chapter on reproductive health. For many women, visits for contraceptive services present an important opportunity for preconception care.

**Contraception**

Unintended pregnancy is in part due to unmet needs for contraception, to discontinuation because of contraceptive side effects or other reasons for dissatisfaction with a method, and to contraceptive failure. In 1995, U.S. women desiring a reversible contraceptive could choose from among various formulations of oral contraceptives, two forms of intrauterine devices (IUDs), an injectable, an implant, and various barrier methods. Close to one-half (47 percent) of unintended pregnancies occur among women who report they were using reversible contraception at the time they became pregnant; the remaining unintended pregnancies occur among sexually active women not using contraception at all. This
means that the 21 million women using reversible contraception and the 4 million women not using contraception contribute equally to the total number of unintended pregnancies. Access to contraception is restricted by a range of social, medical, and financial barriers for many women. Only 40 percent of women seek contraceptive services from a health care provider in the year during their first intercourse. For younger women, especially teenage women, embarrassment, privacy concerns, and lack of access to medical services may present serious barriers. Issues of cost also can be constraining for both insured and uninsured women. For example, use of oral contraceptives, which traditionally have been poorly covered under indemnity plans, requires an annual physician visit and regular purchase of pills at approximately $25 per month.

The table below highlights contraceptive methods available, percent of women using each method, current use by method, effectiveness in preventing pregnancy, and clinical effectiveness. Failure rates in typical use are considerably higher for barrier methods (diaphragm, condom, spermicide and sponge) than for other methods. In addition, while most birth control methods approach 100 percent efficacy in preventing pregnancy when used correctly and consistently, this is not the case for barrier methods. Data from the National Survey of Family Growth suggest the combined first-year failure rate in 1988 for all methods except sterilization was 14 percent. Consequently, over 3 million women become unintentionally pregnant each year due to factors including inconsistent or incorrect use, non-use, or failure of the method.

The oral pill, administered daily, is the most popular of all reversible contraceptive methods. It has been widely used since the 1960s, in comparison to other hormonal methods that have only recently been introduced on the U.S. market. The oral pill has been studied extensively with respect to risks and health benefits. Beyond pregnancy prevention, oral contraceptives provide non-contraceptive health benefits such as regular menses and protection against ectopic pregnancy and ovarian and endometrial cancer. Research on the relationship between long-term oral contraceptive use and breast cancer has shown conflicting results and requires further study.

Other hormonal methods include implants and injectables. Norplant is a levonorgestrel subdermal implant consisting of six flexible, closed capsules that are implanted beneath the skin of the woman’s upper arm. Once inserted, Norplant protects against pregnancy for up to five years. It is a highly effective, long-term, reversible option. Side effects include alterations in bleeding patterns. A disadvantage of the method is that the implant must be removed surgically. The injectable (depot medroxyprogesterone acetate—DMPA) requires the user to return for an injection every 3 months. One notable side-effect of DMPA is amenorrhea.

Renewed interest in the (IUD), one of the oldest and most effective modern contraceptive methods, has been observed since new studies have resolved earlier questions about its safety. Two IUDs are sold domestically: the Progestone T (which must be replaced annually) and the Copper T 380A (which provides protection for ten years). Availability and utilization, however, remain low in the U.S.
Barrier methods include the male condom, female condom, spermicide, diaphragm, and cervical cap. The main benefits of barrier methods include accessibility, availability, affordability, immediate effectiveness, and protection against sexually transmitted disease (STDs). A recent trend is the increased use of condoms. Condom use more than doubled from 12 percent in 1982 to 30 percent in 1990, likely in response to concerns about contracting HIV. However, condoms have a high contraceptive failure rate. In a 1994-95 national study, condoms accounted for 32 percent of unintended pregnancies among women seeking abortion services due to contraceptive failure. One dilemma related to contraceptive choice is that the methods that are most effective against the spread of STDs tend to be less effective in preventing pregnancy. Highly effective contraceptive methods that also protect against STDs should be developed as soon as possible.

<table>
<thead>
<tr>
<th>Method</th>
<th>Percent Women Ages 15-44 Using</th>
<th>Typical Failure Rate (pregnancy per 100 women)</th>
<th>Failure Rate If Used Correctly and Consistently (pregnancy per 100 women)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td>64.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vasectomy</td>
<td>7.0</td>
<td>0.15</td>
<td>0.1</td>
</tr>
<tr>
<td>Female Sterilization</td>
<td>17.8</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Implant</td>
<td>0.9</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Injection</td>
<td>1.9</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Oral Pill</td>
<td>17.3</td>
<td>6-8</td>
<td>0.1</td>
</tr>
<tr>
<td>IUD</td>
<td>0.5</td>
<td>0.8</td>
<td>0.6</td>
</tr>
<tr>
<td>Diaphragm</td>
<td>1.2</td>
<td>20.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Male Condom</td>
<td>13.1</td>
<td>14.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Female Condom</td>
<td>0.0</td>
<td>21.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Spermicide/Sponge</td>
<td>1.0</td>
<td>26.0</td>
<td>6.0</td>
</tr>
<tr>
<td>NFP (Natural Family Planning)</td>
<td>2.5</td>
<td>20.0</td>
<td>1.9</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>2.0</td>
<td>18.0&lt;sup&gt;55&lt;/sup&gt;</td>
<td>4.0</td>
</tr>
<tr>
<td>Other Methods</td>
<td>1.0</td>
<td>N/A&lt;sup&gt;55&lt;/sup&gt;</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Controversy exists as to whether, in order to increase women’s access to effective contraceptives, oral contraceptive pills should be available over the counter. Proponents argue that, after three decades of use in the United States, almost 30 percent of contraceptive women use the pill, and, in most cases, it is used safely and effectively. Proponents also believe having oral pills sold over the counter will lower costs and increase availability and consequently contribute to lower rates of unintended pregnancy. Opponents, however, feel these benefits do not outweigh the current health benefits women get from annual physician visits made to obtain pill prescriptions. Further, opponents fear that over-the-counter status would actually increase out-of-pocket costs for poor women and, thereby, diminish access to preventive services.
The potential of the oral contraceptive pill as emergency contraception in reducing unintended pregnancy has recently gained prominence. Emergency contraception is also referred to as “morning after” pills, a term that can be misleading since they may be taken up to 72 hours after sexual intercourse. Emergency contraception reduces a woman’s risk of pregnancy after unprotected sexual intercourse by about 75 percent. Despite the fact that oral contraceptives have been packaged and labeled for emergency contraceptive use in European countries for some time, the first emergency contraception product, the Preven Emergency Contraceptive Kit, did not gain approval of the Food and Drug Administration until the fall of 1998.

Prior to the approval of Preven, emergency contraception was relatively unknown and inaccessible in the U.S. because manufacturers of the relevant oral contraceptive pills were reluctant to apply to the FDA to market their products as emergency contraception. Further, while physicians are able to prescribe approved drugs for unlabelled purposes, they may have chosen not to because of concerns about legal liability. Awareness and accessibility remain problematic even with Preven available. A campaign is underway to increase awareness of the product through advertising, internet sites, and an emergency contraception hotline.

A substantial barrier to access to emergency contraception is that it requires a prescription. Some efforts are being undertaken to remove this medical barrier. For example, Washington state has initiated a pilot program in which women have access to emergency contraception directly from pharmacists, who have limited prescription-writing authority, rather than having to see a clinician first. For women with birth control pills already in their possession, dosage and directions for emergency contraception are available, by brand, on the internet.

There are many unused avenues available for improving women’s access to safe, effective means of contraception. For instance, policy questions about the oral contraceptive pill are legion. Should only physicians be able to prescribe? Should prescriptions be valid for a longer period of time so that women do not have to return so frequently to health care providers? Could pharmaceutical companies be encouraged to lower their prices? How should emergency contraception be promoted? If the oral contraceptive pill is given over-the-counter status, should emergency contraception be treated in the same manner? Should universal coverage of oral contraceptive pills be mandated? Policy questions about most contraceptive methods have far-reaching ramifications. These issues touch on the legitimacy of the medical field as the gatekeepers of birth control technologies, the power and interests of the pharmaceutical industry, and the rights of women to control their bodies.

**Abortion**

The debate over abortion rights continues to be in the forefront of the American political agenda. Unintended pregnancy often leads to abortion; therefore, reducing unintended pregnancies would greatly decrease the incidence of abortion. In 1994, of the estimated 5.4 million pregnancies that occurred in the United States annually, 1.4 million end in an abortion.
In the United States, as in most cultures, the stigma attached to abortion results in persistent problems of underreporting of the event. In the 1976, 1982, and 1988 rounds of the National Survey of Family Growth, abortion was estimated to be 35 to 50 percent of the actual level. In two other national surveys in the same time period, the National Survey of Young Women and the National Longitudinal Survey of the Work Experience of Youth, reported abortions were estimated to be 38-59 percent of the actual level.57

A 1994-1995 national survey of abortion patients undertaken by the Alan Guttmacher Institute provides information on the characteristics of women seeking abortion. Women who were more likely than the general population to have abortions were minority, aged 19-24, separated, divorced, or never-married, women with annual incomes less than $15,000, women who had a previous live birth, and women enrolled in Medicaid. Women living in metropolitan areas were twice as likely as women in the general population to have an abortion.52 This may be due to reduced access to abortion services for women in rural areas. Issues of provider availability and confidentiality may present greater barriers to access to abortion services for women in rural areas than for women in metropolitan areas. Among women who have non-hospital abortions, an estimated 24 percent travel at least 50 miles from their homes to reach an abortion facility, and almost one in ten women seeking an abortion outside a hospital traveled over 100 miles. Most abortion providers are located in metropolitan areas and access to abortion services everywhere has been declining due, in part, to harassment of clinicians who perform the procedure.56

In the survey of abortion patients, most of the women who were not using a contraceptive method when they conceived had used a contraceptive method in the recent past and conceived within a very short period after discontinuing use. This large group should be particularly targeted in individualized efforts to increase consistent contraceptive use and, thereby, lower the abortion rate. This issue represents a major challenge and an important area for additional research. Condom failure was identified as the cause of pregnancy among 32 percent of abortion patients that were using contraception at the time of conception, so there is a clear need to improve education about the appropriate use of this method.52

Medicaid recipients are more than twice as likely as women in the general population to undergo an abortion. While a relatively high demand for abortion exists among Medicaid recipients, in 1995 just 15 states and the District of Columbia covered abortion services under Medicaid. Among those states that pay for abortion services, women covered by Medicaid have an abortion rate 3.9 times that of other women. Given federal restrictions on funding for abortions (the Title X federal program prohibits the use of family planning funds for abortion services and federal Medicaid also may not be used for abortion), state Medicaid funding represents an important element in the ability of poor women to terminate unwanted pregnancies.59

Women seeking abortion services face a number of barriers. The number of facilities offering abortion services in the U.S. in 1995-96 dropped to 2,042 providers, down nearly one-third from the peak in 1982. Cost also is a major barrier for women. In 1993, non-hospital abortion facilities charged on average of $296 for first-trimester abortions,
$604 for abortions at 16 weeks of gestation and $1,067 at 20 weeks. Most abortions are not paid for by insurance because: (1) many policies exclude them, (2) many women seek confidentiality, and (3) many women simply do not have insurance. Finally, harassment at clinics, which inhibits both abortion seekers and providers, represents an imposition no other form of medical care is subject to.

Access to abortion could potentially improve with availability of the abortifacient RU486. Despite its approval by the U.S. Food and Drug Administration (FDA) in September 1997, RU486, which is widely accepted in Europe, has not made inroads in the United States. Attempts to ban the product persist on Capitol Hill, with the House of Representatives passing such an amendment as recently as June 1998. The amendment prohibits the FDA from taking the necessary next step in the legal availability of RU486—the approval of the production, manufacturing, and distribution of the product. Further, the product developer has not been able to find a distributor because companies are reluctant to become involved given the political climate. (Lisa Kaeser, personal communication, July 23, 1998)

Abortion in the United States is a highly controversial and divisive issue. It is legal, widely utilized, and still highly stigmatized. Unfortunately, it appears that the heated debate over abortion obscures the large public consensus on the importance of pregnancy planning. If less attention were focused on abortion issues, far greater progress might be made in increasing pregnancy planning, thereby reducing the need for abortion services.

Role of Providers in Counseling Women About Pregnancy Planning

Health care providers are in a unique position to counsel women about pregnancy planning. The 1987 National Medical Expenditures Survey found that among women over the age of 15 who had at least one general health check-up visit within the previous year, 26 percent went to obstetrician-gynecologists, 36 percent to general and family practitioners, 14 percent to internists, 33 percent to other kinds of physicians and nine percent to non-physicians, including nurse practitioners, physician assistants, and nurse-midwives (the percentages do not add up to 100 percent because some women may have seen more than one type of provider). In health maintenance organizations and clinic settings, although women may report seeing a physician, a large amount of primary care is in fact delivered by non-physician providers.

A recent literature review suggests primary care delivered by non-physician providers is equal in quality to that provided by physicians, and that non-physician providers are superior with regard to communication and preventive care. The vast majority of non-physician providers are women (95 percent of nurses are female, for instance), and many women prefer female providers for gynecological care. Studies of male verses female physicians show female physicians exhibit some of the same strengths as non-physician providers. Women physicians have been shown to spend more time both listening to and educating patients than do their male counterparts. Female physicians also are more likely to perform screening tests such as pap smears. A study of California physicians found that female physicians were more likely than male physicians to provide STD preventive care. This difference, however, decreased among recent
Clearly, communication skills and provision of preventive services are critical elements for effective pregnancy planning counseling. A recent study of women of reproductive age by the Kaiser Family Foundation asked about topics discussed during their most recent visit with a new doctor or other health professional for gynecological or obstetrical care. Among women at risk for an unintended pregnancy, neither they nor their health professional initiated a discussion of birth control. Women who did report discussing family planning were twice as likely as other women to report using birth control on a regular basis.

Although contraception is a primary health service needed by the vast majority of women of reproductive age, women's health curricula (which would include training on contraception) for medical students and for residents in family practice, internal medicine, obstetrics and gynecology, and psychiatry are only offered in a minority of medical schools. A 1995 survey of family practice residents found a majority had no clinical experience in cervical cap fitting, diaphragm fitting, or IUD insertion and removal. If these key providers are inadequately trained in the provision of contraceptive services, the result is fewer contraceptive choices for women and potentially greater levels of unintended pregnancy.

A study of U.S. residency programs conducted in 1993-1994 found that only one in eight family practice residency programs offers training in abortion. When the training is offered, only one-half of residents choose to participate. A 1995 study of family practice residents found that 74 percent of chief residents reported no instruction in first-trimester elective abortion, and 85 percent reported no clinical experience. Among obstetrics and gynecology residency programs, the proportion providing routine training in abortion declined by half (from 23 percent to 12 percent) between 1985 and 1992. Traditionally, family practice residents have worked in Planned Parenthood and other community clinics to learn about contraception and abortion. Another promising avenue is for family practice residents to train with private physicians providing contraception and abortion services. Medical Students for Choice and the American Medical Women’s Association place residents in summer internships that include training in contraception and abortion.

Providers rely on a variety of guidelines for family planning services. All family planning providers that receive funding from Title X must follow the program’s detailed guidelines concerning contraceptive methods offered, counseling, and routine tests conducted during the course of a reproductive health-related office visit. The Planned Parenthood Federation of America’s comprehensive and detailed Manual of Medical Standards and Guidelines is used in many community-based clinics. Most managed care organizations rely on professional medical standards of practice (including those of the American Academy of Family Physicians, the American Academy of Pediatricians, and the American College of Obstetricians and Gynecologists), which provide broad guidelines stating that patients should be made aware of the availability, effectiveness, and relative risks of different methods of contraception. These are similar to—but less detailed than—the Planned Parenthood Federation of America’s Manual.

While most pregnancy planning focuses on the care of women, providers are increasingly encouraged to recognize the importance of the male partner’s role in effective contraceptive use and to reach out to men, both in terms of male responsibility in pregnancy planning and male reproductive health needs. This new emphasis is driven, in part,
by the renewed focus on male responsibility in welfare and child support enforcement programs. Another factor is the recent increase in STD rates, which pressures clinics to treat partners of infected females and to promote condom use. In addition, the rapid expansion of managed care is forcing freestanding clinics to expand their traditional client base.73

Public Sector Pregnancy Planning Programs

The U.S. government has long recognized the importance of pregnancy planning as a public health measure. Title X of the Public Health Service Act is a federal discretionary grant program created in 1970 specifically for the provision of family planning services. Title X funding permeates three-quarters of U.S. counties and supports access to contraceptive services for approximately 4.2 million women.74 In 1994, of 85 primary grantees, 51 were health departments, 14 were independent family planning councils, 14 were other community agencies, such as hospitals, and seven were Planned Parenthood affiliates.70 In addition to services, Title X also funds research, training, and infrastructure development.70 Because Title X requires that services be made available regardless of age or marital status, Title X clinics are an important provider for adolescents.75 This premise was challenged by an amendment, which passed in the House of Representatives in the 105th Congress, that would have required Title X clinics to obtain written parental consent for minors seeking services.

Despite the traditional importance of Title X in funding contraceptive services, Medicaid has now become the primary federal financing mechanism for family planning services. The primacy of Medicaid is a consequence of a 72 percent decline in Title X funding between 1980 and 1992 (after adjusting for inflation) and an expansion of Medicaid eligibility for pregnant women beginning in the mid-1980s.76 Two other major federal sources of funding for family planning services, both within the Social Security Act, are Title V (Maternal and Child Health Services) and Title XX (Social Services). All of the above programs can fund the provision of reversible contraceptive methods as well as sterilization. In addition to federal programs, public funds are allocated by state legislatures and are supplemented by user's fees and private contributions. Under Medicaid, the federal government reimburses 90 percent of state expenditures for family planning services. Under this arrangement, almost all publicly-funded sterilizations are paid for through the federal-state Medicaid program. However, since federal funding for abortions is prohibited in almost all cases, public funds for abortion services are provided almost exclusively by states.59

A new source of funding for states for family planning-related activities is the $50 million annual appropriation in the 1996 federal welfare reform legislation (Temporary Assistance to Needy Families—TANF) to promote abstinence education for unmarried individuals and to reduce out-of-wedlock births and abortions.77 Funding is channeled through the Title V programs.

The much-debated “family cap” (which refers to denial of increased cash assistance to a mother who conceives and bears another child while she is on welfare) is not mandated under TANF and is left to the states’ discretion. By May 1997, some 19 states had family caps in place.77 New Jersey was the first state to impose a family cap in August 1993;
Arkansas followed suit in July 1994. Recent studies in New Jersey and Arkansas suggest that these caps had no effect on reducing births among welfare recipients. Proponents of the family cap believe it serves as an incentive to reduce out-of-wedlock births among welfare recipients. Opponents believe the measure will not impact birth rates and will create hardship for families on welfare.

Linkages with Other Women’s Health Services

Issues related to the separation of reproductive and non-reproductive health services—and the redundancies and gaps in services that result—are discussed in this volume by Weisman and Poole. Even within reproductive health services, considerable fragmentation exists. Federal funding for key reproductive health services, including family planning clinics, STD clinics, and HIV programs, is allocated categorically. Given that all three types of programs address sexual transmission of disease, increased integration may improve prevention and increase economies of scale.

However, because of the great overlap among many reproductive health services, integration has in fact been pursued at the local service delivery level. For example, over 90 percent of family planning clinics offer STD screening and counseling. However, family planning clinics are left financially strapped by the large increases in the numbers of clients requiring treatment for STDs. Due to state payment arrangements, clinics often do not receive reimbursement for these services. Within technically related services, such as family planning, STD prevention and control, and prenatal care, much time and energy is devoted to negotiating the labyrinth of funding mechanisms in order to cover costs.

Financing Reproductive Health and Family Planning Services

The same gaps in coverage found previously in indemnity insurance are now found under managed care. Managed care organizations, working under private and public payment mechanisms alike, vary widely in their policies and practices for coverage and delivery of family planning services. Current funding mechanisms under managed care have yet to mature and many important questions remain unresolved, such as comprehensiveness, confidentiality, and continuity.

A 1993 study of private-sector insurance coverage of reproductive health services by the Alan Guttmacher Institute found almost half (49 percent) of all typical large-group indemnity plans and PPOs do not cover any reversible contraceptive methods. Despite the fact that almost all (97 percent) large group indemnity plans cover prescription drugs, only one-third covered oral contraceptives. Among HMOs, however, 84 percent covered oral contraceptives. Even among HMOs, the most likely insurer to cover contraceptives, only 39 percent routinely cover the IUD, diaphragm, Norplant, Depo-Provera, and the oral contraceptive pill. Further, a more recent study revealed that even though managed care coverage of contraceptive options appears to be improving, specific efforts to inform enrollees about the availability of such benefits and services are limited, and appointment wait times for these services often are protracted. In the past two years, private insurance coverage of contraceptives has gained prominence at both the state and national levels. In 1998,
Congress mandated that insurers in the Federal Employees Health Benefits Program that provide subscription benefits must cover contraception. Advocates hope that legislation covering all insured women will be enacted in the near future.83

One of the goals of managed care is better coordination of services. Efforts to ensure coordination, however, may threaten patient confidentiality—especially when sensitive services are sought from a provider other than the primary care provider. Mechanisms to ensure confidentiality in the context of the changing health insurance market are not well established. This is a particularly troublesome issue for adolescent and adult women dependent on parental or spousal health plans, respectively. Reminder calls for appointments or notices of services rendered can lead to a breach of patient confidentiality.84 According to a study by the Group Health Association of America (GHAA) and the Kaiser Family Foundation, only four percent of HMOs have special protections in place to ensure the confidentiality of patients seeking family planning services—even though most HMOs (approximately 85 percent) do not require parental notification or consent to provide family planning services to minors. Fifty-nine percent of plans in the HMO survey reported that family planning providers and primary care physicians had access to one another’s records. It is possible that such care coordination, a fundamental managed care component, could be a threat to confidential treatment for patients. For the 40 percent of plans that did not report that providers shared records, confidentiality may be good but coordination of care may be hindered.80

The managed care landscape presents new conscience clause issues. Conscience clauses have traditionally allowed individual providers to claim a conscientious objection to providing certain sensitive medical services (normally limited to abortion and sterilization). However, in the new health care market conscience clauses have expanded, in some cases, to include “any health service about which an ethical, religious or moral objection has been raised”—and the entities claiming an ability to conscientious objection can include corporate payers.85,86 Mergers with Catholic institutions, in particular, often raise major conscience clause issues related to reproductive health services. The National Conference of Catholic Bishops’ Ethical and Religious Directive for Catholic Health Facilities prohibits abortion, contraceptive sterilization, provision of contraceptive services and supplies, most forms of assisted reproduction, and, in most cases, the “morning-after pill” or “emergency contraceptives” for rape victims, although referral may be provided in these areas.87

Implementation of Medicaid mandatory managed care highlights concerns about the continued viability of freestanding family planning centers as safety-net providers. Currently, nearly one-half of Medicaid enrollees are in managed care plans, and the Balanced Budget Act of 1997 removed the need for states to obtain waivers in order to mandate enrollment.88 Yet, many family planning centers and providers are not included in managed care networks contracting with state Medicaid programs. A 1995 study by the Alan Guttmacher Institute based on a nationally representative sample of all family planning agencies found that only one in five had a Medicaid managed care contract.89 Family planning providers not operating within Medicaid managed care networks report difficulty referring women for network primary care and specialty care services, as well as problems in receiving reimbursement for family planning services they provide.87,90 As a result,
some out-of-network family planning providers may refuse to serve Medicaid managed care clients. Rosenbaum and colleagues (1994) report that, as a consequence, some women claim to be uninsured in order to continue receiving care from their preferred reproductive health care provider. This situation not only increases the levels of uncompensated care, but also defeats the original purpose of carving out family planning services to ensure free choice of provider. One option for preserving choice of provider and convenience—and minimizing payment and follow-up treatment problems—is to include community programs in managed care networks.

Issues for Policy, Practice, and Research

The following policy recommendations regarding pregnancy planning are consistent with the recent Institute of Medicine (1995) committee recommendations regarding unintended pregnancy and well-being of women, children, and families.

High contraceptive failure rates suggest the need for improved education and counseling for both clinicians and clients. Improved counseling will require training of clinicians in both technical and communication skills. Particularly among condom users, there is a need to counsel individuals regarding the advantages of using more effective temporary methods and on the availability of emergency contraception.

The increasing use of condoms highlights the tradeoffs between effectiveness in preventing pregnancy and in preventing sexually transmitted diseases and, consequently, the necessity to develop contraceptive methods that effectively serve both needs. Reliance on condoms also highlights the need for increased research on male methods of contraception.

Programs addressing pregnancy planning and unintended pregnancy should be multi-faceted, with strong educational as well as service delivery components. Research is needed for evaluating programs and interventions to better understand the effectiveness of different approaches. A particular area of study in need of greater programmatic and research attention is male involvement (i.e., beliefs, attitudes, and behaviors).

Various financial and structural aspects of the U.S. health care system present barriers to the use of more effective (i.e., hormonal) contraceptive methods. Increased coverage of contraceptives under health insurance plans and reductions in medical barriers to use of hormonal methods are called for. Research is also necessary to explore the way in which contraceptive and reproductive health services are delivered. Specifically, more information is needed on how managed care is impacting access to contraceptive services and on the implications of a fragmented reproductive health care delivery system.

Conclusion

The health and well-being of women, children, and families are affected by unintended pregnancy. The number and complexity of factors related to pregnancy planning all point to the conclusion that a single solution is unlikely to solve the problem of unintended pregnancy; rather a comprehensive, multi-component strategy would make more sense. Currently, much attention is given to reducing teenage pregnancy. It is necessary
to expand our efforts to prevent unintended pregnancies across all age groups and socio-economic levels of women. The problem of unintended pregnancy is not only one of individual behavior, but of public policies and institutional practices.²

A recent telephone survey in the U.S. indicated that “a substantial majority of Americans perceive that unintended pregnancy is a serious concern, and that a considerable number believe that barriers to contraception contribute significantly to the problem.”⁹² Given the insufficient level of public funds aimed at preventing unintended pregnancy, it appears there is an inconsistency between public perception and federal response.⁹² As such, the problem should be addressed by increased federal public health efforts.
References


Pregnancy care in the United States has undergone major technological and financing changes in recent decades aimed at improving the outcomes of pregnancy and reducing infant mortality and morbidity. These changes, however, have primarily focused on improving infant health, with much less attention to the health of mothers.

The fertility rate for women aged 15-44 years is currently the lowest it has been since 1976.¹ The increasing complexity of women’s lives at home and in the workplace and changing patterns of childbearing have influenced the age at which women have their first birth, the course of their pregnancies, their receipt of prenatal care, and their need for specialized care. In the current health care policy environment, increased reliance on managed care is influencing access to and the delivery of perinatal services. The policy environment has also challenged the involvement of government in traditional public health roles, such as surveillance, monitoring of health care, and data collection. In this chapter, following a discussion of levels of mortality and morbidity experienced by pregnant women and their newborns in this country, we discuss many of these changes and their policy, practice, and research implications.

Pregnancy is a critical event in the lives of women. It not only shapes a woman’s relationship with her partner and family and her role in the workforce, but it also affects her health, as is discussed in other chapters in this volume. Approximately 4 million live births occur in the United States each year, along with an estimated 60 percent or more additional pregnancies to women that end in spontaneous losses, stillbirths, or induced abortions.² In 1995, women aged 15-44 years reported an average of 1.2 births, as estimated from the most recent National Survey of Family Growth (NSFG). Women expected to have an average of one additional birth, resulting in an average of 2.2 children by the end of their childbearing years. Moreover, over ninety percent of women aged 15-44 in the 1995 NSFG expected to give birth at least once during their lifetime; only 8.9 percent who were childless in 1995 did not expect to have a child. Eighty-seven percent of these women were voluntarily sterile—that is, they were fecund but sterile because of contraceptive intervention—while 13 percent were involuntarily sterile, as defined by impaired fecundity or sterile for noncontraceptive reasons.³
Indicators of Maternal Morbidity

Maternal Medical Complications of Pregnancy: The low levels of maternal mortality in the United States in the second half of this century turned the attention of clinicians and public health officials away from data about mothers to a greater focus on newborns. More recently, however, there have been attempts to improve the quality of population-based data on maternal morbidity and mortality.

Currently, birth certificates are the only available source of annual data on medical complications of pregnancy for the entire population of women who give birth to a liveborn infant. In 1989, improvements were made in the reporting of data on medical complications by introducing a checklist of sixteen complications of pregnancy on the standard recommended birth certificate. While the completeness of reporting has improved since the introduction of this checklist, the prevalence of complications is still under-reported.4

Pregnancy-induced hypertension (PIH) was the most frequently reported medical complication of pregnancy in 1996, with 3.6 percent of women having had this condition. The prevalence of PIH has risen slightly since 1990, which may be due to improved reporting on birth certificates. The prevalence of chronic hypertension, however, has remained constant at 0.7 percent.1 The prevalence of both complications is lower than is generally reported in clinical studies of pregnant women.5

Diabetes and anemia were the second and third most common medical complications reported on birth certificates in 1996 at 2.6 percent and 2.0 percent, respectively.1 However, the birth certificate checklists do not distinguish gestational diabetes from pre-existing diabetes, and, as a result, interpretation of that data is problematic. The frequency of other complications is too low to provide accurate or meaningful figures.

Antenatal Hospitalization and Bed Rest. Two proxy measures of morbidity during pregnancy are antenatal hospitalization (hospitalization not related to delivery) and bed rest. Both represent the need for medical intervention and, as such, are indirect measures of the occurrence of significant complications during pregnancy. One advantage of antenatal hospitalization as a proxy for maternal morbidity is that data can be obtained from hospital discharge summaries to estimate its frequency, rather than from cumbersome, complex, and costly medical chart reviews. Such a measure has the disadvantage, however, of representing only the most severe complications, those that warrant hospitalization before delivery, and is also subject to changes in out-patient and in-patient management of complications.6 Bed rest, on the other hand, is more problematic as a proxy for maternal morbidity. While it may be prescribed for women with complications, it is also prescribed prophylactically to prevent complications.7 Moreover, data on bed rest must be obtained either from medical records or through postpartum or follow-back surveys of women who have recently given birth.

Among the four million or so women who give birth annually, between 12 and 27 percent are hospitalized during pregnancy.6,8-11 The most common reason is preterm labor, representing about one-third of antenatal hospitalizations.8,11 Other common reasons are genitourinary infection, pregnancy induced hypertension, placental bleeding/placenta previa, vomiting, and diabetes.8,11 A history of medical or obstetrical problems is strongly associated with an increased risk of hospitalization, as is lack of prenatal care.8,10,12 Haas and
colleagues (1996) argue that while assuring increased prenatal care will not necessarily alter the reasons for hospitalization, improved management of some conditions in the course of prenatal care may prevent some hospitalizations.12

In a recent analysis of national hospital discharge data for 1986-87 and 1991-92, Bennett and her colleagues (1998) cast a wide net to capture all prenatal hospitalizations, regardless of whether or not they were for a pregnancy-related problem.6 The overall hospitalization ratio was 18.0 pregnancy-associated hospitalizations per 100 deliveries; the ratio for pregnancy complications was 16.7 and for obstetric causes, 12.2. There was a decrease in antenatal hospitalizations between 1986-87 and 1991-92, largely due to a drop in hospitalizations for pregnancy losses. The authors suggest that increases in out-patient management of ectopic pregnancy and early losses was the reason for this decrease, as well as possible errors in reporting or classification.

The evidence is mixed regarding an effect of race on antenatal hospitalization. In their retrospective study of antenatal hospitalization among all women admitted to a Boston hospital for delivery, Haas and colleagues (1996) found no effect of race or other socio-demographic variables on hospitalization.12 Adams and colleagues (1994) also found no difference in rates of hospitalization between White and Black enlisted service women who had unrestricted access to medical care.9 Franks and colleagues (1992), on the other hand, found a 40 percent increased risk of antenatal hospitalization among Black women, but the role of clinical or obstetrical factors or the use of prenatal care in explaining this risk were not examined.8 Bennett and colleagues (1998) also found higher ratios of antenatal hospitalization among Black women for all types of pregnancy-related hospitalizations, although their analysis of potential confounders may not have been thorough enough to account for these differences.6

Bed rest has been recommended since the 1930s as a preventive measure for poor pregnancy outcomes, particularly for preventing preterm birth. It is recommended to prophylactically reduce the occurrence or severity of the following complications of pregnancy: spontaneous abortion or fetal loss, preterm labor, fetal growth retardation, edema, chronic hypertension, preeclampsia, and adverse consequences of multiple births.13-16 Bed rest reduces physical activity, and reduction in physical activity has been shown to improve uterine blood flow, reduce pressure on the cervix, and increase cardiac volume.17

Goldenberg and colleagues (1994), using data from the 1988 National Maternal and Infant Health Survey, estimated that about 18 percent of women delivering a live birth or fetal death after 20 weeks of pregnancy were prescribed bed rest at some time during their pregnancy.7 The reasons for bed rest in descending order of frequency were edema (5.2 percent), hypertension (4.8 percent), “early or false” labor (4.8 percent), and first-trimester bleeding (3.9 percent). Bed rest was prescribed for an additional 5 percent of women for other reasons. Moreover, about 11 percent of women reported spending a week or more in bed to prevent preterm labor. These estimates do not include the 15 percent or so of women who have a spontaneous abortion before 20 weeks of pregnancy. Goldenberg and colleagues (1994) also estimated the costs of bed rest to be about a billion dollars yearly, which included antenatal hospitalization, income lost by working mothers, and lost productivity related to domestic work.7
Maternal Mortality. The magnitude of maternal mortality in the United States is estimated to be 1.3 to 3 times that reported in vital statistics data. For example, only deaths classified as a complication of pregnancy, childbirth, or the postpartum period are counted as maternal deaths in vital statistics compiled by the National Center for Health Statistics (NCHS). Many pregnancy-related deaths cannot be determined from death certificate data unless the certificate includes a check box indicating that the woman was pregnant during the past year or the data on cause of death are manually coded to take advantage of all medical information written on the certificate; only about half of states currently include a check box about pregnancy on death certificates (Freedman, 1998, personal communication). More complete counts of maternal deaths can be achieved by linking deaths to women aged 10-50 years with live births and fetal deaths in the previous year.

In 1987, the Centers for Disease Control and Prevention (CDC) Division of Reproductive Health began to collect data on all deaths related to pregnancy through the Pregnancy-Related Mortality Surveillance System (PRMSS). A death is considered to be pregnancy-related, and thus a maternal death, if it occurs during pregnancy or within one year of pregnancy termination and results from: (1) complications of the pregnancy itself, (2) a chain of events initiated by pregnancy, or (3) aggravation of an unrelated event by the physiologic effects of pregnancy. While the PRMSS is an important step in improving reporting of maternal deaths, it does not identify all pregnancy-related deaths, particularly those for which a record of the pregnancy outcome is not generated, for example, in the case of an ectopic pregnancy. Surveillance has improved more recently and has contributed to an increase in reporting of maternal deaths; accuracy in monitoring trends in these deaths, however, is still not optimal.

The number of maternal deaths identified through PRMSS classification is over 50 percent greater than the number classified using standardly coded death certificate data. Based on PRMSS data, approximately 300 to 500 maternal deaths occur annually in the United States. The overall maternal mortality ratio was 9.1 deaths per 100,000 live births for the period from 1987 to 1990, and rose from 7.2 in 1987 to 10.0 in 1990. This rise is believed to be due in part to improved surveillance of maternal deaths. Recent figures for maternal deaths based on the standard classification of deaths using vital statistics indicate that the ratios fluctuated between 7 and 8 per 100,000 live births during the period from 1982 to 1996.

The data from the PRMSS indicate that the maternal mortality ratio rose for all racial groups from 1987 to 1990, but the rate of increase was greatest for Black women. Their ratios are higher than for other racial/ethnic groups, exceeding four times the ratio for White women. Differences in the ratio between Black women and other groups increase as age increases, with the divergence being especially great for women 35 or older.

According to the PRMSS, the major causes of pregnancy-related deaths in 1987-1990 were bleeding/hemorrhage, embolism, pregnancy-induced hypertension/hypertensive disorders, infection, and cardiomyopathy. Between 1982 and 1996, pregnancy-induced hypertension, infection, and ectopic pregnancy accounted for most maternal deaths (59 percent). For each of these causes, the maternal mortality ratio was greater among Black women than among White women. Women delivered by cesarean are also at greater risk than women with vaginal births; their ratio is estimated to exceed that for women with vaginal births by two- to eleven-fold. This relation is due, in part, to the greater likelihood of a
cesarean delivery among women with severe complications rather than cesarean delivery causing the death. An analysis of the data available on birth certificates (when linked with death certificates) suggests that unmarried women, women with low levels of education, women with inadequate prenatal care, and women with higher order pregnancies are also at increased risk of maternal death.19

**Indicators of the Health of the Newborn**

*Low Birth Weight and Preterm Birth.* Over 7 percent of all births in the United States are of infants weighing less than 2500 grams, and 11 percent are preterm infants; that is, they occur before 37 completed weeks of gestation.1 Low birth weight (LBW) refers to infants that are born too small either because they were born early or because of growth retardation, while preterm births refer solely to infants born too early. LBW is often used as a proxy for preterm birth since most LBW infants in the U.S. are also preterm, and data on birth weight are more reliable than data on gestational age.

Both gestational age and birth weight are strongly associated with infant mortality22,23 as well as with the risk of developmental delays.23 In 1996, over 40 percent of infants nationwide born before 28 weeks of gestation died during the first year of life, compared with 1.5 percent of those born between 28 and 36 weeks and with 0.3 percent of full-term infants. Using birth weight data, close to 90 percent of infants born in 1996 weighing less than 500 grams at birth died in the first year of life, 33 percent weighing 500-999 grams, 6.4 percent weighing 1000-1499 grams, and 1.7 percent weighing 1500-2499 grams. Only 0.3 percent of normal birth weight babies, 2500 grams or more, died.24

Although infant mortality has declined over the past several decades in this country, there has been little change in the percentage of LBW births. The decline in infant mortality has been due almost entirely to declines in birth weight-specific infant mortality rates or to improved survival. In fact, in the past few years, there has been a rise in LBW rates for White women, due in part to an increase in multiple births that is suspected to result from infertility treatment as well as a shift toward older childbearing.1,25

The risk factors or markers for LBW are multifactorial, including socio-demographic variables (age <17 years, age > 34 years, 0 parity, parity > 4, Black race, low SES, unmarried, poverty, low education); medical risk factors (chronic diseases, previous LBW or preterm birth, genetic factors, multiple pregnancy, poor weight gain, infection, placental abnormalities, premature rupture of membranes, and fetal anomalies); and behavioral risk factors (stress, smoking, unintended pregnancy, poor nutrition, substance use, exposure to toxins, and failure to obtain prenatal care).1

A primary antecedent of LBW is preterm delivery, an outcome with largely unknown etiology.26 The lack of progress in reducing the LBW rate has been due primarily to our limited knowledge of the etiology of preterm labor, which in turn contributes to difficulty in determining who is at risk for preterm labor or what proportion of preterm births can be prevented.

---

1For a complete discussion of these various risk factors, the reader is directed to the issue of The Future of Children, 5(1), 1995, on Low Birth Weight.
There are marked racial differences in the LBW rate. Black newborns are twice as likely to weigh less than 2500 grams at birth and 3 times more likely to weigh less than 1500 grams, defined as very low birth weight (VLBW). The higher LBW rates among Black women are primarily the result of higher preterm birth rates, close to twice that of White women. The reasons for these racial differences or the factors for which race may serve as a proxy are often not stated or studied. Adjustment for traditional risk factors, such as demographic characteristics, health behaviors during pregnancy, and common indicators of socioeconomic status (like mother’s education), has failed to account for these differences.

Most studies of racial differences in LBW or preterm birth rates have used somewhat simplistic measures of socioeconomic status. For example, adjusting for differences in variables such as years of education may not adequately account for differences in socioeconomic status because Blacks with college educations, on average, do not achieve similar levels of income or wealth as Whites. The home, work, or community environment may also be important in determining racial differences in LBW, as well as other potential confounders unrelated to socioeconomic status. More recently, psychosocial factors (for example, racism and/or stress and differences in physical activity) have emerged as possible risk factors in explaining the racial disparity.

The poorer prepregnancy health of Black women may also contribute to the racial gap in LBW. Some investigators suggest that differences in outcomes may be related to the mother’s own birth weight and childhood health, reflecting a previous generation’s circumstances. The greater occurrence of some sexually transmitted diseases, particularly bacterial vaginosis, among Black pregnant women may also account for part of the gap in LBW. Goldenberg and colleagues (1998) found a population-attributable risk of 40 percent for spontaneous preterm births among Black women with bacterial vaginosis at less than 32 weeks. For all women, bacterial vaginosis was significantly linked to fetal fibronectin, a substance normally found in the amniotic fluid and placental tissue, but when found in the cervix or vagina, suggests mechanical or inflammatory damage to the integrity of the membranes. These findings suggest a possible treatable condition that may be responsible for a portion of the Black-White difference in spontaneous preterm births. In an earlier study, Goldenberg and colleagues (1996) also reported higher rates of infection among Black women than White women due to chlamydia trachomatis, Neisseria gonorrhoea, and bacterial vaginosis, although the differences were greatest for the latter.

Strategies to reduce preterm birth and LBW as well as maternal morbidity and mortality have taken two general approaches: a population strategy and an individual strategy. The population strategy attempts to reduce the determinants of these problems at the community level. The individual strategy focuses on individual women at risk and attempts to modify or alter their risk. These strategies are discussed below along with a number of systems issues that relate not only to preventing maternal complications, LBW, or preterm births but to providing access to services needed by high-risk women and by high-risk infants after birth.
Preconception, Pregnancy, and Newborn Care

Preconception Care. Increasingly, pregnancy care is viewed as a continuum starting with the preconception period and ending with the interconceptional period. Preconception care has been promoted as one strategy to assure the health of mothers prior to becoming pregnant; it was an important recommendation of the Expert Panel on the Content of Prenatal Care commissioned by the U.S. Department of Health and Human Services (DHHS) in the late 1980s. It encompasses care to women who are planning pregnancy as well as to those who want to delay childbearing. Broadly speaking, preconception care makes no assumptions about a woman’s current childbearing decisions. As is clear from studies of unintended and mistimed pregnancies (see the chapter on Pregnancy Planning and Unintended Pregnancy), women often cannot predict the childbearing path they will take.

Preconception care includes several elements: identification and management of chronic and acute medical conditions that may negatively affect prenatal health and pregnancy outcomes; health education and promotion; nutritional counseling; and identification and referral of women with unhealthy behaviors, such as smoking and substance use. These services are focused on mitigating or preventing insults to the fetus, particularly early in pregnancy, and even before a woman becomes pregnant. There are no reliable data on the extent to which women receive preconception care, but it is believed to be infrequent and most likely obtained by women with chronic diseases or by particularly health-conscious women. For this reason, it is important to raise awareness in a number of health care venues through which preconception services can be provided.

As chronic diseases may be difficult to manage during pregnancy and may have profound effects on pregnancy outcomes, high quality preconception care for women with chronic illnesses is critical to ensuring good pregnancy outcomes. For example, tight glycemic control of diabetes prior to conception, and especially early in pregnancy, has been shown to reduce the risk of malformations associated with poor glycemic control. Adjustment of hypertension and thyroid medication can also reduce the risk of malformations.

Chronic diseases are not the only medical conditions that are important to identify prior to pregnancy. For instance, the risk of ectopic pregnancy is markedly increased in relation to past treated and untreated chlamydia infection and pelvic inflammatory disease. Primary prevention of reproductive tract infections can be emphasized as part of preconception care, especially during family planning visits. As many vaginal infections are sexually transmitted, the promotion of healthy sexual behaviors is also critical to successful prevention. Moreover, because of the high prevalence of unintended pregnancy and its association with poor pregnancy outcomes, family planning services are both an important component of and a vehicle for preconception care.

Health promotion is an important component of preconception care, particularly in relation to identification of behaviors that place the mother or her unborn fetus at risk. For example, pregnancy and the preconception period offer a special opportunity, a “teachable moment,” to intervene to help women stop smoking. Most women are aware of the health consequences of smoking for their baby and are ready, as a result, to consider stopping or at least reducing the number of cigarettes smoked (see the chapter, Effects of Smoking on Women’s and Perinatal Health). Few studies have specifically evaluated smoking cessation programs during the preconception period, although there have been
attempts to reach women through pediatric providers or public school programs. Unfortunately, women who smoke tend to be less likely to begin prenatal care early in pregnancy and, by inference, are less likely to receive a preconception visit in anticipation of pregnancy.

Substance abuse is another important behavior that can be addressed during preconception care. Women who abuse substances, however, are unlikely to plan ahead or pursue a preconception visit, so that it is especially important to identify these women at family planning visits or visits for acute or chronic illnesses. Preconception interventions for women who abuse alcohol are very important because of the clear link between excessive alcohol intake during early pregnancy and cranio-facial abnormalities in newborns associated with fetal alcohol syndrome and fetal alcohol effects (refer to the chapter on the Effects of Drug and Alcohol Use on Women’s and Perinatal Health for a more complete discussion of the effects of alcohol use early in pregnancy). A deleterious effect of alcohol on the fetus may already have occurred by the time a woman learns that she is pregnant.

Preconception care is also an opportunity to provide nutrition education. Some nutrients must be consumed in adequate amounts during early pregnancy to prevent adverse fetal outcomes, but many women do not receive prenatal care early enough to learn about them. For example, folic acid has a protective effect against spina bifida, anencephaly, and other neural tube defects if taken before conception and in very early pregnancy.

Prenatal Care. After a leveling off in the 1980s, the percentage of U.S. women getting first-trimester prenatal care rose from 76 percent in 1991 to 82 percent in 1996. The percentage of women receiving no care or care starting in the third trimester dropped to 4.1 percent in 1996, the lowest since 1969 (6.4 percent) when national data were first available. Although Black and Hispanic women continue to start care later and receive less care, they had the greatest rise in early use of care between 1991 and 1996.

Prenatal care has often been cited as an important intervention to reduce LBW and preterm births. Valid estimates of the effect of the number or timing of prenatal visits, however, cannot be made from available observational data. Most studies of routine prenatal care have included data sources such as vital records that contain limited or questionable information about important variables like health behaviors and complications of pregnancy, which may confound the relation between care and LBW. Self-selection for early and continuous care can also not be ruled out as an explanation for the findings of these studies. Moreover, while Tyson and colleagues (1990) and Malloy and colleagues (1992) showed that early entry to care was associated with improved birth outcomes only for full-term or near-term newborns, the authors acknowledged the problems of accurately assessing the impact of prenatal care in observational studies. The results of time series studies or more rigorously designed studies show little or no effect of increases in the use of routine prenatal care on LBW rates.

Policymakers and investigators have endorsed changes in the content of prenatal care, recognizing that merely counting visits does not assess the quality of care. The Expert Panel on the Content of Prenatal Care (1989) emphasized early prenatal care for all women, front loading of prenatal care (providing a greater array of care components early in pregnancy before problems begin), and basic prenatal care that addresses both medical
and psychosocial risks. The basic care components recommended included early and continuous risk assessment, health promotion, and medical and psychosocial interventions with appropriate follow-up. Particular attention was given to identifying the content and timing of risk assessment and health promotion activities. These recommendations have been incorporated into programs for Medicaid-enrolled women in some states; for example, Pennsylvania incorporated the entire set of recommendations into the Healthy Beginnings Plus Program for Medicaid-eligible women.

A number of quasi-experimental studies offer consistent evidence that provision of comprehensive prenatal care is associated with reductions in LBW rates. While the magnitude of the reduction is estimated to be about 16-50 percent lower odds of a LBW birth for women who receive comprehensive care, the possibility remains that improvements in LBW rates for women who receive comprehensive prenatal care may be due to other unmeasured differences between them and women who do not receive comprehensive care. Only one small randomized trial of comprehensive prenatal care for low-income women has been conducted, which showed higher mean birth weights among primiparous women who received comprehensive prenatal care but no effect for multiparous women. Given that the overall standard for prenatal care may have improved in terms of comprehensiveness and/or quality, it is unclear whether the positive effects documented in the quasi-experimental studies of the 1980s would be observed today. For example, the results of a more recent study of a case management program for low-income women showed no effect on LBW or preterm births.

In addition to recommending care for low-income women with psychosocial risk, the Expert Panel also recommended that some low-risk women may not need as many prenatal visits as are currently recommended. This recommendation caused considerable controversy in the obstetric community. In a randomized trial of fewer prenatal visits for low-risk women, McDuffie and colleagues (1996), however, found no differences in preterm deliveries, preeclampsia, cesarean delivery, LBW, or satisfaction with the quality of care between women receiving the American College of Obstetricians and Gynecologists (ACOG) recommended number of visits and those receiving fewer visits.

An important limitation of the studies of prenatal care is that they do not provide information on the components of care that may be the most effective. Even strong proponents of prenatal care acknowledge the need for research on the effect of content of care on pregnancy outcomes.

Another prenatal care intervention that received considerable attention and investigation in the 1980s was preterm birth prevention programs. These programs, initially promoted by Papiernik (1984) in France, used specific risk assessment instruments to target high-risk women for more intensive interventions, such as education about the signs and symptoms of preterm labor, cervical exams, and use of tocolytic agents to stop preterm labor. Early studies with historical or non-equivalent comparison groups among predominantly middle-class women indicated success of these programs in reducing preterm births. Clinical trials among low-income women, however, have shown no program effects on reducing preterm births. A limitation of these programs is that they address largely the medical causes of preterm birth. Given the multi-factorial etiology of preterm births, a more comprehensive approach to its prevention is needed.
Postpartum and Newborn Care. A major change in perinatal care over the past decade has been a decline in the length of maternal postpartum hospitalization and of nursery stays for infants. This decline is due in part to changes in medical practice, reimbursement, and patient preferences. Shortages of hospital beds and a trend toward “demedicalizing” childbirth have also contributed to early discharge. In many communities, standard discharge is 12-24 hours or less after an uncomplicated vaginal birth or 48-72 hours after a cesarean delivery. Following strong reactions by women and health professionals to limitations placed by insurance companies on length of postpartum stay, federal legislation—the Newborns’ and Mothers’ Health Promotion Act of 1996—was passed and signed by President Clinton requiring insurance companies to cover 48 hours in the hospital after a vaginal delivery.

The most recent Guidelines for Perinatal Care (1997), developed jointly by the American Academy of Pediatrics (AAP) and ACOG, indicates the minimal criteria with regard to the medical condition of mothers for discharge prior to 48 hours for vaginal deliveries and before 96 hours for cesarean births. It also encourages providing a mechanism for the mother to ask questions as they arise and a follow-up telephone contact or home visit for women with shortened hospital stays. There is, however, little documentation of the extent to which follow-up in any form is being achieved. Even if more definitive guidelines were adopted for follow-up, it is unclear whether there is adequate capacity in the health care system or communities to handle the resulting increased service needs.

The AAP has also endorsed both medical and social evaluation of newborns before early discharge as well as clinical follow-up within three days of discharge. The guidelines, however, do not specify whether early follow-up should be a home visit or in a clinical setting or if telephone follow-up is adequate. The AAP guidelines function only as suggestions for care. In reality, there are no widely accepted practice guidelines for early discharge.

Several reviews of the literature indicate an overwhelming lack of consensus on the maternal and newborn consequences of early discharge, and the results of recent studies do nothing to promote consensus. In four recent studies, investigators examined whether infants discharged within 24 hours of delivery were at a greater risk for neonatal mortality, morbidity, or hospital readmission. Brumfield and colleagues (1996) reported outcomes of low-risk pregnancies and uncomplicated births in a Medicaid population for which 15 percent (856 newborns) were eligible for a 24-hour discharge program. Ninety-three percent had a normal exam at the time of the first postpartum visit, 61 infants had problems requiring a telephone call to the physician, and 12 were seen by a pediatrician; none required readmission. The net savings to the hospital from the early discharges over a two-year period were more than $500,000. Beebe and colleagues (1996), in a review of death certificates of full-term infants weighing over 2500 grams in four Utah counties between 1985 and 1989, found no significant increase in neonatal mortality for infants discharged at less than 24 or 48 hours.

Two studies specifically addressed rehospitalization in the first month of life. In a case-control study of 2,029 newborns rehospitalized in the first month of life and 8,657 randomly selected controls in Washington state from 1991 to 1994, Liu and colleagues (1997) found an increased odds of rehospitalization (1.28 at 7 days, 1.16 at 14 days, and 1.12 at 28 days) for newborns discharged before 30 hours of life. In particular, early discharge
was associated with an increased odds of rehospitalization for jaundice, dehydration, and sepsis. On the other hand, Edmonson and colleagues, in a case-control study in Wisconsin from 1991 to 1994 of 210 newborns readmitted for a primary feeding problem secondary to dehydration or inadequate weight gain and of 630 controls, found no significant association of rehospitalization with early discharge. Most other studies of early discharge have major methodological flaws, including small sample size, lack of comparison groups, limited outcomes, and large losses to follow-up, which limit their conclusions.

The findings of Edmonson and colleagues raise one concern expressed by proponents of more extended postpartum stays. In this study, breastfed infants were more likely to be readmitted for feeding problems. The shortened nursery stays of newborns may not provide adequate time for detection of breastfeeding problems or for proper education of new breastfeeding mothers, even if hospitals are not the optimal site for breastfeeding promotion. Certainly, home or telephone follow-up of new breastfeeding mothers is an important part of basic postpartum care (see the chapter on The Nutritional Status and Needs of Women of Reproductive Age for a fuller discussion of breastfeeding).

Although early discharge may benefit maternal-infant bonding, it may negatively affect maternal well-being due to a reduced period of rest and possible lack of confidence about infant care. The increased medical needs in the days after birth for both the mother and newborn (e.g., jaundice, infection, breakdown of episiotomy), reduction in time for in-hospital teaching and support, and the possible incompleteness of newborn metabolic screening practices also have been raised as concerns about the effects of early discharge.

**Technological Advances in Perinatal Care**

Medical advances in prenatal diagnosis, assisted reproductive technologies, prediction of preterm delivery, and extension of newborn viability have been made in the past few decades. As with any new technology, these medical advances generate new questions, ethical dilemmas, and concerns about health care costs.

**Genetic Screening and Counseling.** Over the last decade, the effectiveness of prenatal diagnosis in identifying fetal chromosomal and structural abnormalities has greatly improved. One example is the Triple Marker Screen, a maternal blood screening test for neural tube defects and Down Syndrome. According to the AAP/ACOG 1997 Guidelines for Perinatal Care, this screen is recommended for all pregnant women during the second trimester of pregnancy. The incidence of neural tube defects is approximately 1 per 1,000 births, and over 90 percent of neural tube abnormalities occur in pregnancies with no identifiable risk factors for the defect. Down Syndrome, the most common human malformation, occurs in 1 per 800 births.

The Triple Marker Screen is estimated to be 85 percent sensitive for neural tube defects. Although its sensitivity in detecting Down Syndrome is relatively low at 60 percent, it is, nevertheless, the best screening test for Down Syndrome currently available for the general population. The major advantage of this screen is that it is non-invasive, requiring only a small maternal blood sample. For high-risk women, including women over 35 or with a family history of Down Syndrome, genetic counseling and amniocentesis are recommended rather than the Triple Marker Screen.
Chorionic Villus Sampling (CVS), performed in the first trimester of pregnancy (usually 10-13 weeks of gestation), is a technique used to detect chromosomal abnormalities through cells from the fetal placenta. This technique is performed before the Triple Marker Screen. On the other hand, amniocentesis, a more widely used procedure, is performed in the middle of the second trimester after the results of the Triple Marker Screen are available. It is recommended for all women 35 or older, in addition to the Triple Marker Screen, because it is a more definitive test for chromosomal anomalies. Neither procedure is without risk for fetal loss. CVS allows expectant parents to make decisions about termination earlier in the pregnancy.

Another example of a disease for which prenatal testing may ultimately become available on a wide scale is cystic fibrosis, a disease characterized by chronic respiratory illness, long-term care, and early death. It is the most common recessive genetic disorder affecting White populations, with an incidence of 1 per 2,000 to 1 per 3,000 births. Screening for cystic fibrosis can alert parents to a potentially affected child and help them prepare for their infant's health care needs. Prenatal cystic fibrosis screening, however, has not yet been shown to be a cost-effective screening tool.

New technology such as CVS and the Triple Marker Screen can bring significant ethical dilemmas for expectant parents, specifically decisions regarding elective termination of an affected pregnancy. In addition, false positive results can occur in 4-5 percent of tests, leading to additional procedures such as amniocentesis, anxiety for expectant parents, and additional health care costs.

Assisted Reproductive Technology. The birth of septuplets in Iowa in 1997, and more recently the octuplets in Texas, brought a new wave of national attention to advancements in reproductive technology. At no other time in history has there been more research on women's fertility or focus on extending the opportunity for childbearing. Gamete Intra-fallopian Transfer (GIFT) and, more recently, Intracytoplasmic Sperm Injection (ICSI) are being marketed as essential tools for promoting fertility. GIFT is commonly used when there are abnormalities in the number or motility of the male sperm. In ICSI, the female egg is directly fertilized by sperm in the laboratory and then placed within the uterine cavity.

From a policy perspective, these advancements offer both advantages and disadvantages. Certainly, there is new hope for previously infertile couples. Nevertheless, reproductive technology requires women to undergo expensive therapies with significant side effects and limited effectiveness. The costs of this technology bring new dilemmas about health insurance coverage requirements and equal access to this technology by all groups of women, regardless of race and insurance status.

The use of reproductive technology frequently results in multiple infants. In 1990-91, 48 percent of the 12,327 live births associated with assisted reproductive technology (ART) were multiple gestations, as reported by the American Fertility Society (AFS) and the Society of Assisted Reproductive Technology (SART) voluntary system of clinical outcomes. These births represented 22 percent of all triplets and higher order multiple gestation births in the U.S. in 1990 and 1991.
Multiple gestations are much more likely than singletons to result in LBW or preterm infants. Although many of these infants survive, they often involve additional costs for maternal hospitalization and prolonged infant care in neonatal intensive care units (NICU), and may have disabilities that require high-cost, long-term outpatient care and special education. As noted above, the increase in multiple births to White women is one of the reasons for the rise in LBW births to this population. In 1996, 16 percent of neonatal deaths nationally were to multiple births; they were 7 times more likely to die in the first month of life than singleton births.

**Prediction of Preterm Delivery.** Survival rates of premature infants are increasing each year, yet prolonged maternal hospitalization secondary to preterm labor and the extended NICU stays of preterm infants further escalate the costs of maternity and newborn care. Tocolytic therapies introduced in the mid-1980s have been shown to prolong pregnancy complicated by preterm labor for a few days, but they have not significantly affected the absolute number of preterm deliveries or the need for maternal hospitalization. With an eye toward reducing the number of maternal hospitalizations and related health care expenditures, researchers are testing a maternal assay for fetal fibronectin, which may assist physicians in predicting which patients with preterm labor are at highest risk for preterm delivery within a two-week period. Although the use of this assay as a standard screening tool in high-risk pregnancies is promising, there remains the potential for large numbers of false positive results.

Additional research is needed to determine if the fibronectin assay can be a cost-effective screening method. With few known therapies to prevent preterm labor, it is unlikely that this assay will be effective in reducing preterm births. The assay, however, can be used to reduce maternal hospitalizations by giving providers information to determine which patients are at highest risk for delivering preterm. Women who are not at high risk for delivery within a 2-week time frame may be followed as outpatients.

**Neonatal Intensive Care.** The development and availability of improved therapies in neonatal intensive care, which primarily serves VLBW infants and normal weight newborns with life-threatening complications, is believed to be largely responsible for the dramatic decline in infant mortality rates in the last 30 years, particularly among the very smallest newborns.

The most striking recent improvement in survival has occurred for the very premature infant. In many tertiary centers across the country, the limits of viability for preterm infants have been extended to as early as 23-24 weeks gestation. National estimates of survival for these infants are difficult given the small numbers born each year, although, in 1996, close to 90 percent of infants weighing less than 500 grams at birth died within the first year of life, primarily during the first few days of life. Advances in neonatal care and surfactant therapy have been suggested as one of the reasons for recent significant reductions in the mortality for these infants. Surfactant is a substance produced in the lungs that prevents them from collapsing when filled with air. It is administered to very preterm infants who are not mature enough to produce their own surfactant, in order to prevent or reduce the severity of respiratory distress syndrome (RDS) and its complications.

Extending the viability of these newborns brings its own new ethical decisions for health care providers and expectant parents as well as health policymakers. The associated
costs of neonatal intensive care and long-term chronic care for these infants have increased, placing additional demands on the global base of financial resources available within the health system. For example, using data from all Medicaid births in California in 1986 and 1987, Rogowski (1998) found that although the medical costs for infants weighing over 750 grams at birth decreased with increasing birth weights, the costs for newborns under 750 grams increased directly with birth weight; that is, for these very small babies, the costs were greatest for infants weighing close to 750 grams and lowest for the smallest newborns; this may be due in part to the greater likelihood of early death among the very smallest newborns.105

Quality of Care/Quality Assurance

Prenatal Care. A long history of established clinical guidelines exists for prenatal care. ACOG initially developed guidelines for routine prenatal care in 1959, and, since that time, these guidelines have been periodically revised to include advances in prenatal care. More recent guidelines, a collaborative effort of the ACOG Committee on Obstetric Practice and the AAP Committee on Fetus and Newborn (1997), focus on both the mother and newborn.81 Like prior editions, the 1997 guidelines are comprehensive, but also stress flexibility in their implementation related to local population characteristics, resources, and the climate for providing care. They encourage innovation and adaptation in order to provide quality care to patients, and now also represent the orientation of a variety of disciplines within the perinatal health care system.

Several studies have been conducted to determine if the practices of obstetric providers are consistent with current guidelines for prenatal care. Using data from the 1988 National Maternal and Infant Health Survey, Hansell (1991) showed that prenatal care received by women was far from meeting even minimum standards for quality of care in terms of blood pressure assessments, urine tests, and blood tests for hemoglobin/hematocrit (HB/HCT).106 More than 60 percent of pregnant women were not tested for blood pressure at every prenatal visit, and blood pressure readings were never taken at a visit for 13 percent of women. Three-quarters of women did not have tests for protein in their urine at every visit, and one-third had no urine tests. The results for HB/HCT were the closest to standards; only 7 percent of women were not tested in pregnancy.

Baldwin and colleagues (1994), on the other hand, found close adherence to published standards by obstetric providers in Washington state using data abstracted from the prenatal records of 2,357 low-risk women who received prenatal care from a random sample of obstetricians, family practice physicians, and certified nurse midwives (CNMs) between September 1988 and August 1989.107 All providers exceeded ACOG guidelines for the recommended number of prenatal visits, with CNMs having the largest number. They also adhered closely to recording of blood pressure, maternal weight and height, and uterine size. Other components of prenatal care were not studied. The divergence of the findings of this study with those from Hansell (1991) may be due to the restriction of the sample to low-risk women in one state.

The quality of ambulatory prenatal care has been shown to differ significantly by socioeconomic status and race/ethnicity.107,108 In general, the findings of several studies suggest that low-income women are less likely to receive amniocentesis109 and routine prenatal
testing\textsuperscript{106,108} than higher income women. Moreover, other investigators report lower rates of receipt of ultrasound,\textsuperscript{110} amniocentesis,\textsuperscript{110,111} and CVS\textsuperscript{111} among African-American and Latina women than among White or Asian women, even after adjustment for confounders such as timing of care\textsuperscript{110} and socioeconomic factors.\textsuperscript{111} Further study is needed, however, to determine whether differences in patient counseling by providers or differences in patient preferences account for some of the variation in use of these procedures.

The evidence with regard to variation in prenatal education by patient characteristics is somewhat mixed. Using national data, Kogan and colleagues (1994) noted that non-White and low-income women reported significantly less time spent by providers with them on health promotion and education, including education about diet, nutrition, and smoking cessation.\textsuperscript{108} Freda and colleagues (1993), on the other hand, found more education among lower income women at a large urban medical center who received care in a public clinic than among women who received care from private doctors.\textsuperscript{112} The women in the public clinics reported significantly higher rates of discussions with their providers on 25 of 38 topics recommended by the Expert Panel on the Content of Prenatal Care. Less than fifty percent of the women who saw private providers reported that they discussed topics such as HIV, preterm birth prevention, family planning, or family violence with them compared with between 65 and 81 percent for women in the public clinics. These findings may reflect as much the source of care as the providers’ attention to the socioeconomic level of their patients or their presumptions about their patients’ risks. This study is also limited by its small sample size.

Despite its limitations, the findings of Freda and colleagues (1993) are particularly troubling with regard to the lack of discussion of HIV and its effect on the fetus and of testing for HIV among private patients.\textsuperscript{112} In particular, less than 30 percent of private patients received information about HIV and its effects and less than 25 percent about HIV testing, compared with 79 percent and 71 percent, respectively, among women in the public clinic, figures that are also not optimal. Discussion of testing for HIV is particularly important because of the evidence that AZT can markedly reduce the transmission of the virus from the mother to the newborn.\textsuperscript{113} At the same time, there are a number of ethical concerns related to testing of pregnant women, including who should be tested, what should be done with the test results, the high costs of treatment, and women’s rights to refuse treatment.

The data used in the above studies were primarily from retrospective surveys and may be subject to patient recall error. In a study based on medical records data, Dobie and colleagues (1998) found that among women on Medicaid, more resources were used for testing of sexually transmitted diseases while among privately insured women, more resources were directed to alpha-fetoprotein testing and amniocentesis.\textsuperscript{109} However, there was no association of insurance status with overall prenatal or intrapartum resource use. The consistency of differences reported by low-income and minority women in prenatal testing warrant further evaluation of providers’ adherence to clinical standards to ensure quality pregnancy care for all women.

Lack of adherence to clinical guidelines may lead to unnecessary hospitalizations and additional health care costs.\textsuperscript{12} As noted earlier, hospitalization prior to delivery accounts for a significant health care burden for reproductive-aged women. Haas and colleagues
(1996) examined avoidable hospitalizations and compliance with prenatal care guidelines among a sample of women delivering in a Boston hospital. Women who received less than 70 percent of the recommended components of prenatal care, according to the U.S. Preventive Services guidelines, were significantly more likely to experience a prenatal hospitalization, after adjusting for race, age, and medical and obstetrical complications. The magnitude of the effect of inadequate prenatal care, however, was considerably less than the effect of medical or obstetrical complications on hospitalization.

**Cesarean Delivery:** Cesarean delivery has been a frequently studied obstetrical procedure, especially because of the large increase in its use in the 1970s and 1980s. In 1987, it was the most frequently performed surgical procedure among women of childbearing age, and is currently second only to cataract surgery among adult women of all ages. Cesarean delivery rates have been reported to be lower among publicly-insured women than among women with private insurance. As noted in the chapter in this volume on *Women's Reproductive Health and Their Overall Well-Being*, practices of U.S. obstetricians related to cesarean deliveries have been questioned along a number of fronts. These questions include the cesarean delivery rate's contribution to improved perinatal outcomes, health system costs, as well as institutional and socioeconomic status biases.

Many hospitals and state officials are implementing guidelines for primary and repeat cesarean deliveries in an attempt to reduce rates. ACOG has been reviewing the issue of cesarean delivery rates for the past few decades. Most recently, ACOG convened a Task Force on Cesarean Delivery Rates to provide recommendations on ways that physicians and institutions can review and, where appropriate, reduce these rates. Clinical management guidelines for vaginal birth after previous cesarean delivery were updated by ACOG in 1990. ACOG also developed quality assessment criteria for cesarean deliveries to serve as retrospective chart review for non-physicians. Studies are needed to address differences in rates by patient characteristics and to ensure that clinical guidelines reduce the rates of cesarean delivery without increasing adverse maternal and perinatal outcomes.

**Preterm Birth.** In addition to cesarean delivery, different methods have been studied in the management of preterm birth, including the use of antenatal corticosteroids and tocolytic therapy. As noted above, tocolytic therapy is a widely used intervention for the prevention of preterm birth, even though it is effective in prolonging gestation for only a few days. On the other hand, antenatal steroids, which are used to accelerate fetal lung maturity and reduce the incidence of respiratory distress syndrome (RDS) in preterm infants, are prescribed less widely, despite the clear evidence of their benefit. The substantial variation in the use of corticosteroids appears to be due in part to physician uncertainty about their efficacy and potential side effects. Despite appropriate evaluation of interventions and publicized guidelines for their use, differences persist in the use of corticosteroids, particularly across racial groups.

In a prospective study of patients treated for preterm labor, Bronstein and colleagues (1998) found that use of tocolytic therapy varied appropriately by patient clinical factors and indications, but the use of antenatal corticosteroids varied by the site of care and maternal characteristics. Moreover, differences in steroid use by maternal race/ethnicity persisted after adjustment for the site of care and clinical factors that measured the window of opportunity for intervention for both procedures. In an earlier study of VLBW
infants in St. Louis, Hamvas and colleagues (1996) reported lower rates of antenatal corticosteroid use for African-American women than for White women.\textsuperscript{103} The findings of these studies are of particular concern given the clear benefit of steroid use in reducing RDS and the 1995 NIH Consensus Conference recommendations for their use.\textsuperscript{124}

**Comprehensive Pregnancy Care Services: Organization & Financing**

A number of recent public health efforts to reduce maternal complications and poor pregnancy outcomes have focused on the system of perinatal care, particularly its organization and financing. Some of these efforts address the provision of population-based services like public education to women, especially for disadvantaged women, as well as continuing education for providers. Others emphasize expanding both the access to and content of care for disadvantaged women and their newborns. Still others focus on the organization and access to intensive care for high-risk mothers and newborns, including women at psychosocial as well as medical risk. In the midst of these efforts, there have been dramatic changes in the organization and financing of health care, particularly the expansion of Medicaid coverage for pregnant women and the increasing reliance on managed care, especially for women eligible for Medicaid. Moreover, recent legislation regarding insurance coverage has been enacted, which may have both negative and positive effects on access to care for pregnant women. These efforts and their impact are discussed below.

*Changes in Medicaid for Pregnant Women and Newborns.* After a period of retrenchment in the early 1980s, Congress undertook a series of significant steps beginning in 1984 designed to expand the Medicaid program. Expansions for pregnant women and their newborns were accomplished largely in three areas: broadening the eligible population by not requiring AFDC enrollment for Medicaid eligibility; simplifying and shortening the eligibility process; and enhancing services provided by the program. The table that follows shows the expansions implemented in eligibility between 1984 and 1990.
Legislation also expanded the services available to pregnant women enrolled in Medicaid. The Consolidated Omnibus Budget Reconciliation Act (COBRA) of 1985 allowed states for the first time to offer enhanced services to pregnant women that were not offered to other eligible persons. The expanded maternity services, related directly to the high social risk of Medicaid recipients, included case management to help women gain access to medical, social, educational and other services beyond traditional maternity care; risk assessment; nutritional counseling; health education; psychosocial counseling and social work services; home visits; and transportation. COBRA 1985 allowed states to cover pregnant women for postpartum services for a period of 60 days following delivery.

While coverage by private insurance declined nationally from 64 percent in 1985 to 57 percent in 1994, the percentage of women without health insurance at the start of pregnancy dropped from 26 percent in 1985, before the major expansions of Medicaid eligibility were implemented, to 19 percent in 1994. Moreover, eight percent of women had no coverage at delivery in 1994, a drop from 15 percent in 1985. The percentage of women covered by Medicaid at the time of delivery rose from 17 percent in 1985 to 29 percent in 1994.

With the exception of an early study in Massachusetts, the results of state-level studies of the impact of expanded Medicaid eligibility on enrollment and access to care generally showed increases in both following expansion. A recent study in Tennessee showed pronounced increases in Medicaid enrollment as well as decreases in the percentage of
Charting a Course for the Future of Women’s and Perinatal Health

women with inadequate or no prenatal care between 1983 and 1991, after adjusting for potential confounders. Similarly, the expansion of eligibility in Florida from 100 to 150 percent of poverty was accompanied by an increase in births covered by Medicaid between 1988-89 and 1991, as well as improvements in the timing and number of prenatal visits. In Florida, however, Medicaid recipients still received fewer visits than privately insured women, as did women on MediCal in California in 1990.

Piper and colleagues (1994) also evaluated the impact of presumptive eligibility in Tennessee. They found that women were more likely to enroll in Medicaid and to receive care in the first trimester following implementation of presumptive eligibility. They argue that when bureaucratic barriers to prenatal care are eliminated, low-income women seek prenatal care and continue to use it. Fossett and colleagues (1990), however, suggest that elimination of bureaucratic barriers may not be enough. They found that the effect of extending eligibility to new groups of women in Chicago was limited by the availability of obstetric care in their neighborhoods. In the most economically depressed neighborhoods, where most women were already eligible for Medicaid, lack of access to maternity care was related to the scarcity of obstetric providers rather than to failure to qualify for Medicaid.

Despite increases in the use of prenatal care, the effect of expanded eligibility on birth outcomes appears to be small. Studies from Massachusetts and Tennessee showed no improvement in LBW or preterm births following expansion. Long and Marquis (1998) noted a small reduction in LBW rates in Florida among women without private insurance following eligibility expansion. This effect was noted primarily among Medicaid-enrolled women who received care from health department sites where enhanced services were available.

The impact of expanded services under Medicaid also has been evaluated in two states, Washington and New Jersey. Baldwin and colleagues (1998) compared LBW rates in Washington in 1989 and 1992, where expanded services and case management were available, with rates in Colorado, where only eligibility was expanded. The LBW rate fell in Washington from 7.1 to 6.4 percent, while it rose slightly in Colorado from 10.4 to 10.6 percent. The decline in Washington was due largely to a drop in rates for medically high-risk women. In New Jersey, expanded services were associated with increased birth weight, lowered newborn hospital costs, and reduced rates of LBW and VLBW among Black women. No effect was noted, however, for White women. Thus, while expanded Medicaid eligibility has large effects on use of care, expansion effects on pregnancy outcomes have been modest, although the effects appear to be most pronounced for high-risk women.

Other Insurance Changes. Recent legislative initiatives regarding health insurance in general are likely to affect the affordability of and access to perinatal care by women in both positive and negative ways. The Health Insurance Portability and Accountability Act of 1996 provided new insurance protection for individuals who move from one job to another, who are self-employed, or who have pre-existing conditions. Provisions of this law relevant to pregnancy care include prohibiting denial of benefits to pregnant women, regardless of whether or not they were previously insured; prohibiting application of pre-existing conditions exclusions or waiting periods for newborns or adopted children; and guaranteeing access to individual insurance for individuals with group coverage for a prior 18-month period or who are ineligible for or have exhausted extended benefits under prior

121
federal laws. These provisions increase, to some degree, women’s flexibility in making decisions about employment while pregnant, particularly with regard to changing their work schedule or duties in order to accommodate family needs or changing employment when pregnant or planning pregnancy.134

In contrast, the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) of 1996 eliminated most public benefits for both legal and undocumented immigrants, including Medicaid coverage of prenatal care and delivery services. Cash welfare benefits, supplemental security income for the disabled, and food stamps were also eliminated for immigrants. Concurrent changes in immigration policy compound this situation by creating disincentives for accessing prenatal care. Inadequate prenatal care may lead to increased morbidity in immigrant women’s infants. In fact, it is possible that cost savings resulting from the exclusion of immigrant women from Medicaid will be offset by increased costs of neonatal care to address the long-term consequences of poor birth outcomes.135

Creative outreach strategies need to be devised to encourage immigrant women to fully utilize available prenatal care. A number of states have adapted or restructured their education and enrollment plans for Medicaid to address provisions of the new federal law.136 Title V Maternal and Child Health Programs, Community and Migrant Health Centers, and other local and state public health programs seeking to serve this population, however, are facing increased demand at a time when resources and capacity for direct service provision are diminishing. The PRWORA legislation illustrates the need to vigilantly monitor population health status and to institute new processes for system responses to overcome unintended consequences of national policy changes.

Pregnancy Care Coverage and Service Delivery in the Context of Managed Care. With increasing pressures to reduce Medicaid costs and to increase access to services for low-income populations, many states have recommended or required the use of managed care organizations for the Medicaid population. By mid-1998, 48 states had instituted at least one Medicaid managed care plan.137 While there undoubtedly has been a considerable rise in coverage of pregnant women by managed care organizations in the past decade, especially for Medicaid enrollees, the actual percentage of pregnant women enrolled in managed care plans is unknown. In general, enrollment in managed care among all Medicaid recipients rose from 9.5 percent in 1991 to 53.6 percent in 1998.138,139

The growth of managed care may have both positive and negative impacts on pregnancy care. While managed care organizations (MCOs) are traditionally oriented toward providing comprehensive, cost-effective care and coordinated services,140 there is also concern about limited choice of providers, limited physician-patient interaction, limited access to specialist care for high-risk women, and discontinuity in providers.141 Disenrollment and lack of appropriate follow-up and risk-appropriate care are of particular concern for low-income women who may have limited knowledge of MCO procedures or who may not have the time or resources to change providers or plans, especially for the short period of pregnancy. The result may be inadequate and inconsistent prenatal and obstetric care.

There is conflicting evidence about the effect of managed care on pregnancy outcomes. In a study of the AFDC population, no significant differences were found in the number of prenatal visits or number of women receiving first trimester care between those
in a traditional Medicaid program and in a prepaid Medicaid plan; mean birth weight and LBW rates also were similar, as were complications of pregnancy and cesarean delivery rates. In a study of inner-city women in Illinois, Reis (1990) found no differences in patient satisfaction or birth outcomes between women in fee-for-service and women in Medicaid managed care plans. On the other hand, Shulman and colleagues (1997) found that pregnant women in a Medicaid fee-for-service plan in a seven-county area in Iowa started care earlier, received more adequate care, and had improved LBW rates as compared to women in a primary care case management program (PCCMP).

The need for psychosocial services for low-income pregnant women was identified in the Expert Panel's report on *The Content of Prenatal Care* (1989), but changes in managed care pose problems in assuring the provision of these services to women in need. Many of these services have traditionally been provided by public health systems in communities. MCOs may not be able to provide the same level of services and referrals while maintaining cost savings. The increasing penetration of managed care for Medicaid enrollees threatens the continued availability of these services unless there are mechanisms built into managed care contracts or unless public-private partnerships or population-based structures are established to maintain them.

Assurance of enhanced prenatal care services may be met by requiring that they be provided by the MCO within or outside of capitated payment, or that the MCO contract with other public or private health agencies in the community to provide these services. Delaware requires that all Medicaid plans include provisions to contract for supportive services, such as home visiting and social services for pregnant women, from health department providers, who traditionally provided these services to low-income women. Contracts in Massachusetts include detailed specific services that MCOs must provide and the standards for these services, while in Georgia the requirements for MCOs are very general. There were 34 states, as of October 1994, that provided at least three or more enhanced prenatal services to pregnant women in Medicaid managed care programs.

Another approach to assuring enhanced services is the establishment of partnerships between community health providers and MCOs, such as the partnership established between providers at the Rochester General Hospital and the Monroe Plan of Rochester with the goal of providing consistent prenatal and obstetric care and to reduce LBW in the community. In another community-based model in several counties in Maryland, public-private partnerships have been developed to ensure that pregnant women with social or psychosocial problems have access to care to address these problems. These partnerships use the skills of the local public health departments to provide needed services such as home visiting, substance abuse counseling, and health promotion to all women in need of them, not just those who have traditionally been health department clients. The medical components of prenatal care are provided by private obstetric groups in the counties.

Health departments and programs funded by Title V and other public health programs, such as community and migrant health centers, have a long tradition of providing quality care to low-income, disadvantaged women. This care has included more than just medical care, or even psychosocial care, and has involved culturally-appropriate approaches, an understanding of the social context in which care is provided, and assistance to women through care coordination. This latter concept is differentiated from the gatekeeper
role of many case managers in MCOs in that care coordination facilitates access to the multiple services needed by disadvantaged women. Additional components of care have included transportation, outreach, translation services, and on-site child care, as needed (See related chapters on Health Care Services and Systems for Women of Reproductive Age and Public Health Roles Promoting the Health and Well-Being of Women). The proliferation of Medicaid managed care and the increased provision of care to disadvantaged women by private providers threatens this traditional role of the health department.

Regionalization of Perinatal Care. A major systems approach to organizing medical care for pregnant women and newborns has been regionalization of perinatal care. Regionalization of perinatal care evolved in the early 1970s, when the limited availability of both neonatologists and perinatologists, coupled with a climate of organized regional planning and economic feasibility, promoted its development. The early stimulus for regionalization was to improve access to specialized care for high-risk mothers or newborns through the development of a system of care that linked institutions and providers at various levels of care. These levels, initially designated as primary, secondary, and tertiary, were differentiated by the degree of complexity of patient needs and the capabilities of the provider or institutions to address their needs. Regionalization stressed the efficient use of scarce and expensive resources to care for high-risk mothers and newborns and to consolidate, when feasible, multiple facilities with small numbers of deliveries.

There is considerable evidence of the success of regionalized systems in the 1970s in concentrating births of high-risk infants, as defined by VLBW births at tertiary centers, in reducing death rates of newborns in these centers and in improving the survival of high-risk newborns at community hospitals, presumably through transfer of these infants or provider education. Reductions in neonatal mortality in states and other geographic areas were also reported following regionalization, particularly for LBW infants, but a cause-and-effect relation has not been documented empirically. For example, McCormick and her colleagues (1985) did not find a greater reduction in neonatal mortality in areas with Robert Wood Johnson (RWJ) Foundation-funded regionalization efforts when compared to areas with no funding, nor did Siegel and colleagues (1985) find an effect of a regionalized perinatal program in rural North Carolina. McCormick and colleagues (1985) suggested that their findings were due to the proliferation of regional systems of perinatal care during the study period in areas without RWJ Foundation funding.

The report, Toward Improving the Outcome of Pregnancy: The 90s and Beyond (1993, also referred to as TIOP II), a revision of the 1976 document on perinatal regionalization developed by the Committee on Perinatal Health and published by the then March of Dimes Birth Defects Foundation, reaffirmed the importance of regional systems of perinatal care. TIOP II, however, refocused earlier recommendations about regionalization to embrace ambulatory care as well as inpatient maternity care. Another contribution of TIOP II to the ongoing discussion of pregnancy care was introduction of the concept of reproductive awareness, which stressed that for every woman of childbearing age, health care providers should be aware of her potential for optimal reproduction, and should provide reproductive health promotion messages at every health encounter. The document also stressed that the key elements of perinatal care should include health promotion and health education, ongoing risk assessment, and universal access to perinatal care.
Despite considerable progress in the 1970s and 1980s, recent changes in the content and organization of perinatal services in a number of states threaten to erode regionalized systems. The first involves an increase in self-designated Level II or II-plus hospitals in a number of states, including Washington, California, and Missouri. This increase has resulted in a rise in some states in the proportion of VLBW births that occur in these hospitals. Of concern is the consistent finding that the mortality rates of VLBW infants born in these hospitals is similar to those for infants born in community hospitals and consistently higher than the rates in Level III centers. Some investigators argue that there has never been documentation of a survival advantage for VLBW infants born in Level II hospitals. There also appears to be both a volume and level of care effect on mortality. The lowest neonatal mortality rates are seen in large Level III centers. Those noted in smaller Level III centers and Level I and II hospitals are similar, but higher than mortality rates in large Level III centers.

The rise in Level II, and to a lesser extent self-designated Level III hospitals, is thought to be a result of competition for perinatal patients. Development of a full-service hospital is seen as a marketing advantage because the availability of NICU care is attractive to pregnant women, and women tend to continue to use the same facility for family care after birth. Moreover, the number of neonatologists has increased considerably in recent years, yielding more specialists to staff the newly designated Level II and III facilities.

Richardson and his colleagues (1995) described the community-wide decision-making process used to maintain the structure for regionalized care in the Hartford, Connecticut area. Generic issues related to this process and relevant to the continuation of effective and efficient regional structures for perinatal care include: determination of the optimal number of NICU beds in an area; restriction of these beds to promote inter-hospital cooperation; assessment of the size and scope of the NICU; promotion of the development of data systems to measure the extent and outcome of regionalization; and development of guidelines for reimbursement that are consistent with public policy.

Two other issues that warrant comment here are differential access to high-risk perinatal care by socioeconomic status and the locus of accountability for the total population. As noted earlier, the results of a number of recent studies in different geographic areas show less access to technological interventions for uninsured women, women on Medicaid, and minority women as well as for their newborns. These latter findings for minority women are believed to be due to their greater likelihood of having lower incomes. The findings for newborns of uninsured women persist independent of their medical risk status.

Health services delivery and financing changes in the 1990s highlight the importance of a locus of accountability for the total population. Recommendations for the establishment of community boards to organize and advocate for a regional system were first promoted in the expert report, *Perinatal Health Strategies for the 21st Century* (1992), supported by the federal Maternal and Child Health Bureau (MCHB), and later in TIOP II (1993). Such boards may function throughout the state (e.g., Delaware) or in a limited number of counties or groups of counties (e.g., Maryland). They are instituted to assure access to care in the community by coordinating services for all pregnant women and newborns, regardless of income or insurance status, within an area and to assure access to risk-appropriate care by instituting monitoring and surveillance procedures.
Implications for Policy, Practice, and Research

Policy Implications. This review suggests that special attention is needed to ensure that health insurance coverage for women is made consistent with the Health Insurance Portability and Accountability Act. While the Act should have a positive impact, it will have its greatest impact if women are aware of their legal rights. Of particular concern is dissemination of information about the law so that women know that they are assured access to insurance when they move from one job to another; they can not be prohibited from coverage for pre-existing conditions, especially pregnancy as a pre-existing condition; and they are guaranteed access to insurance under other conditions of the law. Implementation of the law, which has been slow, will need to be monitored in order to assure appropriate insurance coverage for all women.

Also needed is careful attention to the impact of PRWORA on the health and well being of immigrant women and their newborns. Because state Maternal and Child Health programs and federal community and migrant health centers are exempt from PRWORA immigrant-related provisions, their role in assuring services to this population of women is of particular importance. States also have the option to extend insurance coverage for immigrant women. In states not electing to do so, it will be particularly important to track the impact of the PRWORA on pregnancy care and outcomes.

Policy concerns also include regionalized systems of perinatal services, including trends related to deregionalization, increasing competition for patients, and limited data about the extent and outcome of regionalization. Richardson and colleagues (1995) suggest several policy efforts that can be made to develop or strengthen regionalization. First, efficient use of NICU beds requires policies that promote inter-hospital cooperation for both forward and back transport of high-risk mothers and newborns; that is, transport to the tertiary center for intensive acute care when needed, but also back transport for neonatal convalescent care. This mutual dependence of hospitals promotes vertical integration of clinical services.

Second, the appropriate size and scope of NICUs need to be identified in regional systems, along with the scope of appropriate services at Level II hospitals, for which there is considerable variability. Third, regional data are needed to measure the extent and outcome of regionalization, particularly maternal and infant outcome linked with pre- and post-transport status. Finally, regional systems need to include equitable, risk-adjusted reimbursement of costs for acute care, incentives that promote back transport, and sharing of the overhead for regionalization activities by community hospitals. In particular, while public policy may promote access to intensive care for high-risk mothers and newborns, overhead costs for tertiary facilities are not generally covered in reimbursement.

Policies at the state and local level are also needed to assure that MCOs provide pregnant women with access to risk-appropriate care, both medical and psychosocial. Moreover, there is concern that ever-changing managed care alliances may disrupt existing regionalized networks of services. There are no data available to support or refute this concern, but some states have attempted to circumvent this problem by ensuring that managed care contracts include provisions for maintaining stable networks. These networks need to include access to an appropriate array of basic, specialty, and subspecialty
providers and facilities to address the medical needs for all women. Finally, as emphasized above, the expertise and experience of the public sector with providing care for disadvantaged women must be incorporated into these networks.

A locus of accountability for perinatal services and outcomes, regardless of whether it involves formal community boards, is important to ensure that the needs of all mothers and newborns are addressed. Public-private partnerships at the local level have also been used recently to foster community accountability. There is now a relatively short history of experiences with such community organizations. Studies are needed to evaluate various approaches to establishing a locus of accountability and their effect on access of women to risk-appropriate care and other needed services.

**Practice Implications.** Two practice concerns are discussed here: the continuum of care from the preconception to inter-conception period and differential access to quality care. A focus on pre-pregnancy health status and access to and utilization of high quality care for high-risk women may alleviate, to some degree, the racial disparity in rates of maternal mortality and LBW. Moreover, well-woman care and the provision of family planning services represent opportunities for providers to promote health education and interventions that may affect the health of women during planned or future pregnancies. As of April 1999, twelve states were using waiver options to extend Medicaid eligibility for family planning services, establishing a vehicle for providing or reimbursing inter-conception care. These initiatives are an important step in providing opportunities (and financing) for preconception care for some women. Preconception care opportunities, however, are available to all low-income uninsured woman in only four states. Women in seven of the remaining states are eligible for family planning services only if they were previously Medicaid-eligible because of a pregnancy.159

Privately-insured women are covered for preconception care only to the extent that their insurer covers the services. The extent of coverage of these services by private insurance is not known, but it is believed to be minimal. In practice, widespread acceptance of the concept of preconception care among the obstetric community has been easy, but development of financing mechanisms has been more difficult. Questions arise, in particular, about when women are eligible for benefits; that is, for what length of time prior to pregnancy should they be eligible for reimbursement for a preconception visit. A number of health-promoting behaviors—such as good glycemic control for diabetic women, intake of folic acid, smoking cessation and reduction in alcohol use—need to be initiated before pregnancy. Women often need a visit well in advance of becoming pregnant in order to receive the education and support they need to change behavior. For these reasons, and because the timing of pregnancy is often unpredictable, the most prudent approach is to define a package of services that all women need to stay healthy regardless of whether or not they become pregnant. Most behaviors that are important to follow prior to becoming pregnant are also healthy behaviors that all women should pursue.

The differential access of disadvantaged women to ancillary services and obstetric procedures and tests (like genetic screening and infertility treatment) is also of concern. Although variation in provider adherence to appropriate guidelines and obstetrical management may be due to factors not easily measured in conventional studies, there is an urgent need to ensure that providers are educated on current recommendations for prenatal care.
interventions, and that quality of care systems are implemented to monitor adherence to specific guidelines, particularly for disadvantaged women.

Systems for promoting guidelines for the quality of health care are established for two major reasons: to reassure government and the public that the care provided is monitored and, when necessary, modified to reduce provider liability; and, most importantly, to improve patient care. Systems that institute clinical guidelines for providers need to include long-term follow-up to evaluate changes in clinical practice and to ensure improvement in maternal and neonatal outcomes, as well as to promote equitable access to routine services for all racial and income groups.

**Research Implications.** There are a number of areas where research is needed in order to make informed policy and practice recommendations for pregnancy care. First, methods for surveillance of maternal mortality must improve in order to develop effective interventions, identify high-risk groups, and monitor trends. The CDC’s PRMSS is one step in this direction as is the inclusion of a checkbox on death certificates indicating if a woman was pregnant in the past year. Improvements in the quality of the pregnancy complications data on the birth and fetal death certificates are also needed to be able to monitor trends in these complications for the entire birth population. These improvements are most likely to occur when a commitment to educating obstetricians, nurse-midwives, and family practice doctors about the need to improve reporting is coupled with efforts to facilitate use of vital records data by these providers. For example, in the Statewide Perinatal Data System in New York, providers are able to access vital records data for conducting routine quality assurance activities.

More creative thinking needs to be given to indicators that go beyond the conventional measures of maternal pregnancy complications. A number of discomforts that occur during pregnancy and the postpartum period—such as perineal tears, particularly ones that extend to the rectum, urinary incontinence or leakage, development of hemorrhoids or other varicosities following delivery, and extended fatigue during the postpartum period—while not life threatening or even severe, are experienced by women in silence and can have long-term consequences. There are very little data describing the extent of these complications among women or their implications for the quality of life of women.

There is also a need to conduct research on the content and cost of prenatal care in order to determine the most effective package of services for pregnant women. Estimates of costs associated with antenatal hospitalizations should also be included in future studies of the cost-effectiveness of prenatal care. These studies must, however, also address important confounders of the relation between prenatal care and hospitalization in order to ensure that the effects of prenatal care are not overestimated.

The costs and consequences of infertility treatment is also an important area of further research, particularly the effects of specific treatments on multiple births. The decision-making process with regard to women’s acceptance of selective abortion in the case of high-order multiple births is an additional important topic of research.

Limited understanding of the etiology of preterm labor hinders attempts to determine the proportion of preterm births that can be prevented by obstetric intervention, to identify patients likely to experience preterm labor, and to actually prevent preterm labor.
Research in this area must address the social as well as biological determinants of preterm birth with special emphasis on modifiable risk factors. Moreover, this research needs to address the reasons for continued racial differences in preterm births with an eye toward evaluating both social and medical reasons.

Further research is warranted to assess the adherence of providers to clinical guidelines for prenatal care, to determine the extent to which patient preferences as well as provider behavior may influence the content of care, and to identify areas of patient management that are affected by provider uncertainty about efficacy and long-term side effects. Finally, methods of monitoring and measuring the impact of regional systems of care must be developed and implemented to assure the equitable and cost-effective distribution of resources for pregnant women and newborns. Studies also are needed of the impact of managed care on these systems as well as on practices that promote regional coordination and access to risk appropriate care for all women.
References


A wide range of chronic health conditions can affect a woman across her life span. In adolescence, most chronic conditions are congenital—caused by genetic or environmental insults prior to or at the time of birth—or are the result of injuries. As women progress from adolescence through the childbearing years and then through menopause, the incidence and prevalence of chronic conditions rise with a concomitant shift to disorders linked to environmental factors.

This chapter focuses on chronic diseases as a group rather than on individual disorders. A few particular diseases—selected from among the most common disorders that limit activity in women of reproductive age—are highlighted to illustrate important issues more fully. These diseases were not selected because they are more prevalent among women than men—the criterion some have suggested should be the focus of work related to women’s health. Finally, the chapter focuses on specific issues related to diseases that offer lessons that can be generalized to chronic diseases as a whole.

Background

Asthma, diabetes, hypertension, and thyroid disorders are among the most frequent chronic conditions that limit activity among women of reproductive age. Based on National Health Interview Survey (NHIS) 1990-1992 data, asthma affected 48.0 of every 1,000 women aged 18-44 years in the United States. Among women with asthma, 22.2 percent reported limitation of activity and 21.7 percent reported one or more hospitalizations in the past year related to this disease.† For persons under age 65, the NHIS estimates that activity was restricted an average of 9.6 days annually for each individual with asthma.†

The prevalence rate of hypertension was similar to that of asthma: 47.4 per 1,000 women aged 18-44 years. Limitation of activity was reported by 11.7 percent of the women

†The NHIS provides estimates of the number of days of restricted activity from selected chronic conditions, although not specifically for women of reproductive age.
with hypertension, and the disorder caused one or more hospitalizations in the past year for 8.3 percent. Activity was restricted an average of 4.3 days annually each for all persons under age 65 with hypertension.¹

The prevalence rate of diabetes for women aged 18-44 years was approximately 13.4 per 1,000 in 1990-92. Diabetes has a significant impact on women’s functioning. Approximately 35.7 percent of women with diabetes reported limitation of activity, and 27.0 percent reported one or more hospitalizations in the past year related to the disease. Activity was restricted an average of 15.6 days annually for each person under age 65 with diabetes.¹

Like other diseases hypothesized to be related to autoimmune system defects, thyroid disorders are more common in women than in men.¹ Thyroid disease, excluding goiter, affects 15.3 women per 1,000 women aged 18-44 years. Approximately 6.9 percent of these women reported limitation of activity, and 12.8 percent reported one or more hospitalizations in the past year related to thyroid disease.

The burden of chronic diseases falls disproportionately on two overlapping subpopulations of women: poor women and minority women. Rates of chronic disease are higher for low-income and less-educated women.² Based on NHIS data for all individuals,¹ diabetes prevalence and family income are negatively correlated (50.3 per 1,000 for those making $10,000 or less per year vs. 15.8 per 1,000 for those making $35,000 or more per year), and the same is true for asthma (66.1 vs. 45.6), hypertension (162.1 vs. 81.5), and thyroid disease (15.9 vs. 12.3).

### COMMON CHRONIC CONDITIONS IN WOMEN, ALL AGES, 1990-1992¹

<table>
<thead>
<tr>
<th>Chronic Condition</th>
<th>Average annual number per 1,000</th>
<th>Limitation of Activity (%) ¹</th>
<th>One or more Hospitalizations (%) ¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>48.1</td>
<td>22.2</td>
<td>21.7</td>
</tr>
<tr>
<td>Hypertension</td>
<td>120.1</td>
<td>11.8</td>
<td>8.3</td>
</tr>
<tr>
<td>Diabetes</td>
<td>30.6</td>
<td>35.7</td>
<td>27.0</td>
</tr>
<tr>
<td>Thyroid Disorders (excluding goiter)</td>
<td>22.0</td>
<td>6.9</td>
<td>12.8</td>
</tr>
</tbody>
</table>

*Among women with the condition.

Chronic diseases disproportionately affect Black women.³⁵⁷ In a study of low-income Black women of reproductive age, more than 25 percent reported a chronic illness (i.e., diabetes, hypertension, asthma, or any condition requiring regular medication).³ Estimates of disease rates derived from the NHIS¹ also show an increased risk for Black men and women of reproductive age (<45 years) for hypertension (52.4 per 1,000 for Blacks vs. 30.1 per 1,000 for Whites), diabetes mellitus (8.8 per 1,000 for vs. 7.6 per 1,000 for Whites), and asthma (56.3 per 1,000 for Blacks vs. 48.4 per 1,000 for Whites). Based on National Health and Nutrition Examination Survey (NHANES II) data,³ the gap in hypertension rates is even greater for women of reproductive age (15-44 years): 11.3 percent for Blacks vs. 4.8 percent for Whites. Policies that seek to improve the health of women must pay special attention to the two vulnerable subgroups of minority and low-income women.

¹National data are not available for women of reproductive age stratified by socioeconomic status.
Chronic diseases—as well as their treatment—have wide-ranging effects on women’s health. In 1994, 10.1 percent of women aged 18-44 years reported at least some limitation of activity caused by chronic conditions. Approximately 3.5 percent reported they were limited but not in a major activity, 4.0 percent were limited in amount or kind of major activity, and 2.6 percent were unable to carry on a major activity at all. Such limitations may have profound consequences on the lives of women, on their roles in families, and on family functioning.

As more women postpone childbearing until their thirties and forties, it is increasingly important to address the effects of chronic diseases, which become more prevalent with age, on pregnancy. Complications of untreated chronic diseases (e.g., kidney damage associated with untreated hypertension) can negatively affect pregnancy outcomes. Even chronic diseases that are well-controlled may adversely affect a single important physiologic function (e.g., respiratory function), thereby presenting a potent risk to the fetus and mother. Treatment itself may have adverse effects. For example, many chronic diseases (e.g., asthma, arthritis, and lupus) are treated with steroids, which is associated with an increased susceptibility to infection. Furthermore, unlike an acute exposure or complication, a chronic disease affects a woman from the time of conception until the time of delivery. Studies that have followed women with specific chronic conditions throughout their pregnancies have reported increased risk of adverse outcomes for a number of diseases, including asthma, diabetes, hypertension, and renal disease. Given the many physical changes women experience with pregnancy—in hormones, body weight, and cardiovascular function—it is not surprising that pregnancy may also have a direct effect on chronic diseases. However, most diseases have not been well studied with regard to the effects of pregnancy. For example, some studies show a change in asthma symptoms during the course of pregnancy, although the changes are not consistent. Asthma improves for some pregnant women while for others it remains unchanged or worsens. Women with cardiovascular or renal disease may experience difficulty with the increased demands pregnancy places upon their body’s already-compromised systems. Again, adverse effects have not been consistently observed, however. Each stage of pregnancy may also have differing effects, and women may have differing levels of adherence to their medical regimens at various points in their pregnancies.

---

Impact

Chronic diseases—as well as their treatment—have wide-ranging effects on women’s health. In 1994, 10.1 percent of women aged 18-44 years reported at least some limitation of activity caused by chronic conditions. Approximately 3.5 percent reported they were limited but not in a major activity, 4.0 percent were limited in amount or kind of major activity, and 2.6 percent were unable to carry on a major activity at all. Such limitations may have profound consequences on the lives of women, on their roles in families, and on family functioning.

As more women postpone childbearing until their thirties and forties, it is increasingly important to address the effects of chronic diseases, which become more prevalent with age, on pregnancy. Complications of untreated chronic diseases (e.g., kidney damage associated with untreated hypertension) can negatively affect pregnancy outcomes. Even chronic diseases that are well-controlled may adversely affect a single important physiologic function (e.g., respiratory function), thereby presenting a potent risk to the fetus and mother. Treatment itself may have adverse effects. For example, many chronic diseases (e.g., asthma, arthritis, and lupus) are treated with steroids, which is associated with an increased susceptibility to infection. Furthermore, unlike an acute exposure or complication, a chronic disease affects a woman from the time of conception until the time of delivery. Studies that have followed women with specific chronic conditions throughout their pregnancies have reported increased risk of adverse outcomes for a number of diseases, including asthma, diabetes, hypertension, and renal disease. Given the many physical changes women experience with pregnancy—in hormones, body weight, and cardiovascular function—it is not surprising that pregnancy may also have a direct effect on chronic diseases. However, most diseases have not been well studied with regard to the effects of pregnancy. For example, some studies show a change in asthma symptoms during the course of pregnancy, although the changes are not consistent. Asthma improves for some pregnant women while for others it remains unchanged or worsens. Women with cardiovascular or renal disease may experience difficulty with the increased demands pregnancy places upon their body’s already-compromised systems. Again, adverse effects have not been consistently observed, however. Each stage of pregnancy may also have differing effects, and women may have differing levels of adherence to their medical regimens at various points in their pregnancies.

---

1 According to the National Health Interview Survey, limited in a major activity refers to those people unable to carry on or restricted in the amount or kind of usual activities for their age group.
Protective and Risk Factors of Health and Disease

Each chronic disease has a unique set of predictors, yet many risk factors are important predictors of more than one disease. In addition, some factors also influence the severity and symptomatology of a disease—for example, smoking may be related both to the etiology of asthma as well as to its exacerbations. Finally, many protective factors (e.g., quitting smoking and performing regular physical activity) positively influence overall health beyond simply reducing risk of specific chronic diseases. Therefore, we focus here on a few risk and protective factors that influence several chronic diseases.

Nutrition. (For more information, refer to the chapter on The Nutritional Status and Needs of Women of Reproductive Age.) A woman’s diet, both its components and its total calories, can have a large impact on her risk for chronic conditions as well as on the severity and consequences of those conditions. For example, the risk of diabetes mellitus is strongly associated with obesity,16 which is, of course, directly influenced by a woman’s food intake. Furthermore, a diabetic who has a poorly managed diet may experience more episodes of hyperglycemia and consequently may suffer more organ system damage (e.g., retinopathy, neuropathy, or kidney damage).17,18 In terms of overall health, women who obtain the necessary nutrients from their diet may feel more energetic and healthier, regardless of any chronic conditions they may have. Yet, in 1995, only 23.2 percent of persons aged 18 to 24 years in the U.S. ate five or more servings of fruits and vegetables (fruit, fruit juice, green salad, and cooked vegetables) the day preceding the survey.19 According to the 1995 Behavioral Risk Factor Surveillance System (BRFSS), the percentage of women who reported being overweight ranges by state from 19.5 percent to 33.4 percent.19

Smoking. (For more information, refer to the chapter on Effects of Smoking on Women’s and Perinatal Health). Smoking is a significant contributor to poor health among women of reproductive age. In 1995, 22.6 percent of women aged 18 years and over claimed they were current cigarette smokers.20 For women with asthma, exposure to smoke may have played a role in the etiology of the condition21,22 and may both trigger acute attacks as well as affect the chronic severity of the condition.21 Quitting smoking may improve a woman’s overall health regardless of chronic disease status.

Physical Activity. (For more information, refer to the chapter on Women’s Physical Activity in Leisure, Occupational and Daily Living Activities). Physical activity may influence chronic disease both by reducing risk of obesity as well as by improving lung and heart function. For example, by reducing obesity,23 physical activity can protect women from developing diabetes mellitus and hypertension. Regardless of body weight, physical activity reduces the risk of hypertension.24,25 For women with asthma, physical activity may improve their condition and lead to improved function and reduced medication needs.26 Both diabetes27,28 and hypertension29 can be controlled to some degree with physical activity; blood pressure can be lowered and blood sugar better controlled and medication dosages for both may be reduced. Physical activity is often cited as a major contributor to women’s general feelings of physical and psychological wellness. It may help women manage stress and increase their feelings of control over their environment. In 1994, the median percentage of female adults who reported no leisure-time physical activity (i.e., no exercise, recreation, or physical activities other than regular job duties during the previous month) was 30.6 percent.19 In 1995, 33 percent of female college students had participated in vigorous physical activity (activities that made them sweat or breathe hard for at least 20
minutes on 3 or more of the 7 days preceding the survey).\textsuperscript{19} Nationwide, 19.5 percent of
college students had participated in moderate physical activity (walked or bicycled for at
least 30 minutes on 5 or more of the 7 days preceding the survey).\textsuperscript{19}

**Stress.** There is as yet little evidence that stress affects the risk of acquiring a chronic dis-
ease but it may influence the health of women with chronic conditions. For women with
chronic conditions, stress may interfere with their ability to care for themselves and per-
form their usual roles at work and home. And the condition itself may increase levels of
stress. Stress is potentially related to increased risk of acute conditions, such as infections,\textsuperscript{30}
which affect a woman’s overall health and may exacerbate her chronic condition.

**Pregnancy.** (For more information, refer to the chapter on Issues in Pregnancy Care.)
Women who experience pregnancy-induced hypertension have an increased risk of
becoming hypertensive later in life.\textsuperscript{31} Women with gestational diabetes are more likely to
be diagnosed later with diabetes mellitus.\textsuperscript{32} It is unclear whether the association between
these pregnancy complications and later manifestations of chronic disorders are linked to
a common precursor or whether there is a direct causal link between them. If the rela-
tionship is causal, then preventing these complications during pregnancy may stop the
chronic diseases from developing later. However, it seems more likely that there is a com-
mon precursor involved. Regardless of the causes, the appearance of hypertension or dia-
betes during pregnancy has implications for care for the woman postpartum.

**Intervention: Prevention, Early Detection, And Treatment**

**Prevention.** Interventions that increase the prevalence of protective behaviors, such as
proper nutrition and exercise, as well as those that seek to reduce negative factors, such
as smoking and stress, are important steps towards reducing the incidence and sequelae
of chronic conditions and, thereby, improving women’s overall health. Many protective
behaviors—like getting adequate exercise or planning and preparing healthy foods—
require significant time and energy to accomplish. But given the multiplicity of roles
women assume at work and home and the many conflicting demands they face, many
women find it difficult to care for their own health and well-being.

**Early Detection and Treatment.** Access to and appropriate use of high quality medical care
is essential in coping with chronic disorders. Although many chronic diseases, including
asthma, hypertension and diabetes, can be fatal, the adverse consequences of most chron-
ic diseases can be averted, when detected early and effectively managed. For example,
most organ damage that occurs with diabetes and hypertension can be avoided by con-
trolling blood sugar and blood pressure levels.\textsuperscript{33,34} Appropriate management of chronic dis-
esees prevents costly emergency department visits and repeat hospitalizations.

As chronic diseases can be difficult to address effectively during pregnancy, high
quality preconception care of women with chronic diseases is critical to ensuring good
pregnancy outcomes. Many chronic conditions can be identified and managed prior to
conception, resulting in improved pregnancy outcomes. Given the higher rates of chronic
disease among poor and minority women, current strategies need to be broadened to
emphasize the importance of a woman’s health prior to conception in order to close the
gap in pregnancy outcomes for these groups.
There are two major opportunities for interaction between a woman and the health care system prior to conception for identification and management of chronic medical conditions: during the provision of well-woman care and during the provision of family planning services. The provision of well-woman care and family planning services represent opportunities for the identification and management of chronic medical conditions prior to pregnancy. Tight glycemic control of a diabetic woman prior to conception and in early pregnancy will reduce the risk of associated congenital malformations. Hypertension and thyroid medications may need to be adjusted to reduce the risk of fetal malformations. Well-woman care and family planning services are “teachable moments” for women with chronic health conditions, which must be capitalized upon by providers. They also represent ideal opportunities to institute routine screening for chronic conditions (e.g., diabetes, hypertension, and asthma).

Appropriate management of a woman with chronic disease during pregnancy can improve the mother’s health and could reduce her risk of an adverse pregnancy outcome. As with preconception care, appropriate management of the disease during pregnancy may prevent costly hospitalizations. Haas and colleagues recently reported that women were four times more likely to be hospitalized before giving birth if they had a history of chronic hypertension and two times more likely if they had a history of diabetes mellitus. However, detection and treatment of chronic illnesses can be difficult because early phases of chronic diseases may not be apparent, and many women, particularly poor and minority women, have little contact with the health care system prior to pregnancy. Among low-income persons, only half of Blacks had seen a physician in the past year as compared with two-thirds of Whites. Even among moderate- to upper-income Americans, Blacks are more than twice as likely as Whites to be uninsured (14 percent vs. 5 percent) and they average fewer physician visits per year (2 vs. 3). Therefore, prenatal care services must include screening for chronic conditions in addition to providing treatment to women already diagnosed. Prenatal care is the first health care for some woman since childhood. Few chronic conditions are purposely screened for during the provision of routine prenatal care services. Screening for additional disorders may simply entail taking a detailed history of signs and symptoms, not necessarily a laboratory test.

Providers should realize that even women with access to high quality care may still have difficulty managing their chronic diseases because they may feel unable to sacrifice the necessary time or money, particularly if they are caring for others. Complex therapeutic regimens may be difficult for a mother to adhere to, necessitating alternative plans for improving adherence. Alternatives to hospitalization may be necessary for women with young children.

Policy Concerns

Coordination and longitudinality of medical care are key issues for all women (for further information, refer to the chapter on Health Care Services and Systems for Women of Reproductive Age), and especially for women with chronic diseases. Such women often see multiple health care providers: an obstetrician/gynecologist or nurse-midwife for reproductive health care, a specialty physician to treat a chronic disease, and an internist, family practitioner, or nurse clinician for general health care. Multiple providers need to coordinate the care of the woman so that her needs are fully met. Each must be aware of the
specific care that the others have provided and of the patient’s outcomes. Providers should not assume that patients are “coordinating” their own care. Alternatively, women with chronic disease who rely on only one provider to have their health needs met also confront problems. The provider may be limited in his or her ability to address all aspects of treatment. For example, an obstetrician/gynecologist or nurse-midwife may not be knowledgeable about the standards of care for asthma. Even a perinatal specialist cannot be expected to be an expert on all chronic medical conditions. Patients with a severe chronic disease may rely on their medical specialist for gynecologic care even though the provider has not formally trained in this area.

Prenatal care represents a critical teaching opportunity for a woman with a chronic condition. Women often become more health conscious during pregnancy, making them more receptive to health education messages regarding self-care for their disease—for example, for women with asthma, quitting smoking, taking their medicines, and avoiding known asthma triggers. Prenatal care may introduce a woman to another health care professional who can provide ongoing care for the chronic condition beyond the pregnancy. Women who experience adverse pregnancy outcomes may be particularly at high-risk for developing a chronic condition or exacerbating an existing chronic condition and should be targeted for follow-up. In a study following women who delivered preterm, low birth weight infants, Haas and McCormick reported that 29.7 percent of the mothers had been hospitalized for a non-pregnancy-related condition (usually a chronic disease) by the fifth year of follow-up. Prenatal care should not become a missed opportunity for connecting to the ongoing care needed by women with chronic diseases.

Effective regionalization of perinatal care is critical for women with chronic medical conditions. Regionalization must include ongoing risk assessment with appropriate referral to the necessary level of services. Although guidelines for referral of patients to tertiary care centers for antenatal care typically include selected chronic diseases, unless risk assessment is ongoing, patients will not be referred. Furthermore, a referral will not achieve improved outcomes if the needed care is not available or accessible to the patient. All components of the regionalized system must be in place if women with chronic diseases are to receive the appropriate antenatal and intrapartum care. The system must also address the economic and other disincentives for referring mothers to specialty care, particularly in the managed care environment. Current strategies for improving pregnancy outcomes among women with chronic conditions need to be broadened to include an emphasis on a woman’s health prior to childbearing. Because decisions to bear children are often not explicit and as the mean age of first birth has been steadily increasing, narrowly targeting only women who are already pregnant is not sufficient.

Research Implications

The current knowledge base lacks information to determine whether there are gender differences in the effects of therapeutic regimens for chronic diseases, in part since

---

†The regionalization of perinatal care refers to the development, within a geographic area, of a coordinated, cooperative system of perinatal health care to all pregnant women and newborns, to promote maximal utilization of perinatal personnel and facilities, and to assure reasonable cost effectiveness.
women were routinely excluded from clinical trials of new therapies in the past. Even less is known about how effects may differ at various points in a woman’s menstrual cycle. More research must be done in this area.

Chronic disease has been ignored by researchers as a predictor of pregnancy outcome not because there is doubt that it influences risk. Rather, the inherent difficulties of studying chronic disease in the context of pregnancy have prevented researchers from focusing on it as a risk factor. Because chronic diseases occur relatively infrequently, only very large studies can hope to have sufficient numbers to study the effects of any one specific disease. As a result, much of the research in this area has been limited to small case series in which women with one particular disease are followed closely during their pregnancy (e.g., asthma, diabetes, hypertension, and renal disease). Little information is usually collected on other variables, such as health behaviors or acute complications of pregnancy, that may modify the effect of chronic diseases. But without knowledge of these other factors, it is impossible to understand fully how chronic diseases influence pregnancy outcomes.

In addition, most studies of chronic conditions in pregnancy have limited generalizability. In nearly all studies, women have been enrolled under the care of physicians who have specialty training in either a particular chronic disease or in high-risk obstetrics. The pregnancy outcomes of these women may bear little resemblance to those of women with the same chronic diseases who receive standard medical care or no medical care at all.
References


42. Fitzsimons R, Greenberger PA, Patterson R, 1986. Outcome of pregnancy in women requiring corticosteroids for severe asthma. Journal of Allergy and Clinical Immunology 78: 349-353.
Depression in Women

Marjory Ruderman and Patricia O’Campo

“(W)e are often ... diagnosing a situation rather than a person when we diagnose a woman as depressed.” Elizabeth Howell

Policymakers, professionals, and the public have begun paying more attention to depression and depressive symptoms in women, in large part because women have depression rates twice that of men. While depression is not the only mental health problem that affects women more often than men, it is significant due to its relatively high prevalence, its recurrent nature, and its effect on functioning. Estimates of prevalence among women range from 6 percent for one-month risk of a major depressive episode to 11 percent for depressed mood, and up to 15 percent for postpartum depression. The lifetime risk of major depression among women is as high as 21 percent. At least half of those who experience a single episode of depression will experience another, and the likelihood of recurrence rises with each subsequent episode. Depression can severely impair both social and occupational functioning and is associated with increased physical illness. Moreover, the death rate from suicide is as high as 15 percent among the severely depressed.

The great social and economic repercussions of depression should lend urgency to the need for public policy to address its prevention and treatment. The price associated with depression and related affective disorders includes both the direct costs of treatment and the indirect costs of lost productivity due to impaired functioning or premature death—totaling as much as $30.4 billion in 1990. And since about two-thirds of cases of depression go untreated, another $6 to $10 billion would be added annually to the direct costs if all of the estimated 25 million people with affective disorders received treatment, although the indirect costs associated with untreated depression would go down.

†The “affective disorders” include both depressive, or “unipolar,” disorders and “bipolar” disorders, which are diagnosed when at least one episode of mania has occurred, usually in conjunction with depressive symptoms. Estimates from the Epidemiologic Catchment Area Study indicate that in 1985 10 million people in the U.S. suffered from depression, 10 million from mania, and 5 million from dysthymia.
The public health significance of depression in women lies also in its hypothesized causes—most importantly, the constraints of traditional female sex roles and the clash of women's roles at home and at work. A variety of other risk factors for depression that are related to the social conditions of women warrant the attention of mental health practitioners and policymakers alike: poverty, low education, unemployment, minority ethnic or racial group membership, substance abuse, history of sexual or other physical abuse, and lesbianism are all associated with depression in women.3,11-15

A number of biological factors, which may occur singly or in combination with psychosocial factors, complicate the understanding of depression's etiology. Research has pointed to the influence of genetics, neurotransmitter activity, and, in women specifically, hormonal fluctuations on the risk for depression. This chapter examines both psychosocial and biological risk factors as they relate specifically to women, followed by a discussion of treatment issues and an examination of the wider public policy context affecting both treatment and prevention.

Problems of Methodology and Research

The now widely accepted understanding that women have twice the rate of depression as men has, in the past, been questioned on methodological grounds—that is, that it might be explained by health-related characteristics associated with women, such as greater help-seeking behavior and greater expression of emotional distress.16,17 However, the consistency of the disparity in non-patient, community-based populations confirms that the higher rate of depression among women is not artifactual.16-20 The more salient methodological issues are related to case definition and the exclusion of women from research studies on depression.

**Case Definition.** Depending on its context, depression is variously defined as a mood, a symptom, or a syndrome.17,19,20 Indeed, depression is an illness of various manifestations, and is not simply “a continuum from the ‘blues’ to major depression.”13 Accordingly, many different means of measuring depression exist, including both criteria of depressive syndromes such as in the *Diagnostic and Statistical Manual of Mental Disorders*, now in its fourth edition (DSM-IV),3 and cut-off points on scales of depressive symptoms such as the Beck Depression Inventory and the Center for Epidemiologic Studies Depression Scale (CES-D).19 The use of symptom inventories is complicated by researchers’ occasional disregard of pre-defined ranges or cut-offs for clinical depression. Moreover, estimates of prevalence based on scales tend to be far higher than those based on the DSM-IV or other diagnostic criteria,19 with the CES-D cut-off point yielding false positive rates of 15 to 20 percent.21

---

1There is some debate as to whether major depressive disorders and subclinical depressive symptoms are clinically distinct or simply different levels of severity of the same disorder.17,20
The DSM-IV diagnostic criteria for what is termed a “major depressive episode” require at least five of the following symptoms during a two-week period (at least one of the first two symptoms must be present for the diagnosis): (1) depressed mood nearly all of the time; (2) loss of interest or pleasure in most activities; (3) change in appetite or unintentional weight loss or gain; (4) change in sleep patterns; (5) change in psychomotor behavior (6) lethargy or fatigue; (7) feelings of guilt or worthlessness; (8) difficulty concentrating or making decisions; and (9) “recurrent thoughts of death” or suicidal ideation.\(^5\) One or more of such episodes constitute a “major depressive disorder.”

Closely related to major depressive disorder is “dysthymic disorder,” characterized by a depressed mood nearly all of the time over the course of at least two years. The difference between the two disorders lies in “severity, chronicity, and persistence,” according to the DSM-IV;\(^5\) dysthymic disorder is chronic, rather than episodic, and its symptoms tend to be less severe than those of major depression. Some ten percent of persons suffering from dysthymia may develop major depressive disorder each year.\(^5\) Subclinical depressive symptoms that do not meet the diagnostic criteria for major depression or dysthymia nevertheless impede normal functioning, interfere with relationships, and reduce work productivity, perhaps even more significantly than does major depression due to their high prevalence.\(^22-24\)

*Exclusion of Women from Research.* Despite the higher rate of depression among women, the bulk of research on treatments for depression has been done without regard for gender. The state of research on women’s depression reflects the paucity of research on women’s health in general. Historically, fewer resources have gone to research on women’s health problems, even though women have higher rates of morbidity and account for the majority of spending on health care in the United States.\(^3\)

Although women account for nearly three-quarters of prescriptions for drugs used to treat mental illness, and despite the known gender differences in physiology that influence drug metabolism, knowledge is limited about gender differences in the effects of these drugs.\(^3,25,26\) Only in 1993 did the U.S. Food and Drug Administration issue guidelines calling for greater representation of women in clinical trials. Women of reproductive age, both pregnant and not, have generally been excluded from early clinical trials of antidepressants due to potential negative effects on fetuses. Allowing women entry only in the late phases of research may not allow long-term effects of these drugs to emerge.\(^29\)

Research on depression in general has not fully reflected either the disproportionate numbers of women afflicted or the known gender differences in risk factors, age of onset, and symptoms.\(^29\) Although adequate numbers of women have been included more often in studies of depression than in studies of other major diseases, researchers continue to generalize inappropriately from one gender to another, to combine data for men and women without subanalysis, and to leave gender of subjects unspecified.\(^29\) Most strikingly, even though about 75 percent of depression studies published in major psychological and psychiatric journals do test gender differences, only about 5 percent include gender differences in the hypothesis stage of the research; accordingly, the design of many such studies impedes the statistical ability to detect gender differences.\(^29\)
Biological Factors

Both family aggregation and twin studies have found some evidence of a genetic component to depression, with a 1.5 to 3 times greater risk of clinical depression in close relatives of those with major depressive disorder. Genetic factors appear to have a largely direct effect on risk of depression, but may also affect risk indirectly by influencing the risk of lifetime trauma and recent stressful life events, in a sense “predisposing individuals to ‘create’ high-risk environments,” according to Kendler. Studies examining links between depression and specific female genetic components have had conflicting results.

Other physiological factors implicated in the etiology of depression include abnormalities in the activity of neurotransmitters, particularly norepinephrine and serotonin; malfunctions or fluctuations in the endocrine system, such as impaired neurological control of cortisol secretion, decreased thyroid-stimulating hormone and growth hormone, and changes in female sex hormones associated with reproductive events; and altered brain activity during sleep. Recent research showing a lower rate of serotonin synthesis and lower functioning serotonin receptors and transporters in women compared to men suggests that serotonin may be a factor in women’s greater susceptibility to depression.

Endocrinological Explanations. Endocrinological explanations for the apparent susceptibility of women to depression have received favor due to the perceived preponderance of depressive episodes around reproductive events and the increase in rates for women after puberty. Before puberty, in fact, there is no gender disparity in rates of major depressive disorder (and some studies have even shown preadolescent boys to be at higher risk than girls of both subclinical and clinical depression). While there is evidence of an increased risk of depression during pregnancy and the postpartum period, there is little evidence for an increased risk premenstrually, post-menopausally, or during oral contraceptive use.

More recently, even the increased risk during the postpartum period has been called into question, with some evidence that rates of depression after pregnancy are similar to or even lower than those prenatally. Although over half of the cases of postpartum depression are without pre-pregnancy history, both prior depression and a family history of depression are associated with increased risk of postpartum depression, suggesting that, while hormonal changes during the postpartum period may contribute to depression, they are not in many cases the primary cause. However, pregnancy and childbirth may be triggers for depression in women who are already vulnerable.

Prenatal and Postpartum Depression. Because the risk of depression is particularly high during women’s reproductive years, the effects of depression on pregnancy and childbirth (and vice versa) are an important concern. The measurement of depressive symptoms during pregnancy is complicated by an overlap with the symptoms of pregnancy (e.g., fatigue), leading to inflated scores on screening instruments. Using a scale and scoring system unadjusted for use during pregnancy, the proportion of pregnant women receiving CES-D scores indicative of clinical depression is as high as 50 percent. Clinical

1However, both puberty and reproductive events may entail changes in psychosocial conditions that confound the relationship between these biological events and depression.
depression may actually affect about 10 percent of pregnant women, but the prevalence of depressive symptoms is likely higher. The risk factors for prenatal depression are similar to those for postpartum depression and include personal or family history of depression, marital problems, unwanted pregnancy, young maternal age, high levels of stress, and insufficient social support.

Depression during pregnancy is associated with adverse health behaviors, including smoking, use of alcohol or illicit substances, poor weight gain, poor sleep, and inadequate prenatal care. Moreover, many of the sociodemographic risk factors for depression, such as low income and not being married, are also risk factors for low birth weight and preterm birth, giving rise to concern about a possible link between depressive symptoms and poor pregnancy outcomes. There is evidence of an increased risk of low birth weight, preterm, and small-for-gestational-age infants among adult women with high levels of depressive symptoms, although this relationship may not hold for adolescents and for White women. The behavioral risk factors noted above may account for the increased risk of poor pregnancy outcome with prenatal depression, but a direct mechanism is also possible; depression may affect fetal growth or the timing of labor through its effects on the production of maternal hormones, which in turn affect placental or uterine functioning. Prenatal depression has also been linked to neonatal neurobehavioral functioning, with CES-D scores during pregnancy predicting unconsolability and excessive crying in the neonate.

Postpartum depression is distinguished from the “maternity blues,” which is a short-lived phenomenon occurring just after delivery. Some 20 percent of those suffering from the maternity blues go on to develop symptoms of postpartum depression. Both physiological and psychosocial factors have been implicated in the etiology of postpartum depression. Postpartum depression increases with time since last pregnancy, difficulty and complications of labor and delivery, and possibly maternal age; all of these factors could plausibly operate through either physiological or psychological mechanisms. Marital problems and problems related to the care of a demanding infant are also associated with postpartum depression. Limited evidence points to specific biochemical correlates of postpartum depression, including reduced free serum tryptophan, which directly affects the synthesis of serotonin, and reduced serum estriol.

The severity of postpartum depression is related to maternal health, infant health, and frequency of other life stressors. Not surprisingly, women who have help from a partner and/or extended family experience fewer emotional problems after delivery. Social support may influence postpartum depression through its effect on perceived self-efficacy as a parent. Cutrona and Troutman found that women with greater social support rated themselves higher on parenting efficacy and experienced less depression at three months postpartum. The authors hypothesize two mechanisms by which perceived self-efficacy might affect depression. Women with feelings of low self-efficacy may behave differently—not trying as hard to calm the infant, for example—and so receive little reinforcement from the infant. In a sort of self-fulfilling prophecy, this lack of reinforcement feeds back into low self-efficacy and leads to depression. Alternatively, low self-efficacy leads to self-blame; even when maternal behavior is not affected by low self-efficacy, an inability to please a difficult infant is attributed to some failure on the part of the mother. Infant temperament was, in fact, found to be related to maternal depression both directly and indirectly through parent’s subjective feelings of efficacy.
Psychosocial Factors

The importance of the role of psychosocial factors in women’s depression is underscored by the wide range of sociodemographic risk factors. Many of the factors associated with depression in women—poverty, minority ethnic or racial group membership, and lesbianism among them—speak to the mental health effects of social marginalization. In addition, a great deal of attention has been paid to the contribution of sex role expectations and role conflicts, cross-cutting issues that affect all women.

Sex Roles. Some authors have noted that the social basis of depression is evident in its very definition:16,19,43 “the term ‘depression,’ as it is clinically defined, describes a state which is ‘normal’ for women as their social role has been defined,” according to Leonard.44 Negative self-image and dependence, for instance, are found both on some depression inventories and in characterizations of the traditional or stereotypical female role.16,19 Most of the symptoms on depression scales do not correspond to sex role stereotypes,19 but clinical judgments may still be biased by the norms of gendered behavior.43 Indeed, Broverman and colleagues45 found that “clinicians have different concepts of (psychological) health for men and women and . . . these differences parallel the sex role stereotypes prevalent in our society.”45

Sex role stereotypes may also contribute to depression by fostering passivity and “learned helplessness.”17,19,46 Women are socialized to internalize rather than express negative emotions; when they are under stress, this passivity can lead to depression. The learned helplessness hypothesis holds that, through repeated lack of reinforcement, women come to view their actions as ineffectual and unrelated to others’ responses, leading to depression. Nolen-Hoeksema33 notes that the learned helplessness theory is supported by the greater prevalence of depression among disenfranchised groups.

Passivity and learned helplessness may also mediate the relationship between gender discrimination and depression. In this view, women’s opportunities are proscribed by sex role expectations, and women’s traditional roles are devalued; the consequent anger over thwarted goals is turned inward, leading to helplessness, low self-esteem, and, finally, depression.17,19,46,47 There is empirical support for an association between the stereotypical feminine sex role and both low self-esteem and depressive symptomatology.48-50

The absence of attributes associated with the masculine sex role may contribute as well to depression in women.13,47 Exerting command over one’s environment, or “instrumentality”—one component of the traditionally masculine sex role—has been associated with self-esteem and may provide a healthy means of contending with stressful conditions.47-50 By contrast, women’s typically more “ruminative” response to negative events may serve to perpetuate a depressed mood.1,13,35,47

Marriage, Work, and Family. Although some authors have noted a negative effect of marriage on women’s mental health, particularly marriage to an unsupportive husband, in

1Nolen-Hoeksema argues further that the incidence of depression may actually be the same for men and women, but that women’s reaction to the depression results in longer, more severe illness, creating a gender disparity in prevalence of depression. However, data from the National Comorbidity Survey indicate that women and men with histories of depression have similar one-year rates of chronic depression and acute depressive episodes, suggesting that a higher risk of first onset among women is primarily responsible for the gender disparity in depression rates.
general marriage is thought to have a protective effect. Separation, divorce, and widowhood are all associated with depression, although the direction of causality in cases of separation and divorce is unclear. The relationship between widowhood and depression is weaker among African Americans, perhaps because they are more likely than White widows to live with family members.

Paid employment can reduce not only the risk of depression but possibly the negative effect of depression on daily functioning as well. However, women in traditionally male-dominated professions, such as medicine and science, may actually have higher rates of depression and suicide, perhaps due to their lower status (in relation to men) at work. Unemployment is also associated with an increased risk for depression, although, again, the direction of causality is not clear.

Over the last twenty years, family demographics have shifted such that the majority of married women are now employed outside the home. In general, however, women remain charged with the bulk of the household responsibilities, employment notwithstanding. Women are thus faced with conflicting roles, a dual burden of paid and unpaid work. For women who experience problems with child care or household responsibilities, paid employment may actually increase susceptibility to depression. Schwartzberg found evidence that a lack of help with family tasks increases the risk of depression in women, although conflict between job and family roles did not show an effect independent of family stress and job stress separately.

The burden of household work is increased by the presence of children. The degree of parental responsibility, related either to the number and age of children or to access to supplementary child care, has been associated with depression in many, though not all, studies. Adolescent mothers, who are more likely than older mothers to be poor and unmarried, are at high risk for depressive symptoms. Responsibility for the care of family members other than children, such as the elderly and mentally or physically impaired, may also increase the risk of depression. Depression, in turn, has a negative effect on parenting and child development. In a sample of inner-city mothers with multiple sociodemographic risk factors, 40 percent experienced high levels of depressive symptoms and nearly 20 percent had levels suggestive of major depressive disorder. Given the high levels of risk factors in the sample, sociodemographic characteristics were not adequate for predicting which mothers were experiencing depression. However, several simple indicators proved useful for predicting high levels of depressive symptoms: self-reported financial and health status (rated as poor, fair, or good on a five-point scale), self-reported limitation of activities due to illness, and negative response to a global question about their happiness.

Recent research examines the quality of women's experiences, rather than just the presence or absence of a role. Control over one's environment, and particularly an ability to negotiate conflicting roles, may be more important for a woman's mental health than the number of roles she performs. Control over work activities in particular may be important for a sense of well-being, possibly by contributing to a sense of mastery over life in general. Job control may be particularly important for women with children; the number of children in the home is associated with distress only among women with little job control. Control over one's job either has a buffering effect on distress resulting from
parenting responsibilities or simply reflects a woman’s ability to tailor her work conditions to facilitate her family responsibilities. Women’s jobs, however, tend to involve lower levels of control and complexity of work than do men’s.

Culture and Ethnicity. Role conflicts and the effects of discrimination may be particularly salient for women of color, who are in effect “double minorities.” Certainly, the potential psychological effects of discrimination, such as feelings of helplessness and low self-confidence, can lead to depression. African-American women are in fact more likely than White women to receive treatment (both psychotherapy and medication) for depression, although it remains unclear whether this disparity is related to real differences in mental health status. The prevalence of clinically diagnosable affective disorders is actually lower among African-American women aged 30 to 64 than among White women of the same age, with no difference by race in the younger and older age brackets, and other studies have found a markedly lower life-time prevalence of depression among African-American women. However, there is some support for a higher prevalence of depressive symptoms among African-American women than among White women, suggesting that African Americans may experience higher rates of subclinical depression.

Members of immigrant communities may hold marginal status in both their native and adopted cultures. The highest severity of depression may be experienced by those falling toward the middle, as opposed to the extremes, of the spectrum of acculturation, since they may be in essence caught between two cultures. The tasks of assimilation—learning to negotiate a foreign tongue and a foreign culture—may be a significant source of stress and are strongly related to levels of depressive symptoms. A wholly different kind of role conflict comes of trying to integrate traditional ways of life, including culturally-specific sex roles, into the shape of American life. The consequences are familiar, however: the responsibility to live up to antithetical expectations is a significant source of stress, contributing to depression. It is important, of course, not to attribute to cultural conflicts what may be due to other sociodemographic factors; many of the sociodemographic risk factors for depression are more prevalent among ethnic minority groups than among the majority population.

Among Hispanic women in the United States, for example, rates of poverty, low education, and single parenthood are higher than among non-Hispanic whites. Depression is in fact far more common among Hispanic women than among White or African-American women, with the highest 30-day prevalence among Hispanic women aged 45 to 64. The highest prevalence of depression among Hispanic women occurs among Puerto Ricans, followed by Mexican-Americans and finally Cubans. Although these groups are different in many ways, they have in common a tradition of female gender role expectations that include subservience and dependence and that may contribute to the onset of depression. These gender role expectations are shared by other ethnic minorities as well, including some Asian and Native American groups.

Ethnicity can also complicate the expression of depression. In many ethnic groups, depressive symptoms may be translated into physical terms. In Gazmararian, this difference was found only among women with the highest levels of income and education and among married women.
physical ailments are traditionally more acceptable than emotional ones, and, perhaps as a result, the use of mental health services by Asian Americans is lower than that by whites, even though the prevalence of depression is similar.\textsuperscript{61} Further complicating diagnosis for Asian-American women, some of the traits highly valued by Asian cultures, such as self-blame and shame, are defining characteristics of depression.\textsuperscript{61} 

**Age.** Regardless of either gender or ethnicity, rates of current depression are highest in the youngest age groups. Life-time prevalence estimates of depression are actually lowest among women over the age of 65; this finding could be due to greater difficulty among the elderly in recalling past episodes of depression or to a higher death rate among the depressed, but quite possibly also reflects a true effect of birth cohort.\textsuperscript{27,63} There is some evidence that the gender gap in rates of depression narrows after age 65, possibly because “gender differences in social roles diminish,” according to Brown.\textsuperscript{64} 

Prevalence rates may not convey the significance of the problem of depression in the elderly. Depression may go unnoticed in the elderly due to the presence of other health problems.\textsuperscript{7} Certain subpopulations of the elderly are at greater risk for depression; the rate of depression is almost seven times higher among residents of nursing homes than among those living at home.\textsuperscript{7} Although the poorer physical health of nursing home residents, as well as the possible psychological distress resulting from a loss of independence and home, likely contribute to depression, depression may itself be a factor in the health problems that lead to institutional care.

**Sexual Orientation.** Little data exist on depression among lesbians, although some research has pointed to a higher rate of attempted suicides among lesbians—particularly African-American and Hispanic lesbians—than among heterosexual women.\textsuperscript{13,65} Depression among lesbians can result from homophobia and the often legally sanctioned discrimination they may face in the work force and other arenas. In few cases do lesbians have access to the employment benefits that aid the well-being of heterosexual families, such as health insurance for partners, and in some cases job security can be threatened by disclosure of homosexuality. Lesbian women who choose to remain closeted may suffer detrimental effects on their mental health from the secrecy and compartmentalization of their lives, but those who do not hide their sexual orientation risk loss of friends, family, and even jobs. Lesbian mothers often also face the loss of children in custody battles.\textsuperscript{65} Nevertheless, lesbians who are “out” may have better mental health outcomes.\textsuperscript{13} 

**Violence.** Sexual or other physical abuse—experienced by up to one-third of all women before the age of 21—is associated with depression in women.\textsuperscript{13,66,67} Given the relatively high prevalence rates of violence toward women, this risk factor is likely to contribute to a large share of depressive symptoms and depression in women. At least 8 percent of all women will experience rape sometime during their lives,\textsuperscript{68} and up to 12 percent are battered by an intimate partner each year.\textsuperscript{69} A history of childhood sexual abuse is far more prevalent among depressed women than among healthy controls—25 percent versus 6 percent.\textsuperscript{18} 

**Social Stratification.** Although a number of studies have shown either no social class differences in rates of depression or higher rates among those in the upper classes,\textsuperscript{70} several studies with stronger methodological designs provide convincing evidence that poverty and low social class are risk factors for depression. Data from the Epidemiologic Catchment
Area Study established an inverse relationship between depression and several indicators of social class, including income, education, and occupation.\textsuperscript{73-74} The National Comorbidity Survey, using more up-to-date measures of depression and a nationally representative sample, provided further evidence of an association between low social class and depression.\textsuperscript{75} Data from a Canadian study supports a causal relationship between the stress of poverty and depression; the incidence of depression after the study began was higher among those in the lower socioeconomic strata.\textsuperscript{76}

Conversely, depression may also contribute to poverty; in the same study, prior depression was associated with a decrease in measures of socioeconomic status.\textsuperscript{76} Men and women with major depression are over two times as likely to receive public aid, perhaps due to the increased unemployment and decreased functioning that may result from depression.\textsuperscript{7}

Examining the direction of causality between social class and depression, Dohrenwend and colleagues\textsuperscript{77} concluded that “social causation,” or stressors related to low social class resulting in depression, is particularly significant for women. The work conditions of women in lower socioeconomic strata may account in part for their increased risk of depression; jobs providing a high level of control over work activities, which is protective against depression, are less common among those of low socioeconomic status.\textsuperscript{58}

### Multifactorial Etiology

Although sociodemographic characteristics associated with depression may point to the influence of environmental stressors on mental health, no one risk factor, or biochemical correlate for that matter, will sufficiently explain the origin of depression. Depression represents the singular manifestation of multiple disease processes:\textsuperscript{7,10,13} as Wetzel has suggested, “to search for a single cause for depression is as misguided as searching for a single cause for fever.”\textsuperscript{78} Too narrowly focusing on the biological roots of depression may mean that the psychosocial factors are ignored,\textsuperscript{7} just as ignoring its physical component will discount powerful possibilities for treatment. It is more likely that depression results from an interaction between biology and environment, with variable contributions of each.\textsuperscript{7,10,43}

### Treatment

**Case Identification and Diagnosis.** Depression must be recognized before it can be treated. Misdiagnosis of depressive disorders among women, however, may reach 50 percent.\textsuperscript{43} Some researchers have suggested that depression has been systematically under-diagnosed among African Americans (both men and women), with a concomitant over-diagnosis of schizophrenia.\textsuperscript{28} Diagnosis can also be influenced by the patient’s age, occupational status, sexual orientation, and even stage of the menstrual cycle.\textsuperscript{43} Moreover, medical comorbidity, the coincident occurrence of another disease, is common with depression and may make depression less likely to be recognized, either because of shared symptoms or because the depressive symptoms are attributed to a normal reaction to medical illness.\textsuperscript{11,14,43} General physicians, who treat the majority of cases of depression, are particularly poor at diagnosing it; about half of all cases of depression go undetected by primary care physicians.\textsuperscript{15,70,80} Primary care physicians are, however, twice as likely to recognize depression in women than in men.\textsuperscript{81}
Psychotherapy. Several types of psychotherapy have shown promise in treating women’s depression, in particular therapies focusing on problem-solving rather than on more meditative work.14 In light of the presumed importance of social context in the etiology of women’s depression, the psychotherapeutic approach must address those interpersonal and gender role conflicts that contribute to depressive symptoms.14 Three types of psychotherapy in particular show promise in helping women move from feelings of helplessness to the mastery that characterizes good mental health: interpersonal therapy, which focuses on positive relationship skills; cognitive-behavioral therapy, which emphasizes the use of cognitive tools and behavioral skills to redress negative thought patterns; and feminist therapy, which addresses the social conditions and power dynamics that shape women’s lives.15 These approaches may best help women to formulate more positive self-images, to counter the effects of gender discrimination, and to negotiate conflicting roles and responsibilities. Hurst and Genest17 suggest that an amalgamation of the cognitive-behavioral and feminist approaches may provide the most appropriate therapy for women’s depression. The traditional cognitive-behavioral method emphasizes adjusting the client’s responses to and interpretations of events. An understanding of the social conditions impacting women’s mental health calls for a recognition that women’s negative interpretations of events may indeed be valid reflections of reality, rather than merely a result of maladaptive “attributional style.”10

Pharmacological Treatment. Pharmacologic treatment results in some improvement in well over half of the cases of depression.79 However, care must be taken that medications do not preclude psychotherapy when it is indicated; the use of antidepressant medication in conjunction with psychotherapy may be more effective than either treatment alone, although the little data on this topic are inconclusive.15 The use of antidepressant medication alone may even worsen depressogenic feelings of helplessness.82

The number of antidepressant prescriptions filled rose by 75 percent from 1990 to 1994, in large part due to an increase in the use of selective serotonin reuptake inhibitors (SSRIs) like fluoxetine (Prozac).15 Before the introduction of SSRIs, inappropriate pharmacologic treatments for depression—minor tranquilizers or antidepressants in inadequate dosages—were commonly prescribed. It remains to be seen whether greater use of SSRIs will diminish the use of inappropriate medications or dosages.1,15

As pharmacologic treatment of depression becomes more commonplace, increased attention must be paid to gender differences in the metabolism and efficacy of antidepressants. A variety of known physiologic differences between men and women may affect the bioavailability of medications, and what little is currently known about gender differences in the effects of antidepressants suggests that some drugs are less efficacious and have more side effects in women than in men.14,15,81 Nevertheless, about 70 percent of antidepressant prescriptions are written for women.15 In fact, there is some evidence that physicians are more likely to prescribe medications for women than for men reporting the

—

†There is some concern that the advent of SSRIs may in fact contribute to inappropriate treatment, through pharmacologic intervention in cases of normal physiological symptoms such as those that occur premenstrually. Prior, Gill, and Vigna suggest that trials of fluoxetine for premenstrual mood fluctuations aim to treat symptoms that are only disordered in a culture which pathologizes women’s physiology, providing “further evidence that science thinks it must rescue women from their bodies.”86
same levels of emotional distress, although other studies have found no gender differences in the likelihood of treatment with antidepressants. In general, gender differences have not informed mental health treatment models, and most clinical protocols for treating depression are not gender-specific. Agencies promulgating clinical guidelines, such as the American Psychiatric Association and the Agency for Health Care Policy and Research, should explore the potential utility of developing gender-specific protocols for depression treatment.

Methodological and ethical constraints on the study of antidepressant use during pregnancy and lactation have limited the data available on the effect of pregnancy on dose requirements and the developmental and long-term effects of exposure to antidepressants in utero and via breast milk. Recent research suggests that in utero exposure to fluoxetine during the third trimester is associated with somewhat poorer neonatal condition, but further research is needed to elucidate the long-term developmental effects of this drug. In light of the preponderance of depression among women of reproductive age, much remains to be learned about the effects on maternal well-being and relationship with the infant of both continuing and discontinuing antidepressant use.

Ethnicity and Culture. Treatment of depression must reflect factors related to ethnicity, such as stress due to discrimination and acculturation and ethnic differences in the typical process of individuation. For therapists, cognizance of how both race and class affect interactions with the client is important. Knowledge about cultural differences in attitudes toward psychotropic medications, albeit limited, must also inform treatment choices. Finally, focusing only on the cultural deprivation that results from oppression paints only half the picture and may even perpetuate stereotypes; further knowledge about the protective factors and resilience of ethnic minority groups is necessary to fully understand the relationship between minority group membership and mental health.

Issues for Policy, Practice and Research

Social Policies. The preponderance of social risk factors for depression suggests an important role for public policy in addressing this major mental health problem. Recent demographic changes that may increase the prevalence of depression make the need for appropriate policy initiatives even more pressing; as numbers of single parents rise, as more women work outside the home, as poverty and low-paying, no-benefit jobs increase, more women will be at risk for depression. Policies affecting the ability of women to provide for their families and handle multiple roles and responsibilities—including child support enforcement and workplace leave and insurance policies—will help determine how many vulnerable women will be affected by depression. Recent welfare reform may have a significant effect on women’s mental health; women living in poverty will be faced with increasing life stressors as their welfare benefits are cut off, and may thus become more vulnerable to depression. Conversely, women moving from welfare rolls to paid employment may experience improved mental health.

Prevention. Most incident cases of clinical depression are preceded by subclinical depressive symptoms, suggesting the opportunity for early intervention and prevention of some of the more disabling forms of illness. The rewards of prevention should greatly out weigh

---

1 Early intervention such as this is often termed “secondary prevention,” even though case finding may not technically be prevention, since the onset of illness has already occurred.
the costs of improved recognition and treatment of depression, not only for the individual, but also “in economic and vocational realms as manifested by reduction of absenteeism, decrease in alcoholism, increase in taxable earnings, increase in percentage of people working full-time, reduction of unemployment, and reduction of patients receiving workers’ compensation and SSI,” according to Klerman and Weissman.87 People with major depression are twice as likely as to have used medical outpatient and inpatient services, and up to 11 times as likely to have used psychiatric services, over the course of a year, because of both depressive episodes themselves and related physical health problems.7 Successful treatment of depression can be expected to reduce per capita health care expenditures by 20 percent, saving nearly $4 billion if all cases of depression were treated.5,19

The low rates of detection of depression by primary care providers should be cause for concern, not only because of the undue suffering of patients, but because the resulting morbidity associated with untreated mental illness may raise the costs of health care. Since rates of depression in women of reproductive age are high, and many women choose gynecologists as their primary providers of health care, this population of providers is a good target for increased training in diagnosing and treating depression.11 Pediatricians should also be recognized as allies in identifying cases of maternal depression,56,89 particularly in mothers of children under age two, when regular well-child visits are frequent. Assessing maternal depression need not be time consuming or disruptive; a few simple questions have proven useful in identifying women at risk for depression in the pediatric setting,56 and these questions can be incorporated into a discussion about the overall well-being of the family.

The policies of institutions that shape the climate of mental health research must make the prevention of mental disorders within the context of women’s lives a top priority. The National Institute of Mental Health’s (NIMH) current emphasis on prevention research90 is an important first step in reconceptualizing the focus of the mental health arena from treatment to prevention. NIMH’s prevention research agenda has been criticized, however, as emphasizing too heavily the biological substrata of mental illness to the neglect of psychosocial and systems-related factors.91 The result of this shift in thinking from environmental to individual causality may be an increase in attempts to alter neurological functioning, with less attention paid to social inequities impacting mental health.91 Further, Albee91 argues that examination of correlates and promoters of positive mental health outcomes has been discouraged in the wake of the current emphasis on disorder-oriented research, even though positive mental health states may decrease disorders of all sorts.

NIMH and the Institute of Medicine have, however, affirmed their commitments to both promoting research on protective mental health factors and placing mental health problems in the wider context of environment.90 Following through on this promise is particularly important given that, despite some knowledge about sociocultural risk factors, “the mechanisms through which contextual factors affect depression (chronic strain, poverty, victimization, and/or trauma) are not well understood,” as Glied suggests.11

---

5This estimate assumes a 70 percent success rate for treatment.
Although further research may be necessary to elucidate the preventable factors in the etiology of depression, enough is known about the correlates of women's depression to warrant a greater emphasis on primary prevention. Given the role of sex role socialization and low self-esteem in the etiology of depression, interventions aimed at alleviating the risk of depression before the onset of symptoms might involve building a healthy and resilient self-image in young girls, helping them to exert positive control over their environments and respond actively to their emotions.

On a broader level, changes in the larger social context are required if rates of depression are to improve. Efforts to alleviate the effects of poverty, gender and racial discrimination, conflicting work and family roles, and the myriad other social factors that contribute to depression should favorably impact both women's mental and physical health. In this sense, nearly any successful intervention that improves women's living conditions will reduce women's risk of depression. What would make any such intervention unique would be its recognition of the importance of women's mental health in its own right; in contrast, many initiatives aimed at improving women's living conditions have as goals either better reproductive health for women or better outcomes for their children.

Public Funding. The financing of mental health services may be the systems issue most significant to the prevention and treatment of depression. The annual medical costs of affective disorders may be as high as $19 billion. To whom these costs (and the costs of other mental illnesses) fall has been a source of wrangling for decades, worsening with the block granting of federal funding for community mental health centers in 1981. Kemp characterizes the public funding of mental health services as “a continuing cycle in which each level of government and each government program has tried to minimize its expenditures by passing costs on to others.”

Medicaid coverage of mental health services varies by state, but reimbursements for psychiatric care are consistently low. As a result, Medicaid beneficiaries are restricted in their access to private providers, many of whom refuse to accept Medicaid reimbursement. However, if trends in third-party payment for some medical services carry over to mental health services, the appeal of Medicaid patients may increase as private insurers’ reimbursements grow smaller. Currently, Medicare pays more for services than Medicaid, but its reimbursement rates are still lower than those of private insurance. Neither does Medicare pay for medications, increasingly the vanguard in the treatment of depression.

Managed Care. In 1996, 75 percent of privately insured employees and 40 percent of Medicaid recipients were enrolled in managed care plans. With the increasing use of managed care organizations, there is concern that women (and men) will be denied referrals for mental health services or will have those services inappropriately limited. Indeed, Wells and colleagues suggest there is some evidence that “pressures to reduce costs and increase caseloads lead to the use of minor tranquilizers as a substitute for visits” among some managed care physicians. Managed care organizations may also encourage pharmacologic interventions at the expense of psychotherapy for depression and other mental illnesses, raising the possibility of less than optimal treatment. Indeed, Huskamp, Azzzone, and Frank found that enrollees in managed care plans were more likely than indemnity plan enrollees to receive antidepressants.
Concerns about denial of services may be particularly salient for women insured by Medicaid, which is increasingly relying on managed care organizations to serve its clients. These women are least likely to be able to pay out-of-pocket for needed services if they are denied. Furthermore, barriers to accessing mental health services under managed care plans may be particularly difficult for women with mental illnesses to circumvent, because, as Wells and colleagues note, “depressed patients could also be less capable of dealing with bureaucratic hurdles than other patients.”

Difficulty obtaining services is not exclusive to managed care plans. Most fee-for-service plans have greater restrictions and higher co-payments for mental health services than for medical services, and many exclude coverage of mental disorders as preexisting conditions. Although the Mental Health Parity Act of 1996 prohibits insurance plans that offer mental health benefits from setting caps on those benefits lower than caps on medical benefits, the law does not bar plans from requiring higher co-payments for mental health services or from limiting the length or type of treatment. The Health Insurance Portability and Accountability Act of 1996 restricts the exclusion of preexisting conditions to the first 12 months after enrollment, including time enrolled in the previous plan for individuals who have had continuous coverage. However, for women who have not had continuous insurance coverage, a one-year break in treatment can have serious ramifications. Long-term maintenance treatment of depression is particularly important given that the risk of recurrence increases with each episode. Greater restrictions on mental versus medical therapies may be particularly burdensome for pregnant and lactating women, for whom pharmacologic treatments may be contraindicated. Limitations on treatments for depression can be expected to profoundly affect outcomes, given that long-term therapy may be necessary due to high rates of relapse and recurrence. Parity in coverage does not necessarily entail an increase in cost, and may even be cost-effective. After implementing a screening and treatment program for depression among high users of general health services, one managed care organization cut total health care costs for its depressed patients by 50 percent.

In behavioral health care “carve-outs,” mental health and substance abuse benefits are separated administratively and financially from general health benefits through contracts between either health plans or employers and independent providers of mental health services. This arrangement is meant to remove financial risk and to reduce the problem of competition among health plans to avoid high users of mental health services. Carve-outs may pose a threat to the integration of mental and medical health care delivery and hamper attempts to coordinate enrollees’ care through the primary care provider. Alternatively, the use of companies specializing in mental health services could result in improved mental health for enrollees, although no data exist to test any such differences in outcome. The integration of mental and physical health services is addressed by recently adopted standards for accreditation of managed behavioral health care organizations, which apply both to HMOs providing in-house mental health services and those using carve-outs, but as of yet few of these organizations have undergone review.

Wells points out that the type of insurance plan may not be as significant a factor in determining outcomes as the specific cost containment measures utilized and that, further, the most severely ill and the most financially disadvantaged may be the most negatively affected by these cost containment strategies. In the Medical Outcomes Study, which
examined differences in the treatment and outcomes of patients in prepaid and traditional fee-for-service insurance plans, the only differences in outcomes between patients occurred in patients of psychiatrists. The patients served by psychiatrists in fee-for-service plans remained stable or showed a slight improvement in functioning, while patients of psychiatrists in pre-paid plans showed a decrease in functioning.

Huskamp, Azzone, and Frank have identified several possible effects of managed care and carve-outs on women specifically. First, changes in access to care will have a greater effect on women, who are more likely to seek treatment. Women are also more likely than men to seek care for “subthreshold conditions,” making their access to care more likely to be threatened by utilization review. Carve-outs could improve services for women, who are more likely than men to receive mental health care from general practitioners, by assigning their care to mental health specialists. On the other hand, carving-out mental health services could be disruptive to the care women receive from their primary care physicians.

It bears mentioning that many women are without health insurance at all. In 1991, 15 percent of women aged 21 to 64 were without any health insurance; women without full-time work, or who were separated, divorced, or unmarried, were most likely to have no insurance. For these women, especially, a clear-cut and comprehensive method of funding mental health services is necessary.

Conclusion

In this era of health care reform and cost containment, both public mental health services and mental health benefits provided through traditional and managed care health insurance programs are being scaled back, leaving coverage of mental health disorders inadequate for many women. Increased public funding of mental health services is needed, as are strengthened mandates promoting insurance plan coverage of mental health services on par with medical services. Already, a large proportion of depression cases are treated outside of the mental health care system. As more patients are required to go through primary care “gatekeepers” in order to receive specialty services, the ability of primary care providers to recognize and appropriately treat both depressive symptoms and major depression must improve. Minimizing the impact of depression in this way should result in reduced morbidity in general and, consequently, cost-savings in non-mental health care sectors. Moreover, the disproportionate burden of depression among women must be reflected in the research arena. Issues that remain to be clarified include the mechanisms through which social factors contribute to depression in women, the means through which that process can be impeded, and the effect of gender on the efficacy and consequences of treatments. Finally, interventions for the prevention and treatment of depression must take into account the multifactorial nature of the disease. The contribution of social factors to women’s depression—such as socioeconomic status and multiple work and family roles—should be further explored, with an eye to determining mechanisms of action.
References


Charting a Course for the Future of Women's and Perinatal Health


Charting a Course for the Future of Women’s and Perinatal Health


Abuse Against Women by Their Intimate Partners

Patricia O’Campo and Katherine Baldwin

“...there is enough evidence to conclude that the home can be a very dangerous place and that individuals have more to fear from close members of their own families than from total strangers.”

McKendrick and Hoffman

In recent decades, the issue of violence against women by intimate partners has changed from being considered a “private” matter to being recognized as a large-scale public problem with causes and consequences for society to address. However, research on the determinants, prevention, and solutions of violence against women is still in the early stages. Because violence by intimate partners is such an important threat to the well-being of women, this chapter reviews the magnitude of the problem in the United States, with a focus on the causes of physical violence experienced by women in general and particularly around the time of pregnancy, and discusses implications for interventions, prevention, and policy.

Magnitude and Types of Violence Experienced by Women

Although rates of victimization for violent crimes in general are higher for men (61 per 1,000 men compared to 43 per 1,000 women), women have a greater likelihood of being victimized by intimate partners. Up to 75 percent of lone-offender violence committed against women is perpetrated by someone known to the woman. Attacks by intimates also result in higher rates of injuries in women than attacks by strangers; half of all attacks by intimates result in injuries compared to 20 percent for attacks by strangers. Women are also more likely to be sexually assaulted. The annual rate of rape of women is 7 per 1000 women, and as many as 13 percent of all women will experience forcible rape sometime during their lives.

An estimated 4.4 million women are battered by intimate partners and 1.7 million of these women suffer severe abuse each year. Domestic violence is behind a large percentage of homicides of women. For instance, a New York City Department of Health study found that almost 40 percent of women murdered between 1990 and 1994 were killed by an intimate partner, one-third of whom were not living with their partner at the time.
Fatal Violence. Homicide ranks within the top ten causes of death for women aged birth to 55; for 10- to 34-year-olds, homicide ranks within the top five causes of death.\textsuperscript{1} Although homicide rates are four times greater for men than women—16 per 100,000 for men and 4 per 100,000 for women—homicide ranks as the second leading cause of death for both males and females aged 15-24 and the fourth leading cause of death for those aged 10-14 and 25-34.\textsuperscript{9} In 1993, one-third of female homicide victims were murdered by their spouses, ex-spouses, or boyfriends.\textsuperscript{10} And as rates for male homicide by intimate partners have fallen sharply, the rate of women’s fatal violence by intimate partners has remained relatively stable over the past several decades, 1.6 per 100,000 population. While the U.S. has at least double the rates for most forms of violence of all other industrialized countries, its rate of homicide of women by intimates is comparable.\textsuperscript{2,11} Seventy percent of all homicides of women by intimates are committed with firearms. Thus, policies directed at limiting access to firearms will be an important strategy for reducing fatal violence toward women.

Non-fatal Violence. Non-fatal physical, sexual, and psychological violence has been a major focus of research. Reporting of non-fatal violence may be underestimated in routine sources (e.g., crime surveys, police records, medical records) compared to research studies. Face-to-face interviews or telephone surveys tend to yield higher rates of reported violence, in part, because of women’s greater willingness to disclose sensitive information when there is interviewer-respondent rapport. Abuse rates based on routine sources are underestimated because at least 50 percent of women who have been victimized do not report their experience to anyone.\textsuperscript{12} Reports of violent physical or sexual acts by intimates are underestimated in routine crime surveys because some women do not view such events as criminal activity.\textsuperscript{2} Finally, reports of abuse in medical records made by medical professionals have been affected due to fear that documentation will lead to termination or denial of insurance for victims.\textsuperscript{2}

How researchers define different types of violence against women plays an important role in obtaining an accurate picture about the extent of the problem. For example, some researchers argue that measures of this physical violence should only include events where there is intention to cause physical harm.\textsuperscript{2} However, because intention is not easy to measure, most definitions do not include intentionality. Another definition—“acts or behaviors which threaten, attempt, or actually inflict physical harm”—also poses difficulty because measurement is not straightforward. The Conflict Tactics Scale (CTS), one of the more commonly used instruments to capture the prevalence of physical violence,\textsuperscript{13} asks about the occurrence of selected behaviors with the potential to inflict physical harm. Events from the CTS are sometimes grouped to denote moderate and severe physical violence. Critics of the CTS claim that counting such events fails to capture an important underlying component of violence toward women: the power differential (both physical and psychological) between women and their intimate partners.\textsuperscript{14} Thus, some researchers argue that it is important to measure physical harm that has resulted from these events (e.g., was medical care sought for any of these events) or other dimensions of power and control by the partner over the woman (e.g., relationship issues).\textsuperscript{14} Unfortunately, to date, no good measures that capture these important aspects of violence have been developed.

\textsuperscript{1}Data on fatal violence primarily come from routine sources: the Federal Bureau of Investigation’s (FBI) Uniform Crime Reports (UCR) and the National Center for Health Statistics.
Estimates about the extent of physical violence or battering experienced by women annually vary widely—from a low of 9 per 1000 women to a high of 220 per 1000 women. Several studies on physical violence by intimate partners have shown consistent one-year prevalence rates among national and state-specific samples; rates ranged from 10 percent in Kentucky to 11-12 percent in the national samples.

Psychological abuse has received less attention than physical or sexual abuse. Psychological abuse includes verbal attacks or harassment, such as ridicule or name calling, intended to control a woman and to make her feel worthless; isolation that separates a woman from social supports or denies her access to economic or other psychological and instrumental resources; and extreme jealousy. Sometimes psychological abuse can include verbal threats of physical harm directed at a woman or her family or friends. Psychological abuse, like other forms of abuse, does not have a single agreed-upon definition. Psychological abuse is often accompanied by physical or sexual abuse.

**Consequences and Costs of Domestic Violence**

Consequences of physical and psychological violence are severe and often long-term; they include mortality, physical and psychological morbidity, and lost productivity and income. Medical consequences—both physical and psychological—have been most extensively documented. Short-term physical consequences include broken bones, bruises, and cuts. Short- or long-term medical problems include miscarriage, preterm labor or fetal injury, sexually transmitted diseases, hearing or vision loss, pain, and physical complaints. In the long-term, chronic headaches, bowel disorders, and death can result. Psychological effects include acute stress disorder, depression, anxiety, attempts of suicide, substance abuse, post-traumatic stress disorder, stormy interpersonal relationships, and revictimization. The medical consequences of physical violence may be underreported as most women do not disclose their abuse to medical providers, even when they are seeing a clinician for ailments resulting from abuse. They are much more likely to disclose their experiences to friends and family rather than to professionals, which has important implications for identification of women who would benefit from services for abuse.

Social consequences of domestic violence include job loss, loss of job productivity, and social isolation. Social isolation both reinforces the pattern of violence and decreases the likelihood that women will report the violence for purposes of help seeking.

The few studies that have examined the direct and indirect costs of domestic violence suggest that the costs both to society and to victims are considerable—including health care costs, child welfare or foster care costs, emergency shelter costs, costs of arrests or incarceration, and job training. Precise costs are difficult to estimate because of the lack of consistent research definitions described above and because services for domestic violence are fragmented across the public and private sectors. Estimates based upon losses due to secondary medical treatment, lost worker productivity, and quality of life indicators range from $5-10 billion annually to $67 billion annually. One study estimated that 19 percent of women with injuries seeking care in an emergency room were victims of domestic violence. Another study estimated that costs of medical services to abuse victims, including psychological and follow-up care, is $1,633 per woman per year. Research
conducted by the Institute for Women’s Policy Research in Washington, DC, shows that economic costs of domestic violence borne by the health, employment, and public sectors are considerable, as are the costs to the victim (e.g., lost wages).

**Causes of Domestic Violence**

Research on the causes of domestic violence is conducted by scientists in a variety of disciplines, including sociology, women’s studies, criminology, psychology, and public health. In seeking to understand the determinants of domestic violence, psychological and sociological theorists emphasize the importance of social contexts (e.g., high-stress neighborhoods characterized predominantly by economic deprivation); poverty and economic deprivation; exposure to racism and classism for the perpetrators and sexism for the victims; status inconsistency within couples where women have more economic or human capital resources than their partners; patriarchal traditions permitting male heads of households to exercise their will over wives and female partners; pathological personality characteristics in the perpetrators and poor coping skills in response to stress that promotes substance abuse or violence among perpetrators; and social learning by perpetrators in the home during childhood, young adulthood, or through media influences. Risk factors for victims include young age, social isolation, and lack of a confidante on the part of a woman, woman having a higher educational or occupational status than male partner, pregnancy, early postpartum period, substance use on the part of the partner and/or victims, economic strain and unemployment on the part of the male partner, exposure to other stressors such as economic, occupational, or race discrimination, and previous relationships characterized by violence.²

Non-White ethnicity has been reported to be associated with higher rates of all types of violence.¹¹ However, studies have not been able to address adequately the extent to which these higher rates are due to poverty or low economic status or to other factors related to “non-White race or ethnicity.” The complex relationship between race, ethnicity, and economic status deserves further careful study. The identification of these risk factors related to race and ethnicity support many of the above-mentioned theories. Thus, despite the recent work in this area, further research is still needed to identify and confirm the causal determinants of partner perpetrated violence so that effective interventions can be designed.

**Violence Related to the Period of Pregnancy**

Pregnancy has been identified as a period of vulnerability and increased risk for violence perpetrated by intimate partners.²⁶⁻³⁴ However, although high rates of violence have been reported against women who are pregnant, it is unclear whether pregnancy or other reproductive issues are the cause of the violence. One study suggests that adjusting for the ages of the women and their partners (since younger women, in general, experience more violence) results in no association between pregnancy and violence.³⁵ Another study found that rates of violence are even greater during the period immediately postpartum.³⁶ Research has only demonstrated that rates during pregnancy might be high, possibly higher than periods of non-pregnancy.²⁹
One possible consequence of sexual abuse is pregnancy. A study of rape-related pregnancies found that most often the perpetrator was a boyfriend (29.4 percent), husband (17.6 percent), or friend (14.7 percent). Another study found that women with unwanted pregnancies had more than four times the risk of experiencing physical violence by a partner compared to women with intended pregnancies; no data were reported on sexual abuse. The relationship between unwanted or unintended pregnancy and physical and sexual abuse should be studied further. Past research has not been able to identify what it is about pregnancy that would cause rates of violence to increase.

Research on the effects of physical violence during pregnancy on adverse pregnancy outcomes is mixed; some studies demonstrate differences in birthweight, medical complications, miscarriage rates, and use of health care while other studies find no differences. One study found that women with substance abuse problems are more likely to continue using drugs or alcohol during pregnancy if they are victims of violence. Some studies have hypothesized that adverse pregnancy outcomes result from direct trauma from physical abuse or stress associated with both physical and emotional abuse. In 1997, the federal Centers for Disease Control and Prevention (CDC) convened an expert panel to identify solutions to the challenges of measuring the magnitude and identifying the causes of violence around pregnancy. The CDC has set out an important research agenda that will identify the causes of reproductive-related violence among women in the U.S., which should have important policy implications for health care professionals who work with pregnant women and for social services that might be implemented to prevent and treat this important problem.

**Prevention and Interventions**

There are currently no preventive interventions for victims of abuse. Rather, crisis protective and support services are available, but since many women do not disclose their abuse to professionals they are unlikely to receive services.

Primary and secondary prevention for male-perpetrated physical violence against women includes arrest of perpetrators, mandatory reporting of domestic violence, counseling programs for perpetrators or couples, state and federal statutes limiting access to the purchase of guns for convicted perpetrators, and provision of protective and social services of victims of abuse. Other than privately funded shelters, assistance for victims of domestic violence is a relatively recent development—as are programs for perpetrators of domestic violence. Mandatory reporting laws are not universal and differ by state (see the table and related discussion, below).

Screening for abuse by health care providers is also exceptionally low. Despite this apparent underutilization of assistance programs, even those women who seek services are often turned away because capacity has been exceeded. Therefore, increased funds for protective and support services are needed for existing and new programs for victims of abuse. More research is also needed to determine the short- and long-term benefits of existing protective and social support services for victims of violence.
# Domestic Violence Reporting Law by State

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>42</td>
<td>29</td>
<td>18</td>
<td>8</td>
<td>9</td>
<td>8</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Alaska</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arizona</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ark., Nev., Oregon</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>California</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Colorado</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conn., Maine, Mo., S.D., Texas, Vermont</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Del., Md., Miss., Va., Mont. N.J.</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D.C., Mass., Minnesota</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Georgia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hawaii</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idaho</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ill., Wisc.</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ind., N.Y., Kansas</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iowa</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kentucky</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Mich., Tennessee</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nebraska</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Hampshire</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Mexico</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Carolina</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N.Dak., Pa., Utah</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ohio</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oklahoma</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhode Island</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Virginia</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ala., La., S.C., Wyo., Wash.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Reporting is mandated
† Reporting is mandated contingent on presence of other element(s)
‡ Specifies 24 crimes comprising “assaultive or abusive contact”
§ Does not state “intentional” but “sustained in a suspicious or unusual manner”
¶ Felony only
# Provides limited exception from mandatory reporting for survivors of abuse and sexual assault
ll Reporting for data collection only
Interventions for batterers include arrest, incarceration, and counseling. Evaluations of counseling programs, which include anger management, cognitive skill-building, and trauma therapy, have been fraught with methodological problems and, to date, have not shown the interventions to be effective in reducing violent behaviors. Thus, further research is greatly needed in this area.

Since experiences of childhood violence increase the risk of being involved in abuse as an adult (either as a victim or perpetrator), youth-oriented interventions have been implemented widely in recent years despite lack of knowledge regarding their effectiveness. Until results of rigorous research and evaluations identify successful batterer or youth interventions, widespread support and implementation of these programs cannot be recommended.

Health care professionals are often the first non-family members to interact with victims of domestic violence. Some reports indicate that domestic violence is the most common cause of serious injury to women. It is estimated that the prevalence of battered women in ambulatory care settings is between 20 percent and 30 percent, although as few as 1 in 20 battered women are correctly identified by providers.

Medical treatment for domestic violence is often performed by internists, obstetricians, gynecologists, emergency room providers, and surgeons. Provider identification of domestic violence victims is hindered by the fact that some 90 percent of battered women do not tell their physicians, and 61 percent never tell anyone about the abuse. In addition, it has been reported that some health care providers do not question women about domestic violence because of embarrassment, lack of time, legal issues, and lack of training.

Women generally access two kinds of non-medical services for domestic violence through health care providers and social services workers: (1) crisis intervention (safety planning, referral to shelters, outpatient counseling, and linkages to social service and legal systems); and (2) psychiatric treatment (psychotherapy and psychopharmacology). Availability of domestic violence services varies from state to state and from community to community. Rural and minority communities have fewer services available and the programs within these communities are more difficult to maintain.

Multidisciplinary approaches to domestic violence treatment appear promising. Two examples—one in the military sector and another at the state level—are described below. Although these programs are comprehensive, their effectiveness in preventing future violence has yet to be evaluated.

The U.S. Army’s Domestic Violence Program offers comprehensive prevention, identification, reporting, investigation, diagnosis, and treatment services. A central component of the program is the Family Advocacy Case Management Team (FACMT). FACMT is a multidisciplinary group chaired by the chief of social work services that includes a pediatrician, a community health nurse, a chaplain, a dental activity commander, a psychiatrist, a psychologist, other military personnel, school personnel, and Child Protective Services representatives (when necessary). The team is responsible for coordinating medical, dental, legal, law enforcement, and social services reporting for reported child or spouse abuse cases and overseeing intervention efforts. Case managers develop treatment plans, review cases at least quarterly to monitor progress and reassess treatment plans, maintain case records, and maintain communication with commanders regarding the cases.
Missouri’s Family Violence Councils\textsuperscript{56} are the result of a partnership between the Missouri Office of Injury Control and the National Center for Violence Prevention and are funded by a federal capacity-building grant from the Centers for Disease Control and Prevention. Council members are drawn from various agencies and professional organizations in the community, including law enforcement, social services, attorneys, shelters/victim advocates, community leaders, and medical experts/coroners. Using a comprehensive, community-based approach to addressing family violence, the Councils:

- facilitate coordination among agencies and organizations in order to affect systemic change,
- provide an interdisciplinary approach to family violence prevention and treatment,
- develop a standardized system of data collection and record-keeping,
- educate professionals and the general public, and
- improve family violence policies and legislation.

To date, no clear empirical evidence exists demonstrating that one modality of batterer treatment is more effective than another, although some research indicates that a didactic format or a didactic and discussion format is more effective than self-help programs.\textsuperscript{47,57} Gondolf’s (1997) review of programs for batterers suggests that they have a 60-80 percent success rate (defined as cessation of violence) among completers.\textsuperscript{58,59} Several weaknesses in the study must be noted, however. First, only 30-45 percent of program participants completed program evaluations. Second, reports of cessation of violence were made by the batterers themselves. Finally, the study did not include control groups or non-compliant/dropout batterers. This is of particular importance because it has been found that dropouts are more likely to have previous criminal offenses, alcohol and drug problems, and antisocial or narcissistic tendencies.\textsuperscript{60-63} The men most likely to complete the program tend to be less violent batterers to begin with and are less likely to continue battering regardless of their participation. On the other hand, the typical program dropout is already a more violent batterer and is more likely to resume battering in the future.

Policy Concerns

\textit{Welfare Reform.} With the recent changes in welfare policy, one important piece of the safety net for low-income women who are victims of violence is being threatened. Women have traditionally used welfare assistance as one means to help them escape abusive relationships\textsuperscript{58,59} With the new life-time and spell-specific limits for the Temporary Assistance for Needy Families (TANF) program, low-income women will be restricted in their ability to become economically independent from abusive male partners. Recent reports have also documented high rates of violence against women receiving TANF, possibly associated with job training participation and employment.\textsuperscript{64} This violence jeopardizes participants’ ability to comply with new TANF work requirements. To help protect women on welfare from domestic violence, the welfare reform legislation included the Family Violence Option (FVO). This provision, adopted by 28 states so far, allows states to exempt women receiving welfare from the five-year limit on benefits if they are victims of family violence. Whether the remaining states adopt the program is dependent upon clarification of yet unresolved regulatory rules regarding the implementation of the FVO. However, despite the FVO, the recent changes to the welfare system raise questions about whether TANF programs will be able to protect and assist victims of domestic violence.
Federal Gun Control Legislation. A large proportion of fatalities from domestic violence involve guns. At least 1,500 women are shot and killed each year during an incident of domestic violence, and it is estimated that of over 2 million cases of household violence reported each year, a gun is present in 150,000 cases. In September 1996, Congress passed a law (within P.L. 208—Making Consolidated Omnibus Appropriations for Fiscal Year 1997) that prohibits persons convicted of a crime involving domestic violence from owning or possessing firearms. Although it had been illegal for persons convicted of felonies to purchase or possess a firearm, this law extended the ban to include misdemeanors involving domestic violence. Although well-intentioned, this law may not significantly reduce the number of gun-related incidents because it prohibits gun possession only for persons who have been convicted of domestic violence in a jury trial. If the person is convicted by a judge, as frequently occurs, the law does not apply. Another weakness is the lack of broad support in Congress amidst the powerful lobbying influence of the National Rifle Association (NRA). Currently, the NRA is working with sympathetic members of Congress to have the law repealed.

Advocacy of Women’s/Children’s Groups. Despite evidence that domestic violence and child abuse often occur in the same household, few attempts have been made by women’s and children’s groups to coordinate their advocacy efforts. Research indicates that almost two-thirds of abused children are being cared for by battered women. Similarly, it has been found that 45-70 percent of battered women in shelters report the existence of child abuse in their homes. Schechter and Edelson (1995) site four compelling reasons for linking women’s and children’s advocacy efforts:

1. Research suggests that domestic violence and child abuse frequently occur in the same family;
2. Children who witness violence by their fathers may be at risk of developing a variety of behavioral and mental health problems;
3. Men who are perpetrating some of the most dangerous abuse against children are also assaulting women; and
4. Child welfare and domestic violence programs serve an overlapping population of women and children.

While the advantages of collaborating on behalf of abused women and children seem obvious, differing philosophies (i.e., empowerment of women v. “best interests of the child”) and competitiveness for funding and public attention have proven to be significant barriers. Schechter and Edelson (1995) discuss some philosophical differences that hinder cooperation among child welfare and battered women’s advocates. First, child welfare advocates who subscribe to the notion of “best interests of the children,” argue that a child in a violent environment should not have to wait for his or her mother to reorganize her life in order to be safe. They criticize battered women’s groups for using language that ignores the special needs of children. Some child welfare advocates also maintain that the battered women’s movement is unconcerned with the needs of children and is blindly loyal to women, even those who expose their children to serious harm. Abuse perpetrated by women is minimized and ignored, claim child welfare advocates, and battered women’s groups underestimate the harm done to children who have been repeatedly exposed to violence.

†A 1993 study by the Oregon Department of Human Resources found that in most child abuse cases where fatal and severe injuries occurred, the child had been living with two adult caretakers. And in Massachusetts, of the 67 child fatalities in 1992, (43 percent) occurred in a family where the mother stated she was a victim of domestic violence.
Battered women’s advocates believe that keeping the mother safe is in the best interest of her children and that the mother usually has her children’s best interest in mind when she makes decisions regarding their situation. They maintain that battered women know that the legal system allows custody and unsupervised visitation to be granted to abusers. This knowledge, coupled with the fear that the abuser may kidnap her children or come after her to kill her, factors into her decision to stay or leave the perpetrator. Battered women’s advocates maintain that the child welfare system blames and punishes mothers for the violence in their homes instead of providing the support and assistance they need.

How to deal with male perpetrators is another divisive issue. Child welfare advocates believe that family stress is the principal cause of abuse in families, and child welfare workers often include the male perpetrator in treatment to relieve the stress, help the family function better, and, thereby, reduce the violence. Battered women’s advocates contend that coercive power and control are at the core of domestic abuse; the perpetrator exerts power over the family in the form of physical and emotional violence in order to control family members. Temporary or permanent separation from the perpetrator is emphasized in treatment plans, with empowerment of the woman being the ultimate goal. Although separation may be supported by both child welfare and battered women’s advocates in a given situation, child welfare might be more inclined to remove the children, whereas removal of the perpetrator from the home would be encouraged by battered women’s advocates.

Common ground may be found in the agreement that recovery from violence for both mothers and children is, in most cases, facilitated by keeping mothers and children together.68 Unfortunately, preservation of the mother-child unit is often complicated by fragmentation in the legal system. Since domestic violence and juvenile court judges are often unaware of overlapping cases, each judge may simultaneously hand down conflicting rulings—which may place the abused woman in a compromised position. For example, a domestic violence court may grant a protection order against a spouse/partner while a juvenile court judge orders joint custody or counseling for the spouse and the battered woman.70 The coordination of intervention plans and support systems for the abused is a strategy that could be successfully advocated by both women’s and children’s groups.

*Mandatory Reporting of Domestic Violence.* Almost every state has laws that mandate the reporting of injuries resulting from weapons and/or criminal acts (see the table). However, only five states (CA, KY, NH, NM, and RI) have enacted laws that specifically mandate the reporting of domestic violence, and each state law differs in terms of its requirements. For example, New Mexico state law mandates reporting by any person who has “a reasonable suspicion” that an adult is being abused, neglected, or exploited. Rhode Island state law only requires reporting of domestic violence cases (without identifying information) for statistical purposes.46 Kentucky and New Hampshire mandate reporting, but only with the adult victim’s consent. In California, the law applies mainly to medical professionals, who must make a report if the patient appears to be suffering from abuse.46

Mandatory reporting laws are controversial because of the potential for negative consequences resulting from the report. Health care providers, who suspect a patient may be a victim of domestic violence, may be concerned that investigations by authorities could
cause the abuser to become more violent, resulting in further injury or even death. To keep from facing this dilemma, providers may choose to avoid the subject of domestic violence unless specifically mentioned by the patient. In the same vein, a woman experiencing abuse may not seek medical treatment for her injuries because of concerns about the mandatory reporting law. Another problem with the laws is that inadequate attention is directed toward providing services and support necessary to break the cycle of violence. The official response to reports of domestic violence varies greatly from state to state, and when appropriate referrals are made, there is often no guarantee the services will be available. In many cities there is insufficient funding for job training, legal services, and affordable housing, and the demand for shelter exceeds the supply of beds. Therefore, coordination of domestic violence reporting and services provided to victims is essential to the effectiveness of mandatory reporting laws.

Conclusion

Violence against women remains a significant public health problem, and any increases in poverty and erosion of social support programs are likely to exacerbate the problem. Health professionals have opportunities at each well-woman check-up and prenatal care visit to screen for and counsel women about domestic violence, practices often neglected due to embarrassment on the part of providers, time constraints, and inadequate training. However, it is important to note that increased screening may, in turn, increase the demand for protective and supportive services, which are already in short supply. Thus, increasing public funding of programs to protect women and screen and treat both men and women is warranted.

Domestic violence is being targeted from several directions on the policy front—although inadequately in many ways. Advocates fear that welfare-to-work laws will lead to increased rates of violence against women receiving TANF. States can implement the Family Violence Option under TANF, which exempts recipients who are victims of family violence from the five-year time limit on benefits. From a different angle, mandatory reporting laws are intended to assist domestic violence victims. However, they are not universal, and, in the five states where these laws exist, the requirements of the law differ. The potential for negative repercussions when reports are made, such as the threat of termination or denial of insurance for victims, deters clinicians from recording abuse in medical records, and deters victims from self-reporting or seeking treatment. A third concern is the fragmentation of the legal system, which greatly hinders prosecution of batterers. Domestic violence and juvenile court judges are frequently unaware of overlapping cases and may hand down conflicting rulings, which may place an abused woman in a compromised position—for instance, forced to share custody of her children with a man she has a restraining order against.

Additional funding for research is needed to identify effective means for primary prevention. Research on domestic violence is hampered by the difficulty of defining both psychological and physical violence. Currently, measures of certain aspects of violence, like physical harm and power of the partner over the woman, are inadequate. Moreover, the causal determinants of partner-perpetrated violence, the effectiveness of protective and social support services, and the effectiveness of current treatment strategies for batterers remain unknown. Relatively little is known about pregnancy-related factors leading to the
increased risk of abuse prenatally and the extent to which pregnancy is actually a result of abuse. In sum, in order to make a real difference in decreasing domestic violence against women, policymakers need to better measure the causes and effects of violence and to learn more about effective methods of preventing it and treating its consequences for both women and children.
References


A new focus on nutrition for women rests on a better knowledge of the impact of women's changing roles and employment patterns, an increasing understanding of the relationship between nutrition and disease, and the recognition that half of health promotion behaviors recommended by the medical community are nutrition-related. The field's emphasis is no longer on women's nutritional deficiencies, although those occur in some segments of the population, but rather on poor eating habits—excessive consumption of protein, fat, and sodium and low intake of fiber-rich foods, especially legumes and fresh fruits and vegetables. Federally-funded food and nutrition programs are struggling to accommodate this shift in nutritional emphasis, as are training programs for future leaders in nutrition programs and services. This chapter presents an overview of lifestyle and societal factors that influence women's food consumption patterns, discusses selected nutritional issues affecting women's health throughout the life cycle, and describes the implications of these nutritional issues for policies and programs related to the health and well-being of women.

Life Cycle and Societal Factors That Influence Nutrition and Women’s Health

The nutritional status of an adult woman is the culmination of nutrient intake, metabolism, and utilization over the course of a lifetime, beginning with her nutritional status at birth. Intergenerational studies have linked size at birth, a proxy indicator of nutritional status in utero, to later health outcomes such as cardiovascular disease, hypertension, and cancer. In addition, a female who is born into poverty, with increased probability for hunger, food insecurity, and an environment where healthy eating habits are not practiced, may be at risk nutritionally throughout childhood. More importantly, she may fail to develop healthy eating and lifestyle habits to break out of this nutrient-impoverished cycle. These cumulative nutritional disadvantages may affect her transition to appropriate eating

1Definitions: hunger - “the uneasy or painful sensation caused by a lack of food;” food insecurity - a condition “whenever the availability of nutritionally adequate and safe foods or the ability to acquire acceptable foods in socially acceptable ways is limited or uncertain.”
behaviors during adolescence, a crucial developmental period that lays the foundation for her ultimate adult nutritional status. These problems are further exacerbated by failure on the part of schools and health care professionals to provide health promotion and nutrition education messages reflecting current scientific evidence about the relationship between diet and disease. In addition, nutrition education messages are often not culturally appropriate, making them inaccessible to populations most in need of hearing them. Accordingly, the next generation may also be at risk for similarly poor nutritional outcomes.

Johnson (1996) discusses five societal factors that shape women’s eating patterns today, which reflect cultural and socioeconomic changes since the 1960s. First, more women are employed outside the home. By the year 2000, 50 percent of the workforce will be women, and 60 percent of women will be working outside of the home. There has been a particularly large increase in the number of working women with children under 6 years old. Full-time working women continue to be the primary persons managing households (cooking, cleaning, caring for children, etc.). In both single female-headed households as well as in married households, the burden of these multiple roles means less time available for food shopping and meal preparation, and, in turn, leads to changes in food consumption patterns.

Second, Americans are consuming more convenience foods, which are often higher in fat and sodium than similar home-prepared meals. This increase is seen mostly in households where women are employed, have children, and have more income but lower levels of education.

A third factor shaping women’s eating patterns is the increase in the number of single female-headed households. In 1992, 26 percent of households with children were headed by single women. These households are often characterized by high poverty rates, less formal education, and unemployment. More than half (55 percent) of single female-headed households fell below the poverty line in 1991 compared to 14 percent of all families. Single mothers are reported to consume less fruits and vegetables, and their children consume less fruits than children in two-parent families. In addition, these mothers may be young and have limited cooking and food resource management skills, which further complicates their ability to provide nutritionally sound meals for their families.

A fourth factor affecting women’s eating patterns is an increase in meals eaten away from home. In 1960, 27 percent of money available for food was spent on meals eaten away from home. By the mid-1980s, this percentage had increased to 40 percent. Some characteristics associated with increased numbers of meals eaten away from home are higher income, higher education, single female-headed household, and employment. With more meals away from home, a woman’s intake of calories, fat, cholesterol, and sodium increases, while intake of iron, calcium, vitamin C, and fiber decreases.

The last factor is tobacco use. As of 1994, 23 percent of U.S. women were cigarette smokers. Women who smoke have poorer eating habits and tend to consume more caffeine, cholesterol, alcohol, and fat. Smokers have lower intakes of fruits, vegetables, whole grains and cereals, fiber, vitamin C, and carotenoid.
For reasons of economic necessity, personal and professional fulfillment, and, recently, welfare-to-work legislation, record numbers of women in all age groups are employed and, therefore, burdened by the multiple responsibilities of employment, child care, and home management, leaving little time and energy available to prepare well-balanced, home-cooked meals for themselves and their families. Entrepreneurs are responding by providing meals that can be picked up or home-delivered, and the food industry has created a plethora of new products requiring little or no preparation. The restaurant and fast food industries are increasing the number of drive-thru facilities. To ensure that consumers are not nutritionally short-changed by these conveniences, several Healthy People 2000 Objectives on nutrition recommend that these foods be consistent with the U.S. Dietary Guidelines for fat and saturated fat.

Nutritional Issues Affecting Women’s Health

The two key nutritional issues focused on in this chapter influence women’s long-term nutritional and health status as well as the outcome of their pregnancies: (1) obesity and eating disorders and (2) intake of nutrients, particularly iron, folate, calcium, and vitamin D. These nutritional issues have significant effects on health care and personal quality of life.

Obesity and Eating Disorders

Measurement and Definition. Next to tobacco, obesity has been identified as the most significant health problem facing American women. Increasingly, two measures are used to establish reference levels for body weight and to assess body weight as a risk factor: body mass index (BMI) and waist-to-hip ratios (WHR). Body mass index is the most commonly used measure of body size because height and weight are usually available from conventional data sources, its reliability and validity are acceptable, and it is correlated with body fat and chronic disease risk.

<table>
<thead>
<tr>
<th>BODY MASS INDEX CALCULATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metric conversion formula:  BMI =  weight (kg) / height (m)²</td>
</tr>
<tr>
<td>Example: A person who weighs 150 pounds (68.04 kilograms) and is 65 inches tall (165.10 centimeters) has a BMI of 25.</td>
</tr>
<tr>
<td>BMI = weight (68.04 kg) / height (1.65 m)² = 25</td>
</tr>
</tbody>
</table>

Non-metric conversion formula: BMI = [weight (pounds) / height (inches)]² x 704.5

Example: A person who weighs 150 pounds and is 65 inches (or 5' 5") tall has a BMI = 25.

BMI = weight (150 pounds) / height (65 inches)² x 704.5 = 25

1Healthy People 2000 relevant objectives: 2.15 Increase to at least 5,000 brand items the availability of processed food products that are reduced in fat and saturated fat; 2.16 Increase to at least 90 percent the proportion of restaurants and institutional food service operations that offer low-fat, low-calorie food choices, consistent with the U.S. Dietary Guidelines.

2Eating disorders include anorexia nervosa, bulimia nervosa, and binge eating disorder. Within this paper, we are specifically addressing anorexia and bulimia.
Waist-to-hip ratio (WHR) is used to assess the distribution of body fat, which has a strong association with morbidity and mortality outcomes. Women who have excess fat in the abdomen appear to be at greater risk for cardiovascular disease and diabetes mellitus than women with excess fat in the hips and thighs.\textsuperscript{23} WHR is used as a simple method of assessing distribution of body weight; it is calculated as the ratio of the circumference of waist over hips. WHR of 0.85 or greater or a waist circumference greater than 88 cm (35 inches) is associated with increased risk of disease for women.\textsuperscript{21,24}

The National Institutes of Health’s new \textit{Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults} is more stringent in defining overweight ($BMI \geq 25$) than the old standard ($BMI \geq 27.3$).\textsuperscript{24,25} As women grow older, there are progressively larger errors in over-estimation of height and under-estimation of weight, though less so than with men. Over-estimation of height as women age may result from less frequent measurement and the estimated 0.9 cm decline in height women experience with age.\textsuperscript{26,27} This reporting bias is likely to have little effect on analyses using self-reported measures to calculate BMI as a continuous covariate, but misclassification could occur when using BMI as a categorical variable.\textsuperscript{27} In other words, errors in estimation of height could misclassify a woman who should be overweight as normal weight.

\textbf{Prevalence.} Recent data from the National Center for Health Statistics indicate a steady increase in the prevalence of overweight and obesity among American women, beginning in adolescence. Approximately 36 percent of all women were estimated to be overweight, although there is considerable disparity by ethnicity.\textsuperscript{28-30} The prevalence of obesity among women of Asian-Pacific Islander descent has been documented to be as high as 70 percent, based on other sources of data.\textsuperscript{31} The annual increase in weight among women up to age 60 years is approximately one pound per year.\textsuperscript{32} This level of weight gain places increasing numbers of women in the overweight category as they age.

\begin{table}[h]
\centering
\begin{tabular}{|c|c|}
\hline
\textbf{Classification} & \textbf{BMI (kg/m$^2$)} \\
\hline
Underweight & $< 18.5$ \\
Normal & $18.5 - 24.9$ \\
Overweight & $25.0 - 29.9$ \\
Obesity (Class I) & $30.0 - 34.9$ \\
Obesity (Class II) & $35.0 - 39.9$ \\
Extreme Obesity (Class III) & $\geq 40$ \\
\hline
\end{tabular}
\caption{Classification of Overweight and Obesity by BMI$^{24}$}
\end{table}

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|}
\hline
\textbf{Race and Hispanic Origin} & \textbf{BMI $\geq 25$} & \textbf{BMI $\geq 27.3$} \\
\hline
White, non-Hispanic & 47.4 & 53.0 \\
Black, non-Hispanic & 66.0 & 52.0 \\
Mexican American & 65.9 & 49.0 \\
All Women & 50.7 & 33.7 \\
\hline
\end{tabular}
\caption{Percentage of Overweight and Obesity in Women $\geq 20$ Years Old (Age Adjusted)$^{24,25}$}
\end{table}
Women also have greater lifetime fluctuation in their weight since young women gain more weight than men and older women are more likely to lose more weight than men.\textsuperscript{32,33} A BMI of less than 18.5 is generally associated with eating disorders.\textsuperscript{24} Although fewer women are affected by these problems, eating disorders and underweight also have negative health implications. Since the 1800s eating disorders have changed from being limited to upper-class White girls to affecting all races, all socioeconomic classes, and both genders. Anorexia nervosa is defined as an eating disorder characterized by refusal to maintain a minimally normal weight for age and height.\textsuperscript{34} The prevalence of anorexia nervosa is estimated to be about 1 percent among young women. The onset is bimodal with a peak at 13-14 years and another peak at 17-18 years. Bulimia nervosa, or simply bulimia, is another eating disorder, characterized by rapid consumption of a large amount of food in a short period of time, with a sense of lack of control during the episode.\textsuperscript{34} By contrast, the prevalence of bulimia is estimated to range from 4-20 percent and is found among men as well as women. Bowen, Tomoyasu, and Cauce (1991) indicate that the prevalence of eating disorders is particularly high among White, middle- and upper-middle class women because of their preoccupation with weight and weight control, resulting in a “drive to thinness.”\textsuperscript{35,36}

### Risk Factors for Obesity and Eating Disorders

Several factors place women at increased risk for being obese: physical inactivity, age (30-60 years), low socioeconomic status, accepting a larger body image as ideal, minority race, genetic predisposition, family history with environmental influences, high fat diet, and having given birth to more than one child.\textsuperscript{28,31,32,37-42} Risk factors for eating disorders include adolescent and young adult age, high socioeconomic status, Caucasian race, accepting a very thin body image as ideal, extreme levels of physical activity, controlled dietary intake low in calories and nutrients, dysfunctional family with unrealistic achievement expectations, and family history of eating disorders.\textsuperscript{43-45}

### Healthy Weight

Determining what weight to recommend for healthy outcomes has been a challenge for obesity researchers. An expert panel assembled by the American Health Foundation recently focused on the idea of a “healthy weight target” defined “as a reasonable upper limit for body weight that would offer a reduction in disease risk and be within reach for most overweight adults.”\textsuperscript{46} This group set the “healthy weight target” at a BMI of 25 or less. Recognizing that this target would not be attainable by a substantial portion of obese people, the panel introduced the concept of “healthier weight goal”—a concept designed to redefine success as interim amounts of weight loss that reduce disease risk. “Healthier weight goal” is “the body weight achieved by a weight loss of approximately 4.5-7.3 kg (10-16 lbs.), depending on individual height, or the equivalent of approximately two BMI units.\textsuperscript{46,47} In the future, “healthy weight target” and “healthier weight goal” may become widely used indicators to help monitor obesity.
Consequences for Women’s Health. Obesity is associated with increased mortality and morbidity related to several chronic health problems in women, including diabetes, cardiovascular disease, osteoarthritis, and some forms of cancer. Some studies, however, do not report a relationship between obesity and increased mortality. Excess weight in the abdominal area and upper body is considered to be more detrimental to one’s physical health than excess weight distributed on other areas of the body. Obesity is associated with congenital malformations, and some overweight women suffer from depression and low self-esteem, which may affect their quality of life. Gortmaker (1993) reports that obesity during adolescence is associated with adults who have lower incomes, less educational attainment, and decreased likelihood of marriage.

Studies show that obesity is related to menstrual cycle irregularities and infertility. However, there is a linear relationship between increasing BMI and risk of menstrual cycle irregularity. Several studies show the resumption of normal cycles among obese women as they lose weight. Investigations of ovulatory infertility report an increased risk among obese women. While the risk of ovulatory infertility is highest among obese women, there is also a slight, but not statistically significant, increased risk for overweight and underweight women when compared with average-weight women. In addition, according to Grodstein (1994), obesity is a risk factor for two of the three subtypes of ovulatory infertility assessed in their study—polycystic ovary disease and hypogonadism. Howe et al., (1985) and Wilcox et al., (1988) report no effect of weight or weight adjusted for height on fecundity. Methodological problems in both of these earlier studies may have limited the ability to detect an association between weight and infertility.

Frisch (1974) proposed that a BMI of 16 is necessary to establish ovulatory cycles and a BMI of 18 to maintain ovulatory cycles. Low-weight (BMI <21) and underweight (BMI < 18.5) women are more likely to have bone mass and bone structure loss, which may increase their risk for the development of osteoporosis later in life. Being underweight is also often associated with poor dietary practices, which place these women at increased risk of other nutritional deficiency problems. Dietary intake that is low in calories and nutrient density may have other detrimental effects on a woman’s health, including chronic fatigue and fertility impairment.

Social and Economic Consequences of Obesity. Being overweight has been related to women’s ability to obtain and maintain employment, the number of sick days they take, and their productivity in the workplace. Both obese men and women suffer from job discrimination. Low-income, minority women, who are more likely to be overweight, face not only health risks associated with obesity but the triple threat of bias based on gender, race, and class. Employment is especially important for these women. Since obesity is more common among low-income women, biases related to obesity are a challenge, highlighting the need for the development and implementation of effective obesity interventions.

Interventions to Prevent and Treat Obesity. Long and short-term remediation of obesity has not been very successful. Even when overweight people lose significant amounts of weight, many regain the weight or even end up weighing more after the intervention. The elements of obesity treatment programs include decreased energy intake, increased exercise, behavior modification, and pharmacotherapy. Although all of these elements are not included in each weight management program, the goal of preventing both additional
weight gain and cyclic weight loss is common to most programs. While knowledge alone is not sufficient to cause nutrition behavioral change, increased nutrition knowledge is associated with dietary intakes that meet the U.S. Dietary Guidelines.

Several federal agencies have programs to improve nutritional status in infants and adults. For example, the U.S. Department of Agriculture (USDA) has challenged schools to meet the U.S. Dietary Guidelines. “Team Nutrition” is the USDA’s national initiative designed to help schools meet national nutrition objectives and integrate nutrition information into curricula. In addition, the federal Maternal and Child Health Bureau sponsors training programs and supports research and the production of materials designed for use in public health settings. The National Institutes of Health—through the National Heart, Lung, and Blood Institute’s National Cholesterol Education Program and National High Blood Pressure Program, the National Institute of Diabetes and Digestive and Kidney Diseases’ Weight-Control Information Network, and The National Cancer Institute—produced culturally appropriate nutrition education methods and materials for use in community-based interventions for weight control and healthy eating. The Centers for Disease Control and Prevention have also played a major role by advocating for nutrition and exercise interventions to be merged, as well as stimulating the development of programs to reverse increases in the prevalence of obesity.

To help fight against obesity reaching even higher levels, the American Health Foundation’s Expert Panel on Healthy Weight made the following recommendations (which are more stringent than those of the U.S. Dietary Guidelines):

1. Adopt a healthy diet that is low in fat (≤ 25 percent of energy from dietary fat) and high in fiber (≥ 25g dietary fiber from whole grains and cereals, fruit and vegetables) and perform daily physical activity.

2. On reaching peak growth at the age of approximately 21 years, body weight should be stabilized and maintained at a constant, healthy weight (BMI <25) throughout life to prevent undesirable weight gain or loss. However, adolescents who are medically classified as overweight or underweight need to be identified and medically supervised to attain maintenance-level weight.

3. Healthier weight goal—individuals who have a BMI greater than 25 should be encouraged to lose the equivalent of about two BMI units, or 4.5-7.3 kg (10-16 lbs), depending on their height and ensure that the weight loss is maintained for at least six months.

4. Individuals at risk of, or suffering from, a chronic disease should consult with their physician regarding body weight recommendations to improve their condition.

*Physical activity can be defined as any bodily movement produced by skeletal movement that results in energy expenditure. Energy expenditure is measured in kilojoules (kJ) or kilocalories (kcal) per unit of time. Energy expenditure during physical activity is expressed as metabolic equivalents (METS). METS are calculated as work metabolic rate/resting metabolic rate. One MET is equal to 5 kcal.*
Preventive Nutrition for Women

Nutrient intake is a modifiable risk factor for several chronic diseases responsible for death and disability among women. The *U.S. Dietary Guidelines for Americans, the Food Guide Pyramid*, and new food labels are available to help women change food consumption patterns to achieve the Healthy People 2000 Nutrition Objectives. In addition, new scientific evidence continues to emerge, such as guidance for folate supplementation, which provides ways to protect the health and well-being of women and their children. Selected nutrients (folate, calcium, and iron), their relationship to the health of women, and resulting policy implications are discussed below.

Iron

Iron deficiency anemia, characterized by hypochromic, microcytic erythrocytes and a lowered production of hemoglobin, is the most common micronutrient deficiency in developing and developed countries and is particularly prevalent among young women and pregnant women. According to data collected as part of NHANES II (1976-1980), the prevalence of iron deficiency anemia in nonpregnant and pregnant women in the U.S. is between 4 and 10 percent. The Healthy People 2000 Objectives call for reducing the prevalence of iron deficiency anemia among low-income women of childbearing age to four percent. Prevalence is higher in African-American women and women in some Hispanic ethnic groups than in non-Hispanic White women. However, prevalence in African-American women may be inflated since some research suggests that hemoglobin cutoff levels for African Americans should be 0.8-1.8 mg/dl lower than levels currently used.

*Risks and Protections.* For women between 20 and 44 years of age, a higher prevalence of iron deficiency anemia is associated with poverty, low educational attainment, and giving birth to many children. Women who smoke and those who live in high-altitude regions may also be at greater risk for developing the condition. Female athletes have increased iron requirements resulting from building muscle tissue and increasing blood mass. Since many athletes are young, they may also be at risk for poor dietary intake of bioavailable iron at a time when the need is great.

*Screening and Prevention.* Despite the significant reduction in the prevalence of iron deficiency anemia resulting, in part, from such federal nutrition programs as the Special Supplemental Nutrition Program for Women, Infants and Children (WIC), the Institute of Medicine (IOM) recommended in 1993 that all nonpregnant women of childbearing age be screened for anemia at least once between 15 and 25 years of age. Women with other risk factors (i.e., high menstrual blood loss, frequent blood donation, high parity, and previous diagnosis of iron deficiency anemia) should be screened every two to three years. Since nonpregnant young women are less likely to see a physician regularly, it is important that strategies be developed to detect and treat their iron deficiency anemia, including using school health clinics for screening.

*Treatment.* Current guidelines recommend getting adequate iron intake from food to protect against iron deficiency anemia—the Recommended Daily Allowance (RDA) is 15 mg/day. Accordingly, nutritional counseling and appropriate food consumption are the first therapies recommended. Routine, low dose (30 mg) iron supplementation is recommended in pregnancy, beginning with the first prenatal visit. Treatment for iron deficiency anemia
should be based on diagnosis and be monitored until remediation occurs, as opposed to simply dispensing an iron supplement with neither diagnosis nor appropriate follow-up.90,91

Prevention, identification, and treatment of iron deficiency anemia require coordination among different agencies and health care providers. Based on the guidance noted above, there is a need for nutrition education in schools at all levels to aid in proper food selection. Health care personnel should be trained to provide nutrition guidance when women are served in the health care system. Additionally, low-income women need federally-funded food and nutrition programs to assure food security and to improve access to adequate quantities of nutrient-dense food.

Folate

Folic acid has gained significant importance for preconceptional health since it has been shown to have a protective effect against spina bifida, anencephaly, and other neural tube defects (NTDs), if taken before conception and up to 28 days of pregnancy.92-94 Approximately 4,000 pregnancies and 2,500 live births are affected by neural tube defects each year in the United States. Dietary Reference Intakes (DRIs), which expand and update RDAs, recommend 0.4 mg of folic acid for all women. In addition to documented effects of folate deficiency on NTDs, recent attention has been focused on the role of folate in preventing high levels of homocysteine, which is a risk factor for heart disease and stroke.95 Approximately 50,000 lives could be saved in the U.S. alone by reducing the risk of cardiovascular disease associated with hyperhomocysteinemia. However, even though taking folic acid reduces homocysteine levels in both men and women, it has not been empirically demonstrated that folate supplementation decreases a person’s risk of heart disease and stroke.96

Evidence is mounting relating serum folate levels to several other health problems. According to the CDC, women with moderate and low levels of serum folate have a greater risk of developing colon and cervical cancer as well as precancerous lesions of the cervix when compared to women with high serum folate levels.96 Luke, Hediger, and Scholl (1996) note a relationship between premature delivery and low birthweight among low-income women with insufficient folic acid intake.97

The Department of Agriculture estimates that most women between the ages of 19 and 50 currently consume only 0.2 mg of food folate each day. The Public Health Service advises women of reproductive age to consume 0.4 mg of folic acid daily (starting at least 1 month before pregnancy begins and continuing through the first trimester) in order to reduce their risk of having a pregnancy affected with NTDs. At the 0.4 mg level, folic acid is shown to reduce the risk of NTDs by up to 70 percent.98 Since many women do not appear to be consuming enough folic acid through their diets, supplementation in the form of multivitamins for women of childbearing age has been recommended in the DRIs as well as by national public health organizations and the American College of Obstetricians and Gynecologists. To further secure an adequate intake of folic acid, beginning in January 1998 U.S. manufacturers have been required by the Food and Drug Administration (FDA) to fortify grain products with between .043 mg and 0.14 mg of folic acid per 100 grams of cereal grain product.99,100
The recommendations about folic acid raise two issues for examination: (1) risks and benefits of food fortification and (2) proper targeting of folic acid supplementation to high-risk populations. Risks and benefits of food fortification can be examined by reviewing current folic acid intakes from food and vitamin/mineral supplements, amounts of folic acid available with current fortification programs, and estimates of intakes with the FDA’s proposed fortification program. According to an analysis of the U.S. Department of Agriculture 1987-1988 Nationwide Food Consumption Survey data, women of childbearing age (11-51 years) consume on average more than 0.2 mg of folic acid per day (from food, currently fortified foods, and supplements)—less than the 0.4 mg recommended. Median folic acid consumption is approximately 0.3 mg, with young girls aged 11-18 consuming less. However, there is much variation among women, with 25 percent consuming less than 0.2 mg/day. Further analyses indicated that supplement use contributed most to those women who already had high intakes of folic acid from food, which supports the need for fortification of a staple food item to increase overall intake of this nutrient. With current food intake patterns, these analyses showed that intake of folic acid would not exceed the 1 mg estimated safe limit with the recommended fortification program, but the fortification is also unlikely to increase folic acid consumption for the 25 percent of the population currently consuming less than 0.2 mg to the recommended level of intake. These findings indicate the need to consider not only the mean but the distributions of nutrient intake, as well as impact on high consumers and effectiveness for the target group. These issues are especially important due to rapidly changing food consumption patterns, the often outdated nutrient databases used for analysis of food consumption data, and errors in self-reporting of food intake.

**Calcium and Vitamin D**

The Food and Nutrition Board’s new Dietary Reference Intakes recommend 1,300 mg of calcium per day for young people 9- to 18-years-old, 1,000 mg for adults aged 19-50, and 1,200 mg a day for all older Americans without regard to gender. These recommendations are an indication of a movement that acknowledges the protective effects of calcium against the development of osteoporosis.

Studies show that peak bone mass is related to the intake of calcium during the time of bone mineralization, which continues for some time after longitudinal bone growth has stopped (that is, into the second and third decades of life). Bone loss occurs with aging and is more pronounced for postmenopausal women than men. Low dietary intake of calcium during adolescence and early adulthood is associated with lower peak bone mass levels and possibly an increased risk of osteoporosis in later life. While calcium stored in bones can accommodate short-term deprivation, chronic shortages are associated with bone mass and bone structure loss that may be irreversible. Surveys show that calcium is consistently low in female diets beginning during adolescence, increasing the risk for low bone mineral content and bone mineral density attainment, as well as low levels in middle and later life. With improved diets, however, women can increase their calcium nutritional status.

It is important to ensure that women throughout the life cycle get adequate supplies of calcium in their diet through nutrition education and food security. Since dairy products are an important source of calcium, women who are lactose intolerant (for example, about 65 percent of African-American women), may use lactase-treated milk or lactase...
tablets when eating foods containing lactose.\textsuperscript{114} Federally-funded food programs (e.g., WIC) make these products available to women who need them. Calcium is also available from other sources, such as green leafy vegetables, calcium-fortified bread, and cereal and orange juice fortified with calcium, in addition to the dozen or more calcium supplements available on the market.\textsuperscript{10,111}

Several lifestyle factors are associated with bone health, such as performing load-bearing exercise, maintaining a proper diet during the period of maximal bone mineralization, and not smoking.\textsuperscript{115} Caffeine is also mentioned as an impediment to calcium absorption, but its effect is minimal when compared with protein and sodium. High intakes of protein and sodium, typical in the U.S. diet, increase the need for calcium because of increased urinary excretion. When protein and sodium intakes are low, the requirement for calcium can be as low as 400 mg per day but can rise as high as 2,000 mg per day when protein and sodium intakes are high.\textsuperscript{116}

Vitamin D is also associated with bone health. Protection against vitamin D insufficiency in the U.S. population is managed by fortifying dairy products in the food supply. As a result, rickets is rare among children and young adults in America.\textsuperscript{117} Vitamin K and several trace minerals (zinc, manganese, and copper), which are involved in the synthesis of bone matrix, need to be derived from a balanced diet.\textsuperscript{118,119} The best insurance against bone loss is a diet that meets the U.S. Dietary Guidelines throughout the life cycle and participation in load-bearing exercise on a regular basis.\textsuperscript{106,120}

**Nutrition During Pregnancy**

In 1990, the IOM issued a report that established reference levels of BMI cut-off values for prepregnancy weight to guide prenatal weight gain recommendations. Prior to this report, prenatal weight gain recommendations were made without regard to the size of energy reserves of the mother. As a result of examining birth weight and other infant outcomes in relation to maternal BMI, the recommendations shown in the table below were made.

| IOM PRENATAL WEIGHT GAIN RECOMMENDATIONS\textsuperscript{121} |  |
|-------------------------|-------------------------|-------------------------|
| BMI category | Body size category | Prenatal weight gain recommendation |
|\textless{} 19.8 | Underweight | 28-40 lb |
| 19.8-26.0 | Normal weight | 25-35 lb |
| 26.1-29.0 | Overweight | 15-25 lb |
| \textgreater{} 29.0 | Obese | at least 15 lb |

Applying the IOM recommendations, recent study findings indicate that only 30 percent of pregnant women gained weight within the recommended weight range.\textsuperscript{122} African-American women are at risk for low prenatal weight gain in each BMI category.\textsuperscript{122-124} When comparing birthweight outcomes, there was no difference across the range of recommended weight gains among women in the lower versus higher weight gain categories.\textsuperscript{42}
However, recent attention in the field to prenatal weight gain has shifted from infant outcomes to maternal outcomes. The focus is now on the relationship between gestational weight gain and the development of obesity. Prenatal weight gain is positively associated with postpartum weight retention, especially among overweight African-American and Hispanic women who retain more weight than Caucasian women at each level of weight gain during pregnancy. The amount of weight retention increases with the more children one bears, and low-income women have higher postpartum weight retention than upper-income women.

Previous recommendations indicated that Black women should gain at the upper end of the BMI-specific categories. However, an Expert Work Group on Maternal Weight Gain, convened by the federal Maternal and Child Health Bureau, having considered that prenatal weight gain is associated with only small incremental increases in birthweight and the possible contribution of prenatal weight gain to postpartum weight retention, wrote: “until more is known, African-American women should be advised to stay within the IOM-recommended BMI-specific weight range...without either restricting weight gain or encouraging weight gain at the upper end of the range.”

With respect to vitamin/mineral supplementation during pregnancy, two significant findings emerged from the Institute of Medicine 1990 Expert Work Group: (1) there should be routine assessment of dietary practices of all pregnant women in the U.S. to evaluate their need for improved diet or vitamin/mineral supplementation, and (2) recommendations for vitamin/mineral supplements should be made based on dietary evaluation and evidence of benefits and possible harmful effects. It was further suggested that counseling and federally-funded food and nutrition programs be the interventions of first resort before recommending the use of vitamin/mineral supplements to meet nutritional needs. Folic acid supplementation of 0.4 mg is recommended outright because available evidence indicates that folate needs are unlikely to be met by diet alone.

For pregnant women at risk of nutrient deficiency due to lifestyle habits such as alcohol consumption, heavy cigarette smoking, and drug abuse, it is advised that a daily multivitamin-mineral supplement be used beginning in the second trimester. To promote absorption of nutrients from supplements, supplements should be taken between meals.

Because of the WIC Program, low-income pregnant women are much more likely to be exposed to nutrition education and guidance than women in other income groups. It is recommended that health care professionals offering services to women in private care settings document that nutrition assessment and guidance is provided to their clients.

**Nutrition During Lactation**

The 1991 IOM report on Nutrition During Lactation contended that “Women living under a wide variety of circumstances in the United States and elsewhere are capable of fully nourishing their infants by breastfeeding them.” This bold statement was based on scientific evidence indicating that women with marginal to poor nutritional status could produce enough milk to support growth and promote health in their infants. By contrast, however, mothers are vulnerable for net losses of calcium, magnesium, zinc, folate and vitamin B6 during the lactation period unless dietary intake is adequate. To prevent these
losses and achieve optimal nutritional status, the IOM report recommended nutrients be
provided from food-based sources and not from supplements unless indicated based on a
professional evaluation.

*Lactation and Body Weight.* Many women are concerned about losing weight during the
postpartum period. For lactating women, part of the weight gained during pregnancy is
mobilized to meet the energy needs of lactation. The amount lost during lactation varies
with nutritional status, with some small percent of women showing a weight gain.
Malnourished women will lose body weight to provide the energy needed for lactation
even at the expense of their own nutritional status.\textsuperscript{111,130} Despite mixed results of studies,
scientific evidence shows that while some weight loss is associated with lactation of short
duration, significant weight loss occurs especially when a mother is exclusively breast-
feeding for longer periods, up to six months or more.\textsuperscript{131-134} Gradual weight reduction is not
associated with decreases in milk volume or quality.\textsuperscript{135} Weight loss can be enhanced by
consuming a low-fat diet and engaging in moderate aerobic exercise.\textsuperscript{133,136}

*Lactation and Bone Health.* During lactation, calcium is mobilized from bone, resulting in
decreased bone mineral content, which is not improved by taking calcium supplements.\textsuperscript{137-}
\textsuperscript{139} This calcium loss may be due in part to the suppression of ovarian function resulting in
decreased levels of estrogen and other hormones, a condition similar to that experienced
during the perimenopausal period.\textsuperscript{140} Following weaning, bone mineral content rebounds
and may reach or surpass pre-lactation levels, especially for women who breastfed for six
to nine months.\textsuperscript{141-145}

*Lactation and Breast Cancer.* Early literature assessing the protective effects of breastfeed-
ing on breast cancer showed positive or no effects.\textsuperscript{146} More recent findings have been
equivocal, especially with respect to premenopausal versus postmenopausal breast cancer
incidence. This disparity may be due in part to the variability in methods used to assess
outcomes.\textsuperscript{129,140,147-150} Age at menarche, family history of breast cancer, duration and life-time
experience of breastfeeding, parity, and age at first birth are variables that have shown
some association with breast cancer but the findings conflict.\textsuperscript{148} Further studies are needed
to clarify the relationship between breastfeeding and breast cancer and to determine pos-
sible etiologic mechanisms that may be related to any observed outcomes.

**Nutrition Intervention for Health Promotion**

Recent research related to nutrition intervention for health promotion has become
more comprehensive in scope, focusing on the range of issues impacting food consump-
tion (food purchasing, preparation, eating occasions, and environmental factors), and more
theory-based, using several behavioral models. Studies with this level of methodological
rigor have been done on clinical trials and self-help interventions, as well as worksite,
school, and community nutrition programs. Better measures, with increased levels of
validity and reliability, have been developed to more appropriately assess nutrition related
behavior changes.\textsuperscript{152} Methods, measures, and outcomes important in guiding policy will be
described here.

Many studies have examined intervention strategies for producing two outcomes
with the best evidence for linking eating patterns to disease prevention: (1) lowering fat in
diets and (2) increasing consumption of fruits and vegetables. These dietary intervention studies showed that people developed a positive attitude toward low-fat eating over time lost significant amounts of weight. When diets met the U.S. Dietary Guidelines, they were associated with reduction in serum lipid levels and hypertension. They were also associated with improved quality of life and nutritional health perception.

Not all evidence showed a positive relationship. Gatenby (1997) found that the casual use of reduced-fat and reduced-sugar foods has little net effect on total energy intake or changes in BMI. Low-fat diet consumption may also be accompanied by low intakes of vitamin E, calcium, and zinc.

Approaches for delivering nutrition interventions range from using volunteer research staff to more intensive strategies, such as classes with professional staff. Interventions with classes and competitions to see who can lose more weight, which result in increased frequency of weight monitoring, have more positive outcomes than programs with one-shot interventions, such as health fairs and kick-off events for weight-management programs. Other approaches include pre-packaged meals and nutritionist-guided diets. Pre-packaged meals are associated with greater clinical benefit, nutritional adequacy, and compliance. In some cases, adaptations in the nutrition education messages were needed to accommodate low-literacy groups.

Regular health care visits present a great opportunity for delivering nutrition education, but, in the past, physicians lacked sufficient training to counsel about nutrition and were often not willing to devote time necessary to do it. Evans et al. (1996) demonstrated that medical residents who were trained and prompted when counseling patients increased their nutrition knowledge and the frequency of nutrition counseling, resulting in increased likelihood that patients would try to change their diets. Similar, but modest, results were found in a program directed to low-income clients. Since studies have demonstrated that even small changes in weight and diet decrease disease risk, general practitioners in a managed care setting may see providing nutrition information as an important cost-effectiveness strategy. Coupling nutrition advice from physicians and nurses with medical nutrition therapy by registered dietitians was associated with increased nutrition knowledge, positive perception of benefits, increased efficacy of cholesterol-lowering diet, improvement in BMI, and better compliance with dietary recommendations. This team effort could mean additional cost savings from the decreased need for medication resulting from improved health status.

Research has identified several problems with nutrition interventions, including failure to maintain changed behaviors and outcomes after one or more years. Studies show that those most likely to sustain nutrition behaviors over time reach the maintenance stage of change during the intervention. A number of methodological problems complicate the interpretation of nutrition research findings, including focusing on single nutrients, failing to evaluate the interactive effects that changes in one nutrient have on other nutrients, and not considering lifestyle factors that relate to health and nutrition. Finally, improvement in analytic and dietary intake methods show promise in reducing measurement bias.
Healthful Eating Patterns. Life cycle and societal factors contribute significantly to women’s nutritional health status. First, the relationship between food consumption patterns and the onset of disease is not adequately communicated to women. Educational opportunities are missed because schools and health care settings do not effectively provide the necessary information and support to foster healthy eating habits in the early years of development and thereafter. Second, women’s food consumption patterns are strongly influenced by their multiple roles within the family. Most women today have less time for food shopping and preparation, and consume more convenience foods and meals eaten away from home. Third, over the past 20 years, there has been an increase in single female-headed households and more than half of these households fall beneath the poverty line. The literature suggests that these women and their families are at particular risk for unhealthy eating patterns.

Based on these findings, we offer five major policy implications:

1. Nutrition education, based on current science, is necessary to improve the health status of all women and should be implemented in schools, community centers, and public and private health care settings. Culturally appropriate behavioral interventions should be included in the programs.

2. Proper training of professionals is needed in order to disseminate nutrition information effectively and to support women in their efforts to modify unhealthy eating patterns.

3. Federal and community nutrition programs for at-risk or low-income populations also need to adjust their programs and services to reflect the new nutrition guidelines and recommendations.

4. Program coordination is necessary to insure that individuals are connected with appropriate professionals when nutritional problems are identified through schools and community centers.

5. Worksite wellness and nutrition programs should be available to all women employed outside the home.

Weight Management. The U.S. has seen an increase in the proportion of women who are overweight or obese. Minorities and women with low incomes are more likely to be overweight for a variety of reasons, including a lack of adequate nutritional knowledge, food resources, and access to health care. Obesity is a considerable risk factor for chronic physical and mental health problems, pregnancy complications, and employment difficulties. In addition, women who are severely underweight and/or have eating disorders are at risk for health problems such as osteoporosis, chronic fatigue, and fertility impairment. It appears that federal agencies and national programs are now beginning to address the issue of obesity through the development and implementation of education and outreach programs.
Policy implications related to these findings are:

1. Comprehensive policies, procedures, and training related to obesity and eating disorders are needed to identify and treat these problems in both public and private health care settings.

2. An efficient referral system should be established in order to link at-risk children and their families who are identified through school programs with health care providers trained to provide culturally appropriate services.

3. Legislation that requires schools to adhere to U.S. dietary guidelines should be monitored to assure that goals are met.

4. Fresh fruits and vegetables should be competitively priced so they are affordable and available to all families.

5. Reimbursement should be provided to trained professionals who specialize in weight management services.

Dietary Supplementation. Because a sufficient balance of nutrients contributes to women’s health, and insufficient or excess nutrient intake places women at risk for a number of health problems, women should obtain necessary levels of nutrients from food consumption. However, supplements of important nutrients such as iron, folate, and calcium may be necessary for women who do not obtain sufficient amounts through their diet. Iron supplementation may be especially important for women who experience food insecurity, and folate supplementation is recommended for all women capable of becoming pregnant.

Nutrition During Pregnancy and Lactation. Primary findings related to nutrition during pregnancy and lactation can be summarized in four points. First, recommendations for weight gain during pregnancy have been adjusted to reflect differences in BMI among women. Second, African-American women are at risk for inadequate prenatal weight gain but also at risk for postpartum weight retention. Hispanic and low-income women are also more likely to retain weight gained in pregnancy. Third, the physical demands of lactation require adequate food intake in order for women to maintain their health status. And fourth, lactation is associated with postpartum weight loss.

Policy recommendations based on these findings are:

1. Routine dietary assessment should be incorporated into prenatal care services for all women to determine the need for supplementation and/or dietary adjustment.

2. Nutrition education and guidance should be a necessary component of all prenatal care programs. This should not be exclusively promoted for women in the WIC program.
3. All women should be encouraged to breastfeed because of the positive health effects for them and their babies as well as the lower costs of feeding compared with the high cost of infant formula. Health care professionals need to continue to improve our understanding of methods to increase breastfeeding rates, especially among cultural and ethnic groups where rates are lower.

**Research Recommendations**

Drawing from the body of work that has been presented here, there are several nutrition topics for women that warrant further research:

1. Explore the extent to which schools can be sites for nutrition screening and health education for adolescents and women.

2. Evaluate the impact of stress in women that may result from multiple role “overflow” on their nutritional status.

3. Assess the extent to which folic acid supplementation and fortification impact folate nutritional status and incidence of neural tube defects.

4. Develop effective interventions to help African-American women reach weight gain recommendations and lose weight to achieve a healthy or healthier weight during the postpartum period.

5. Evaluate the extent to which guidance for calcium intake is impacting bone mineral density in young women.
References


Even though physical activity has been an important concept in health for centuries, the 1950s marked the first time recommendations based on scientific data were made to achieve health through fitness. During the 1960s and 1970s, committees and expert panels from health and fitness organizations began to specify physical activity programs to improve health and physical performance. During the past few years, there has been an increased understanding of the value of regular moderate-intensity physical activity on overall health, leading several health organizations—including the American College of Sports Medicine (ACSM), the American Heart Association (AHA), Centers for Disease Control and Prevention (CDC), the President’s Council on Physical Fitness and Sports (PCPFS), and the National Institutes of Health (NIH)—to issue recommendations for physical activity and health (see Table and Box that follow). In addition, Healthy People 2000 Objectives, Healthy People 2010 Objectives, and the U.S. Dietary Guidelines for Americans (1995) discuss physical activity targets.

Energy expenditure during physical activity is expressed as metabolic equivalents (METS). METS are calculated as work metabolic rate/resting metabolic rate. One MET is equal to 5 kcal. The other components of energy expenditure are basal metabolic rate (50-70 percent) and thermic effect of food (7-10 percent).

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Frequency of Training</th>
<th>Intensity of Training</th>
<th>Duration of Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>For Health</td>
<td>Most or all days of the week</td>
<td>Moderate (3-6 METS)†</td>
<td>30 minutes or more</td>
</tr>
<tr>
<td>For Fitness</td>
<td>3-5 days/week</td>
<td>60-90 percent maximal heart rate</td>
<td>20-60 minutes</td>
</tr>
<tr>
<td>To Develop and Maintain Fat-Free Weight</td>
<td>At least 2 days/week</td>
<td>One set of 8-12 exercises of all major muscle groups</td>
<td></td>
</tr>
</tbody>
</table>

†Energy expenditure during physical activity is expressed as metabolic equivalents (METS). METS are calculated as work metabolic rate/resting metabolic rate. One MET is equal to 5 kcal. The other components of energy expenditure are basal metabolic rate (50-70 percent) and thermic effect of food (7-10 percent).
Focused attention on physical activity and women’s health, however, is a more recent phenomenon. Women’s increased participation in physical activity and sports reflects a cultural change from labeling athletic girls and women as “tomboys.” Even though Title IX of the Education Amendments of 1972 has been used to provide equal opportunity for sports participation and revenue in schools, women still lag far behind their male counterparts in sports and physical activity participation despite some gains.1

This chapter will describe patterns and trends in women’s participation in physical activity, discuss some methodological issues associated with physical activity measurement, and pay some attention to the controversy regarding past failure to account for physical activity in the multiple roles women perform in employment, child care, and household chores. The chapter will also discuss the relationship between selected diseases and physical activity as well as the effects of physical activity during pregnancy and lactation. It will conclude with policy and research recommendations.

Patterns and Trends in Physical Activity Among Women

Leisure-Time Physical Activity. The Surgeon General’s Report on Physical Activity and Health states that approximately one-quarter of U.S. adults do not exercise during

---

1Title IX of the Educational Amendments of 1972 bans sex discrimination in schools, whether it be in academics or athletics. Specifically relevant to physical activity, Title IX governs the overall equity of treatment and opportunity in athletics while giving schools the flexibility to choose sports based on student body interest, geographic influence, a given school’s budget restraints, and gender ratio.

1Exercise is defined as planned, structured, and repetitive bodily movement done to improve or maintain one or more components of physical fitness. Exercise is a subset of physical activity.
leisure time. Race, class, and gender differences are associated with these trends in physical activity. Women and minorities overall are less likely to spend leisure time exercising than men and whites. The prevalence of inactivity among White women (23.1-29.0 percent) is similar to that of Black men however. One-third of Black and Hispanic women report no leisure-time physical activity. Higher prevalence of inactivity is reported among individuals with lower educational levels and with lower income levels.\textsuperscript{1,6,7} Among overweight women, 41 percent report being inactive during leisure time. The proportion of overweight women who are inactive during leisure time increases with age and degree of overweight but decreases with higher levels of educational attainment.\textsuperscript{8,9}

The prevalence of sustained, regular physical activity varies with income and education levels. College-educated individuals have a 50 percent higher prevalence of sustained, regular physical activity than those with fewer than 12 years of education. Higher socioeconomic status (SES) women are more likely to participate in recreational sports and exercise than those with lower SES.\textsuperscript{6,11}

Regular and vigorous exercise is the best type of physical activity for cardiovascular fitness. The Surgeon General's Report on Physical Activity and Health\textsuperscript{1} maintains that only 15 percent of adults participate in this type of physical activity and those who do tend to have higher educational levels. Women and men differ significantly in the types of regular and vigorous exercise they prefer. Women tend to choose walking and aerobics/aerobic dance, while men select gardening/yard work, strengthening exercises, jogging/running, and vigorous contact sports. Stretching, bicycling, stair climbing, and swimming are activities chosen equally by women and men.

<table>
<thead>
<tr>
<th>Years</th>
<th>No Activity (%)</th>
<th>Regular, Sustained Activity (%)</th>
<th>Regular, Vigorous Activity (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986</td>
<td>34.3</td>
<td>18.1</td>
<td>18.8</td>
</tr>
<tr>
<td>1988</td>
<td>31.5</td>
<td>19.6</td>
<td>20.0</td>
</tr>
<tr>
<td>1990</td>
<td>32.3</td>
<td>18.5</td>
<td>19.4</td>
</tr>
<tr>
<td>1992</td>
<td>31.4</td>
<td>18.4</td>
<td>19.7</td>
</tr>
<tr>
<td>1994</td>
<td>33.0</td>
<td>18.1</td>
<td>18.7</td>
</tr>
</tbody>
</table>

Occupational Activity. Women have consistently increased their participation in the labor force during the last 25 years. It is estimated that by 2005, 61.7 percent of women will be working outside the home.\textsuperscript{12} In addition, women are more likely than men to hold multiple jobs. This is especially true for single, never-married women, and widowed, divorced, or separated women. More than 7 percent of women in these two categories work multiple jobs compared to 5.9 percent and 5.5 percent, respectively, of men.\textsuperscript{13}

\textsuperscript{1}A body mass index (BMI, see footnote) ranging from 25-27.3 indicates overweight, while a BMI of 27.3 or higher for women indicates obesity.
In the last thirty years, women have chosen more diversified occupations, with more women working in physically demanding jobs such as construction, farming, forestry, law enforcement, and firefighting. However, the fastest growing major occupation groups for women are executive, administrative, and managerial positions; professional specialties; and technical and related support positions. While many women have jobs requiring little physical activity, increasing numbers engage in occupations that require high levels of physical activity.

**Activity Associated with Daily Living.** Women’s multiple roles at home and work have direct effects on their levels of leisure-time physical activity. Many women work full-time outside the home and also have the majority of household responsibilities inside the home. While these activities contribute to the 30 minutes of recommended daily activity, they may not be intense enough to contribute to fitness and they leave little time for leisure activities such as regular aerobic exercise. In 1990, only 37 percent of women (compared to 44 percent of men) reported participating in physical activity at least 3 times per week for 20 minutes to strengthen the heart and lungs. Although some women may feel exhausted at the end of the day, job-related and household-related activities do not require the same levels of physical energy as leisure activities such as bicycling, aerobics, swimming, and jogging. Achieving a healthy level of physical fitness requires regular cardiovascular exercise, an activity many women do not include in their daily routine. Knowledge and attitudes about physical activity, access to equipment and facilities (especially ones that provide for the care of young children), time, safety, and physical health status influence patterns of physical activity among women.

**Measurement of Physical Activity**

Physical activity is a component of total energy expenditure. Physical activity is composed of leisure-time sports, occupational activities, and activities of daily living. Several components of physical activity, including caloric expenditure, aerobic intensity, weight bearing, flexibility, and strength, are related to health outcomes.

Early attempts to measure physical activity evaluated occupational physical activity using job titles as a proxy indicator. More recent evaluations of occupational physical activity query frequency, intensity, and duration of activities. With the general decline in the quantity of energy expenditure in occupational activity among workers due to fewer labor jobs and better technology, there emerged an interest in assessing leisure-time activity in the early 1980s. Sociodemographic and cultural factors play a role in individual participation as well as reporting of physical activity—for example, while some low-income people walk to and from work, they may not report this as physical activity. Such factors need to be explored in research. Further, compared with men, women tend to have different

---

1A set of attributes that people have or achieve that relates to the ability to perform physical activity. Skill-related fitness includes agility, coordination, power, balance, speed, and reaction time. Health-related fitness includes cardiorespiratory endurance, body composition, muscular strength, muscular endurance, and flexibility.

2Physical activity is defined as any bodily movement produced by skeletal movement that results in energy expenditure.

3Energy expenditure is measured in kilojoules (kJ) or kilocalories (kcal) per unit of time.
patterns of physical activity, and they engage in activities with different levels of intensity and duration. Since questionnaires currently available were tested only on men, they may be less sensitive to differences in physical activity levels in populations of women. Typical physical activity questionnaires are likely to underestimate energy expended in household and child care activities.25,26

**Women’s Health-Related Benefits of Physical Activity**

*Physical Activity and Disease Prevention.* Several authors report that regular physical activity produces a number of health-related benefits in women.27-30 For example, research indicates that the risks of developing cardiovascular diseases, such as hypertension and coronary heart disease, are significantly decreased if regular exercise is incorporated into a person’s lifestyle.28,31-37 In contrast, people who are physically inactive may increase their risk of developing hypertension by 30 percent. Exercise is also associated with improved lipid profiles—High Density Lipoprotein (HDL) components (the “good” cholesterol) increase with regular physical activity.33

The relationship between physical activity and non-insulin-dependent diabetes mellitus (NIDDM)—a disorder which affects more than 7 million women over age 20—has also been reported. One study suggests that each 500 kilocalories of additional leisure-time physical activity per week corresponds with a 6 percent decrease in the risk of developing NIDDM.29 Another study involving female registered nurses (aged 34-59 years) reported a 16 percent lower risk of self-reported NIDDM among women who exercised vigorously at least once a week compared with those who were not physically active.38 Other studies show improvement with exercise in several indices used to assess NIDDM.39

Although studies on the relationship between physical activity and breast cancer have yielded inconsistent findings, the potential preventive benefits of exercise have been noted. Several studies suggest that physical activity during adolescence and young adulthood may be protective against later development of breast cancer. For example, a 1995 study found that among former college athletes and non-athletes, combined prevalence of female reproductive cancers was 2.5 times higher for the non-athletes.40 However, current research results are insufficient to strongly support or deny a relationship between physical activity and hormone-dependent cancers in women.

For individuals suffering from osteoarthritis, regular physical activity may help reduce joint swelling and has been found to improve psychosocial status, functional status, and physical fitness. An increased pain threshold, improved energy levels, and increased self-efficacy have been noted among osteoarthritic persons who engage in moderate intensity exercise. However, it is not yet known whether physical activity assists in preventing the onset of osteoarthritis.41-43

The preventive effects of regular exercise are observed in women at risk for developing osteoporosis. In addition to adequate calcium, vitamin D, and other nutrients, three factors are associated with the development of osteoporosis in men and women and all three are potentially minimized by participating in physical activity: (1) a deficient level of peak bone mass at physical maturity, (2) failure to maintain this peak bone mass during the third and fourth decades of life, and (3) bone loss that begins in the fourth or fifth decade of life.1,30,44,45
Physical Activity and Obesity. Given the prevalence of obesity in the U.S., the relationship between physical activity and obesity has received a significant amount of attention from researchers over the years. Several studies maintain that physical activity is an important component of weight control and obesity prevention. Citing numerous studies, The Surgeon General's Report suggests that regular exercise aids in fat reduction and may positively contribute to healthier fat distribution. In addition, exercise maintains or increases muscle mass. After controlling for age, Body Mass Index (BMI), and smoking status, women participating in regular weekly activity were more than twice as likely to lose weight and retain the weight loss. It was necessary to include some vigorous exercise in the activity pattern to achieve these results. Exercise is believed to influence weight status by enhancing metabolic rate. Exercise increases resting metabolic rate, preserving lean tissue with its higher energy demands during weight loss, and impacts appetite. Low to moderate levels of physical activity may decrease appetite while vigorous levels may increase appetite, but not enough to equal the amount of energy expended in the physical activity. Since there are familial factors in obesity, it is important to begin as early as possible to encourage families to exercise and to persist with both the exercise and encouragement over time.

Physical Activity and Mental Health. The Surgeon General's Report also discussed the relationship between physical activity and mental health. Research links physical activity to reduced symptoms of depression, clinical depression, and anxiety and to improved affect. Inactive persons are two times as likely to have symptoms of depression when compared with physically active individuals. Recent reports indicate an association between exercise and reduced stress levels and between running and improved mood. Research has not shown conclusively, however, that psychological benefits accompany regular exercise among individuals with relatively good physical and mental health.

Additional Health and Lifestyle Benefits of Physical Activity. Regular exercise improves the general health-related quality of life (HRQL) of individuals. HRQL comprises three dimensions: (1) cognitive, social, physical, and emotional functioning; (2) personal productivity; and (3) intimacy. Rejeski, Brawley, and Shumaker (1996) found that physical activity is likely to have an impact on self-concept, self-esteem, mood, and affect. In addition, physically active individuals may experience improvements in their perceived ability to function in a daily routine, in their energy levels, and to some degree, in their cognitive functioning.

Smoking cessation is enhanced with exercise. When 20 females were randomly assigned to a smoking cessation program with and without exercise, findings indicate that exercise contributed most to attendance at the sessions. While 24-hour quit rates were higher for women with the “contact” intervention (that is, classes and group sessions), long-term quit rates measured at 1, 3, and 12 months were higher for those women randomly assigned to the exercise sessions.

Regular physical activity among the elderly is reported to be related not only to improved health status but also increased longevity. Flexibility and strength training should be added to regular physical activities for optimal health benefits.

†Body Mass Index takes into account weight in terms of height, specifically: kg/m².
Adverse Effects of Physical Activity

Musculoskeletal injuries can occur when individuals are physically active. These injuries are often caused by sudden movements or during repetitive exercises, such as running. Metabolic abnormalities are also known to occur among some physically active persons. Hyperthermia, electrolyte imbalance, and dehydration may present themselves in individuals who exercise in extremely hot or cold conditions or for excessive periods of time. Maintaining electrolyte and caloric composition and taking in plenty of fluids can prevent these abnormalities. For women, excessive exercise or exercise in extreme conditions may affect the endocrine system, causing anovulation and amenorrhea. In addition, women who exercise excessively may experience a decrease in bone mass and in body weight below a critical lean mass.1

Of particular concern for women is the relationship between excessive exercise and eating disorders.65 A recent study suggests that women with anorexia tend to exercise at very high or very low levels, depending on their BMI.66,67 Anorexic women with higher BMIs exercised more than those with lower BMIs. Both groups exercised more and at more moderate levels than the control subjects. Another study showed that 25 percent of those women who ran more than 30 miles per week had Eating Attitude Test scores indicating a high risk for anorexia.67 In addition, higher level runners were more likely to be addicted to running and tended to have lower percentages of body fat. Adolescent girls with anorexia are at risk for lower lumbar vertebral bone density and lower whole body bone mass, which may contribute to the development of osteoporosis later in life.68 They are also at increased risk of amenorrhea.40

Exercise During Pregnancy and Lactation

The combined stresses of exercise, pregnancy, and lactation involve complex physiological interactions, and recommendations are made by the American College of Obstetricians and Gynecologists to minimize maternal and fetal risks that may have adverse effects on maternal and fetal health and well-being.69,70 Exercise during pregnancy and lactation may be associated with changes in uterine blood flow, hyperthermia, metabolism of energy-producing nutrients, fetal hypoxia, and uterine contractility, which may increase the risk of preterm delivery.69,70 Specific factors about exercise itself, such as intensity, duration, weight-bearing, not weight-bearing, and total muscle mass utilized, affect physiological impact and risks associated with exercise during pregnancy and lactation. Environmental factors such as temperature and safety should also be considered. Women should only engage in exercise during pregnancy and lactation with the advice of their health care provider.

Despite the potential risks of exercise during pregnancy, findings from the literature generally show neutral or slightly positive effects.71-73 Weight gain during pregnancy generally does not differ between women who exercise and those who do not, although one study found a smaller weight gain (13.0 kg versus 16.3 kg) in women who continued to exercise during pregnancy and those who voluntarily discontinued exercise.72-74 Deliberate, repetitive exercise can result in increased cardiorespiratory fitness in pregnant women.69,71

Even though exercising during pregnancy generally does not alter length of labor,75,76 one prospective study reports that pregnancy symptoms (e.g., fatigue and depressive
feelings) were lower for women who were more active in trimesters one and three. Limited evidence points to a positive effect of exercise during pregnancy as a treatment for gestational diabetes. Moreover, aerobic exercise is not associated with an increase in obstetric complications or neonatal morbidity.

Because exercise results in a redistribution of blood flow from the viscera to the working skeletal muscles, there is concern that uterine blood flow may be compromised during exercise, resulting in fetal hypoxia. In general, fetal heart rate increases during mild to moderate exercise, and returns to pre-exercise levels shortly after exercise completion. McMurray (1993) showed that transient fetal bradycardia (slowness of the heartbeat) occurs approximately 15 percent of the time during and after exercise. This may indicate fetal distress. Even though no morbidity or mortality has been linked to exercise-induced bradycardia at this time, there is a concern about the possibility of adverse fetal outcomes.

No differences have been noted in fetal outcomes between mothers who exercised during pregnancy and those who did not. Birth weights of babies of women who exercised throughout pregnancy are variable, with distributions similar to those of women who did not exercise. Among low-income, African-American women, employment during pregnancy was found to contribute significantly to increased birth weight when the workload was light and involved sitting and standing.

Overall, exercise during pregnancy does not appear to have significant positive or negative affects on fetal well-being, but can improve maternal cardiorespiratory fitness and may increase maternal well-being. The American College of Obstetricians and Gynecologists states that women with no obstetric or medical complications can continue to exercise during pregnancy and derive health-related benefits. Maternal exercise up to 70 percent of maximal capacity does not interfere with normal fetal growth and delivery. A meta-analysis of available intervention studies as of 1991 concluded that a pregnant woman can exercise without appearing to harm herself or the fetus. No adverse effects were noted for weight-bearing exercises. However, the studies did not provide enough information to determine how exercise would affect a sedentary woman as compared to a woman who was physically active prior to pregnancy. For women who are physically active prior to pregnancy, a substantial percentage either reduce their level of activity or become sedentary over the course of gestation. Prudent recommendations for pregnant women suggest that it is safe for a woman to engage in moderate exercise in consultation with her physician.

There is limited information available to examine the effects of physical activity during lactation and the early postpartum period. Exercising during lactation was associated with increased cardiorespiratory fitness but no significant differences in maternal body weight or fat loss, volume or composition of breast milk, or infant weight gain. Women who engage in intense physical activity just prior to breastfeeding produce milk with high lactic acid content, resulting in a taste that some infants find objectionable. This effect is limited when women engage in intense physical activity for more than 30 minutes just following breastfeeding because the lactic acid has time to metabolize before the next feeding.

Postpartum physical activity was associated with a difference in weight retention. A Swedish study found that, of women who retained less than 5 kg, 54 percent were active
in their leisure time; for those who retained more than 5 kg, only 46 percent were active.\textsuperscript{72} At 7 to 12 months postpartum, there was a small but significant correlation between activity and weight change ($r = 0.05$).

### Opportunities and Barriers Related to the Promotion of Physical Activity

Although Title IX was not originally intended to focus on women’s sports and physical activity, it has become a major contributor to the increase in physical activity participation among women.\textsuperscript{10,86,87} By making college scholarships available to women, Title IX encourages girls to be serious about developing skills in sports and adopting vigorous physical activity as part of their lifestyle in order to be eligible for financial aid. In the past, women’s fashions and hair styles have not been conducive to sweating and the level of exertion associated with vigorous physical activity. Recently, styles increasingly reflect the number of women engaging in the types of physical activity that have the potential to enhance and maintain muscular strength, endurance, and flexibility. The popularity and coverage of the Women’s National Basketball Association, women’s Olympic hockey, and women’s college sports are likely to have a significant influence on the number of women engaging not only in personal physical activity but some aspects of the professional opportunities emerging, breaking down the social barriers that for too long has discouraged women from engaging in physical activity.

Exercise has been demonstrated to help people attain healthy weights—an especially important benefit when 50.7 percent of all women are overweight, based on the new definition of a body mass index of 25 points or more.\textsuperscript{88} Since physical activity has been associated with weight loss and weight loss maintenance, promoting women’s interest and participation in physical activity is critical. This will require physical education in schools as well as organized physical activity in the community so that access to exercise facilities is not limited to school hours. Having schools open during extended after-school periods to allow students and families to use the facilities could make it easier for women to increase their participation in physical activity.

Providing facilities and opportunities in cities is especially important due to the high prevalence of obesity among young, inner-city girls and women. However, simply making facilities available is not sufficient if safety remains an issue. Women may be especially vulnerable to violence if they begin to use recreation centers that have been the exclusive domain of males. It may be important to have trained female physical education instructors and administrators in these facilities before women will feel comfortable using them.

In fact, the threat of violence is a major barrier for many women who want to increase their physical activity. Since walking is recommended as an important way to stay fit, defining safe areas for walking in all neighborhoods is important. To avoid danger, women can form teams or walking partners and use malls and other public, protected areas. Houses of worship are another source of underutilized space. Several health promotion demonstration programs are using churches to promote physical activity—for example, “Gospel Aerobics” in the LIGHT Way Project and Project JOY in Baltimore, Maryland, which are funded by CDC grants. Since most congregations are predominately female and have existing social and service groups structures, churches, synagogues, and
mosques are excellent sites for the promotion of physical activity. Funds should be devoted to training leaders in basic first-aid and in techniques necessary to develop and lead physical activity classes. Since volunteers are often very busy with other faith activities and work and family responsibilities, job opportunities need to be created for paid staff who may or may not be members of the congregation. Paid and trained staff mean higher quality programs that could have substantial impact on health and physical fitness, especially for low-SES, minority women.

It is important that health education programs set forth the benefits of sound nutrition practices and physical activity as being necessary to health and well-being. The CDC has been a leader in advocating the merger of the two disciplines of nutrition and exercise. Physical activity and nutrition are being promoted in school curricula as an integrated concept.

Lack of time is another barrier to physical activity commonly cited by women. Activities of daily living and most types of employment do not provide the level of intensity required to achieve and maintain muscular strength, endurance, and flexibility. However, the demands of employment, childcare, and homemaking often leave little or no time for leisure-time physical activity. This is especially true for low-SES women who are at increased risk for obesity. Surveys continue to show the disparity in housework by gender. Even though some increased sharing of household responsibilities by men has been documented, more change needs to occur for women and the family to achieve health and fitness through leisure-time physical activity.

Given the number of women who are employed in the labor force, promoting physical activity at work could have an important impact on increasing physical activity. The savings to employers resulting from better health status of employees and fewer sick days has been an attractive selling point for including worksite wellness programs. These need to be expanded so that women who are employed in low-income situations can have access to some of these benefits. Although low-income jobs are more likely to require physical activity, many do not. Given the health benefits of physical activity, efforts need to be made to increase the proportion of worksites offering employer-sponsored physical activity and fitness programs for all income and age groups of women.

Primary care providers need to do a better job of routinely assessing and counseling their patients regarding the frequency, duration, type, and intensity of each of their physical activity practices. Currently about 19 percent of primary care providers make this assessment in women; the Healthy People 2000 goal is to increase that to 50 percent. But even this goal is too low, given the opportunity of health care providers to influence their patients' health behaviors. Simple tools exist with which physicians can use to assess patients' physical activity and make recommendations for change. These tools should be used more across all socioeconomic and racial/ethnic groups. Also, there should be reimbursement for provider counseling. Given the limited amount of time that providers spend with patients, paraprofessionals and trained peer health educators may have an important role here. Peer health educators may be the best providers to conduct such assessments since they understand the barriers that women face in trying to implement exercise recommendations. Peer health educators can then help outline exercise plans that have the greatest possibility for success.
Policy Recommendations

This review of the trends of women’s physical activity, the health benefits related to physical activity, and some of the barriers women face in getting adequate exercise leads us to a number of policy recommendations:

- Fund and develop campaigns to encourage women to engage in physical for fitness and weight maintenance.
- Provide safe facilities in low-income areas so that women will be able to engage in physical activity.
- Fund and establish walking paths in all communities since walking is the preferred form of exercise for women.
- Make physical education classes a regular component of the curriculum for children to develop skills that can lead to life-long participation in physical activity.
- Provide facilities and opportunities for physical activity at worksites.
- Promote flex-time work schedules that allow for shared family workloads to permit the whole family to achieve fitness and engage in the recommended quantity of physical activity.
- Encourage physical education classes in college.
- Build crosswalks as necessary to facilitate safety while walking in urban and high traffic areas.
- Encourage housing development near commercial areas to facilitate non-motorized transportation for errands.
- Increase awareness of the scholarship and career opportunities available in sports for women as a result of Title IX.

Research Recommendations

There currently exists a dearth of information on the effects of physical activity on women’s (especially minority women’s) health. In order to provide information from which to develop appropriate activity recommendations, research needs to be done to examine strategies that increase leisure-time activities for women and their families, determine the impact of physical activity on weight reduction and maintenance, and examine barriers to participation in physical activity by social class and ethnicity. Information is also needed on the relationship among type, intensity, and duration of physical activity on fitness, health, and disease in women and on the influence of physical activity on menopause symptoms.

In addition, research should be done to see if interventions to increase strength and balance can reduce risk of disability. Further research is needed to confirm relationships between physical activity and chronic disease morbidity (especially cancer) and to determine optimal type and intensity of physical activity to prevent osteoporosis. Studies should also investigate the cost-effectiveness of interventions when physical activity is included and document changes in physical activity patterns in association with Title IX. Finally, more information is needed on interventions to increase the level of physical activity in women, particularly those that enhance and maintain muscular strength, muscular endurance, and flexibility through the perimenopausal period.
References


During the first half of this century, illicit drug use was considered to be a problem primarily affecting males. Concern was first raised in the 1970s about substance use among women in relation to heroin use, centering largely on the effect of its use by pregnant women on the fetus and newborn. In the mid- to late-1980s, there was a strong public outcry in response to the presumed epidemic of cocaine use, particularly “crack” cocaine, among pregnant women. Although this public concern was accompanied by a substantial increase in funding for demonstration grant programs for substance-using pregnant and parenting women, limited funding was available for infrastructure or for increasing treatment capacity for women.

This chapter describes the problems of illicit substance and alcohol use among women in general as well as among pregnant women in particular. It first includes a description of the rates of illicit substance use and variations in these rates among subgroups of women. The effect of drug use on women’s health, programs to prevent use, and treatment programs also are covered. The section on pregnancy focuses specifically on rates of substance use, their effect on the mother’s health and the health of her newborn, and prevention and treatment programs. A similar discussion follows regarding alcohol use. Although many women who use substances are poly-substance users, alcohol use is discussed separately because it is a legal substance. Women who use alcohol differ from those who use illicit substances, and its effect on the health of women differs from that of illicit substances. The final section provides a discussion of policy recommendations regarding strategies to prevent both illicit substance and alcohol use and to address the unique needs of women in treatment programs.

Substance Use As Related To Women’s Health

Indicators of Substance Use. Data on substance use are obtained primarily from surveys which generally include measures of self-reports of use and, less commonly, biologic indices of use. The National Household Survey on Drug Abuse (NHSDA) provides yearly estimates of use of illicit drugs. In 1997, the most recent year for which some data for
women are available, 31 percent of women aged 12 or older reported ever using an illicit drug, meaning that 69 percent reported never using drugs; 8.4 percent of women reported using an illicit drug in the year before the survey and 4.5 percent in the past month. Lifetime and current rates of use in 1997 were all lower for women than for men. Since 1985, lifetime use of illicit drugs among women has remained relatively stable. On the other hand, use in the past year and past month dropped in 1985 from 13.3 and 9.5 percent, respectively, to 7.5 and 4.2 percent in 1992. Rates have risen slightly in recent years, but still remain considerably below 1985 levels.3,4

The most commonly used illicit drug among women is marijuana; in 1997, 28.3 percent reported ever using marijuana in their lifetime, 6.5 percent in the past year, and 3.5 percent in the past month. Again, these rates are lower for women than for men, and the relative gender differential is greatest for most recent use. Rates of marijuana use in the past month among women were over twice as great in 1985 as they were in 1997 and have remained around 3 percent since 1992.3,4

Despite continued public concern about cocaine use, rates of use in the past month were low in 1997—0.5 percent—of which about 40 percent of use is estimated to involve “crack” cocaine.3,4 In 1997, 7.9 percent of women aged 12 or older reported ever using cocaine and 1.4 percent in the past year, percentages similar to those in 1985. Although a peak of 8.9 percent was reached for “ever use” of cocaine in 1990 and 1991, past year and past month use dropped steadily from 1985 to 1992-1993 and have remained stable through 1997.3,4

In 1997, seven percent of women over 12 reported any lifetime use of a hallucinogen and 4 percent lifetime use of inhalants.4 Heroin is still relatively infrequently used by women, with 0.6 percent reporting “ever use” and 0.2 percent use in the last year.4 Nevertheless, close to 120,000 women in 1997 reported using a needle to inject heroin, cocaine, or stimulants, approximately eighteen percent of the 640,000 women who reported ever using a needle to inject drugs.4

In 1997, 7.7 percent of women reported ever using a psychotherapeutic drug for nonmedical reasons and 2.4 percent in the past year.4 About one percent of women reported using psychotherapeutic drugs in the past month, making them the second most commonly used illicit drug. Use often begins as treatment for a medical condition but becomes addictive when the woman begins to depend physiologically and psychologically on the drug.
The peak age for use of illicit drugs among women is coincident with the peak childbearing ages, 18-35 years. The lowest lifetime, past year, and past month use rates are found among women aged 50 or older.\(^3\) Most users of illicit substances begin use by age 20.\(^5\) In 1997, 10.6 percent of women aged 12-17 years reported using an illicit drug in the past month, 18.6 percent in the past year, and 23.2 percent during their lifetime. Like women of all ages, adolescents most frequently report the use of marijuana (8.4 percent) in the past month. They report much less cocaine use (1.1 percent).\(^4\) Although current use of both marijuana and cocaine has dropped among female adolescents since 1985 (when it was 9.3 and 1.1 percent, respectively), the lowest rates occurred in 1991 and 1992. Since then, use in the past month has more than doubled for each drug and the rate of cocaine use in the past month in 1997 is similar to the 1985 rate.\(^3,4\) Initiation of marijuana use also appears to have become earlier in recent years: 23.9 percent of new users in 1991-1995 were 10-14 years of age compared with about 17 percent between 1971 and 1990.\(^3\)

Rates of substance use and the choice of substances vary by a woman’s race and ethnicity. Non-Hispanic White women aged 12 or older in 1997 reported more lifetime use of any illicit drug, marijuana, cocaine, hallucinogens, inhalants, and psychotherapeutics than non-Hispanic Black or Hispanic women, especially relative to Hispanic women. Rates of ever-use of crack were higher for non-Hispanic Black women, however, than for non-Hispanic White women, while, for inhalants, rates were higher for Hispanic women than for non-Hispanic Black women. Rates of illicit drug use in 1995, the most recent year for which data for other racial or ethnic groups are available, were lowest for women of Asian or Pacific Island descent. Native Americans reported the highest use of illicit drugs, marijuana, and other drugs.\(^3\)

Specific psychosocial risk factors have been linked to illicit substance use among women, including a history of sexual abuse as a child, of violence as an adult, and of drug or alcohol abuse in the family.\(^6,7\) Women who abuse substances also have been found to have fewer social supports, fewer members in their social networks,\(^8\) and lower social esteem and to be more likely to experience depression than non-users. These factors appear to not only be risk factors for illicit drug use, but also may be consequences of use.\(^9,10\)

The most important predictor of drug use in women over 17 is initiation of alcohol or drug use at a young age. Protective factors against marijuana use for adolescents include high levels of parent and family connectedness, school connectedness, and self-esteem, as well as the importance of religion in students’ lives.\(^11\) Risk factors include appearing older than school mates, low grade point average, working 20 hours or more per week,\(^11\) living in a family without two biological parents, frequent moves, receipt of welfare by a family member, and emotional or behavioral problems.\(^5\)

Rates of Related Disorders and Consequences of Illicit Substance Use. Women appear to suffer more severe consequences than men after shorter durations of alcohol use and lesser amounts of alcohol ingestion.\(^12,13\) This effect, known as “telescoping,” is often discussed in relation to all substance use, but it has not been empirically tested with regard to use of cocaine, heroin, or other illicit drugs. In terms of physical consequences, women who use illicit substances are more likely to have poor nutrition, to be below average weight for their height, and to have serious medical and infectious diseases like elevated blood pressure, increased heart rates, and/or sexually transmitted disease.\(^12,14,15\) Substance-using
women are also more likely to die from drug overdose, suicide, and violence.\textsuperscript{15} Black women have slightly higher death rates from drug-induced causes than White women.

In 1992, women of all ages made over 1.6 million visits to hospital emergency departments (ED) for alcohol and drug-related (ADR) problems. Close to 60 percent of the ADR ED visits for men and women were urgent, requiring treatment for an acute illness or condition which threatened the individual’s life or function, compared with 44 percent of other ED visits. Over 50 percent were related to illness and one third to injury. The leading cause of ADR ED injury visits was “homicide and injury purposely inflicted,” while it was the fifth leading cause of other injury ED visits. Of all ED visits for suicide and self-inflicted injuries, two thirds were ADR.\textsuperscript{16}

AIDS is also strongly associated with substance use by women, particularly intravenous (IV) drug use. Among the approximately 104,000 AIDS cases among adult women reported to the Centers for Disease Control and Prevention (CDC) as of June 1998, 60 percent were to women who either injected drugs (43 percent) or who had sex with a partner who injected drugs (17 percent). Women of color and of reproductive age are disproportionately represented among AIDS cases, but the percentage of IV drug users among cases is similar for non-Hispanic Black, non-Hispanic White and Hispanic women. The percentage of women with AIDS with sex partners who are IV drug users is higher among Hispanic women than non-Hispanic White or Black women. The number of Native American and Asian women with reported cases of AIDS is very small, and only about 30 percent of cases among Asian women are associated with IV drug use.\textsuperscript{17} IV drug use is also an important risk factor for Hepatitis B infection.\textsuperscript{14}

The co-occurrence of mental disorders with substance abuse has been reported in a number of studies; major depression, anxiety disorder, and post-traumatic stress disorder are the most common problems.\textsuperscript{18,19} Moreover, use of stimulants, marijuana, and opiates by women has been correlated with eating disorders, particularly bulimia.\textsuperscript{20} Women who abuse substances are also at greater risk of experiencing sexual and physical abuse as a consequence of their drug involvement.\textsuperscript{21,23}

There is considerable debate as to whether substance abuse is a result of, causes, or just coexists with other mental health problems. For example, in a critical review of the literature, Raskin and Miller (1993) concluded that patients in psychiatric settings often have comorbidity and independent addictive disorders, while patients in addictive treatment settings report psychiatric symptoms, but these symptoms are often alleviated once substance abuse treatment is completed.\textsuperscript{10} Chavkin and colleagues (1993), on the other hand, contend that there may be subgroups of substance-abusing women with psychiatric illness, particularly women with a history of sexual abuse and clinical dependency in their families.\textsuperscript{24} Regardless of their origin, psychiatric illness and substance abuse need to be treated simultaneously in order to assure effective drug treatment.

Two frequent social consequences of substance abuse include incarceration and homelessness. It is estimated that 70 to 80 percent of all female prisoners may be addicted to alcohol or drugs. Moreover, in 1991, 64 percent of women in federal prisons and 32 percent in state prisons were serving sentences because of drug-related crimes;\textsuperscript{25} this latter percentage increased dramatically from 11 percent in 1980. There are few reliable data on
the relation of homelessness and substance use specifically among women, although one study found that 67 percent of homeless women in Baltimore had an alcohol or drug abuse problem. Another study estimates that between 16 and 67 percent of homeless women have a substance abuse problem.

Interventions. The strong effect of early use of substances on later use among adult women emphasizes the need to prevent use early in or prior to adolescence. A number of prevention programs have been developed for middle and high school students, the most well-known of which is the DARE program, organized and administered by local law enforcement officers. A recent report suggests that DARE is less effective in preventing substance use among teenagers than more interactive programs. More comprehensive programs, such as Project Star and the Life Skills Training Programs, have been shown to be effective in reducing marijuana use among high school students. These programs include substance abuse education incorporated into the usual curriculum for students, as well as parent and community education. One study suggests that both resistance skills and normative education are necessary to reduce subsequent drug abuse.

There are few primary prevention programs for adult women, although there have been some small studies of preventive programs that use family skills training to reduce substance use. The Safe Haven program in Detroit has been reported to have an effect on parenting and family functioning. More rigorous research is needed about the best strategies to prevent substance use among both adolescent or adult women, similar to the randomized controlled trials of the Project Star and Life Skills Training programs.

Data from the 1993-96 Center for Substance Abuse Treatment (CSAT) funded substance abuse treatment facilities demonstrate a 65 percent reduction in the number of women reporting alcohol and illicit drug use. The results of a recent observational study of clients in short-term residential, long-term residential, outpatient, and residential detoxification programs in Massachusetts in 1993 and 1994 show lower 90-day relapse rates among male and female clients who received case management than among those who did not.

Length of stay in substance abuse treatment appears to be related to provision of services which are tailored to the specific needs of women, particularly women with children. For example, Copeland and colleagues (1993) compared the outcomes of women who received treatment in a woman-specific (WS) residential program and in two traditional mixed gender residential programs. In addition to the women-only environment and provision of residential child care, the recommended length of the WS program was longer by two weeks than the other two programs. Accordingly, median length of stay in the program was 28 days for the WS program, compared with 15 days for the traditional programs. Two other studies have found that including children in a residential program
for women increased their duration in treatment (and presumably provided more successful treatment) compared to women in programs without child care.\textsuperscript{39,40} Improved length of retention in treatment for clients who received case management has also been noted.\textsuperscript{37}

Successful outcomes for women need to be gauged by other variables besides abstinence or length-of-stay alone because women frequently relapse and drop out. These behaviors are an actual part of the addiction process, and may not mean that a program is ineffective. Other successful outcomes include measures of women’s health, productivity, and parenting ability as well as the health and well-being of their children. Camp and Finkelstein (1995) noted improved parenting skills and higher levels of self-esteem for women who participated in a parenting program in a residential treatment setting.\textsuperscript{41} Copeland and colleagues (1993) reported greater success by a women-specific treatment program in attracting women with children, lesbian women, women who were sexually abused as children, and women whose mothers had a history of substance abuse; they found no significant differences in outcomes between women in the WS and traditional programs.\textsuperscript{38} Stevens and Arbiter (1995) found higher employment rates, fewer rearrests, and fewer women receiving public assistance among pregnant and parenting women who completed a women-specific program than for dropouts.\textsuperscript{42} Other recent programs show similar success with increased productivity, independence from social and welfare programs, and lower arrest rates.\textsuperscript{36}

Pioneers in the field of substance abuse treatment like Finnegan (1978), Reed and Moise (1980), and Suffet and Brotman (1984) described gaps in substance abuse services to women related to the lack of reproductive health care and lack of emphasis of these services on women’s relationships with their children.\textsuperscript{43-45} More recently, Finkelstein and her colleagues (1997) summarized the literature on barriers women face in accessing and using substance abuse treatment services.\textsuperscript{46} These barriers include lack of: early identification of users by professionals, access to treatment programs that accommodate their children, child care, transportation to services, culturally-sensitive services for minority and disadvantaged women, safe drug-free housing, and adequate public funding, as well as the negative attitudes of staff about the ability of women to recover from their addiction.

Allen (1995) noted some additional barriers among African-American women in Illinois who were substance abusers.\textsuperscript{47} The three most common barriers cited for not being in treatment were, in descending order of frequency: home responsibilities for children and husband, inability to pay, and lack of insurance. A fourth barrier, not previously reported in the literature, was their need for substances to deal with the stresses of daily life in their community. Other frequently cited barriers were: fear that admission of substance use would be used to take their children away, shame about admitting their use, past inability to stay in treatment, and having to wait for an opening in services. These barriers indicate the complexity of issues related to providing appropriate and needed services to substance-abusing women, especially women with children.

**Drug Use And Preconceptional Health**

Drug-using women are more likely to receive little or no prenatal care compared to women who do not use illicit substances.\textsuperscript{48-51} Some may receive sporadic care. While there are no data available, it is very likely that women who use drugs also do not receive
preconception care. Providers, however, have the opportunity at visits for family planning, routine gynecologic visits, and STD treatment to screen for women who use substances and link them with appropriate services. Providers in emergency departments, who often see the deleterious effects of substance use, are a particularly important source of screening and referral for substance-abusing women. Another important opportunity for identifying women is at pediatric visits for their children. It is important to screen women during the preconception period or during pregnancy because these are times when the women may be more receptive to obtaining treatment. Additional research is needed, however, on the extent to which, once identified, women are referred to appropriate drug treatment services prior to becoming pregnant.

Drug Use In Pregnancy

Indicators of Drug Use. Assessment of drug use by pregnant women is frequently determined by self-reports in surveys, from medical records, and through biologic indices. Biologic indices, which are more commonly used to detect drug use in pregnant women than in nonpregnant women, include toxicology screens of urine and, more recently, assays for drug metabolites in hair follicles in mothers and newborns, as well as testing of metabolites in meconium of newborns.\textsuperscript{52} No assessment method is optimal, and all lead to under-reports of use;\textsuperscript{48,49,51} a combination of approaches is recommended to obtain accurate estimates of use.\textsuperscript{54-56} Self-reports, the most widely used assessment method, may underestimate use because of women's unwillingness to report their engagement in illegal activity.\textsuperscript{56} Urine screens are problematic because the metabolites of most drugs have a short half-life, and screening only measures recent use. The evidence related to the use of other methods is still incomplete,\textsuperscript{54} but their discussion is beyond the scope of this paper. Multiple drug use is difficult to assess with the biologic screening methods. These tests are also expensive to perform. The only method to obtain both amount and timing of use of multiple substances during pregnancy is self-report. In fact, Morse and colleagues (1997) recommend using self-reports to screen women for substance abuse during pregnancy.\textsuperscript{57}

Recent national estimates of use of illicit substances among pregnant women come from the 1992 National Pregnancy and Health Survey (NPHS) in which data were obtained from responses to a self-administered questionnaire completed by 2,613 women. A total of 5.5 percent of women were estimated to have used an illicit substance during pregnancy, with the most commonly reported substance being marijuana (2.9 percent). An estimated 1.1 percent of women used cocaine and 1.5 percent nonprescription psychotherapeutic drugs, with much lower levels of use of other substances. Crack cocaine use was reported by three-fourths of cocaine users.\textsuperscript{58}

The choice of substances and their frequency of use varied in the NPHS by age and race/ethnicity. Women under 25 were less likely to report using crack cocaine than women 25 or older. In contrast to rates among nonpregnant women, Black women had higher rates of use of any illicit drug during pregnancy than White or Hispanic women and higher rates of cocaine use than White women and of marijuana use than Hispanic women. Among White and Black women, rates of use of any substances dropped from three months prior to pregnancy through the second trimester, after which they stabilized. For Hispanic women, they continued to drop throughout pregnancy although to a lesser extent in the third trimester.\textsuperscript{58}
Like substance-using women in general, women who use drugs during pregnancy are more likely to have a partner who uses drugs, to be introduced to drugs by their partner, to have a family history of drug or alcohol abuse, to be depressed, and to have fewer social supports and less stable living situations.6,24,56,59 They are more likely to move several times or to be homeless6,60 and to drink alcohol and smoke cigarettes during their pregnancy.56,58,59,61

The Effect of Pregnancy on Drug Use. Pregnancy may offer a window of opportunity to intervene with women with addictive problems.62 The results of the NPHS58 suggest that rates of use decrease with advancing trimesters through the first six months of pregnancy. A large number of women, however, do not stop drug use during pregnancy, and, as noted above, relative to non-users, a greater proportion of drug users do not get prenatal care.48,50 Thus, the hospital stay surrounding delivery and the early postpartum period may be an important time to intervene.

The Effect of Drug Use on Pregnancy Outcomes. The specific effects of substance use during pregnancy depend upon the type and amount of drug used, the mother's overall health, the gestational age of the fetus at the time of use, and the functional state of the placenta.56,59,63 Moreover, when there is multiple drug use, it is often difficult to isolate the effect of any single drug.53,56 In fact, in several studies of the effects of cocaine, there were no differences in outcomes among polydrug users whether they did or did not use cocaine.64 Many other factors in the lives of women who use drugs are also related to poor pregnancy outcomes. Drug users are more likely to be homeless and poor and to have poor nutrition and inadequate prenatal care, all of which have an effect on pregnancy outcomes.65 In future studies, the effect of these and other risk factors need to be disentangled from the drug use, including the potential confounding effects of tobacco use on outcomes.56,64

There is considerable controversy in the literature about the effects of cocaine use on the fetus. Indeed, many researchers in the early 1990s, because of the consistently negative reports about “drug-exposed” infants in the media in the 1980s, were reluctant to stigmatize the babies of drug users by attributing to cocaine any effects to the infant.1,53 Reduced birth weight, birth length, and head circumference of infants exposed to cocaine prenatally has generally been upheld in studies,56 even very recent ones in which adjustment has been made for confounders such as maternal prepregnancy weight and weight gain; use of cigarettes, alcohol, and other drugs; and maternal demographic characteristics.48,56,66,67 Moreover, studies that have adjusted for biologic indices characterizing the status of the newborn suggest that there may be deficits in newborn state or arousal regulation associated with in utero exposure to cocaine.68-72 This effect is different from the neonatal withdrawal syndrome noted in babies of heroin and methadone users73 and is thought to be an effect of the drug, not a withdrawal syndrome.56

There is little evidence of any long-term effects of cocaine1 or heroin use on offspring,74 but it is still too early to draw inferences from the limited number of longitudinal studies conducted to date. Smaller head circumferences appear to persist in cocaine-exposed children through the first two years of life.56,74 Jacobson and associates (1996) found that six-month-old infants whose mothers were heavy cocaine users during pregnancy had faster responsiveness on an infant visual expectancy test, but poorer recognition memory and information processing than unexposed infants.75 Only one study76 has
been published of school-age children exposed to cocaine in utero. No differences were found in cognitive or intellectual performance of these children when compared to children from similar backgrounds, although the authors speculate that they may exhibit more attention disorders.

Perhaps the greatest legacy of cocaine or heroin use on children is their increased risk of being placed in foster care or with other family members and of more disruption in placements than for children not exposed to drugs. Inadequate parenting skills may also be more common among substance-using women. The needs of these families have placed considerable strain on resources of the child welfare system in the past decade, particularly as a result of laws related to the mandatory reporting of drug use during pregnancy or of evidence of drug exposure in newborns.

Interventions. There was an intensive effort in the late 1980s to increase funds for research on drug treatment programs for pregnant women, as noted above. Two perinatal demonstration projects, Amity, Inc., and Operation PAR, showed increased length of stay in treatment for women who were permitted to bring their children with them to a therapeutic community (long-term, intensive residential program for substance abuse treatment). Moreover, women in Operation PAR also showed reduced use of substances and criminal activity, increased employment, and improved parenting skills and relationships with their children.

Several studies of treatment for heroin-addicted pregnant women were conducted in the 1970s. Methadone maintenance, the most common treatment for these women, appears to assist in retaining women in prenatal care, but the basis for any improved outcomes is of some dispute. These outcomes may result from lifestyle changes and improved access to services related to participation rather than from methadone maintenance, per se.

Alternative therapies have also been used to treat substance abuse, although these therapies generally have not been subjected to rigorous evaluation. One potentially promising therapy is acupuncture. It is a drug-free therapy, can be offered on an outpatient basis, and is perceived to be less threatening to drug-abusing women than counseling and other therapies. A limited number of studies suggest that acupuncture may be useful in helping substances users to become abstinent. Acupuncture has been noted to increase endorphins, serotonin, and cortisol, suggesting a possible biologic mechanism for its effect on individuals’ responses to treatment. A six-site study funded by the Conrad N. Hilton Foundation, the National Institute on Drug Abuse (NIDA), the Office of National Drug Control Policy and the National Institute of Justice is now underway looking at the use of auricular acupuncture for the treatment of cocaine addiction.

Alcohol Use and its Effect on Women’s Health

Estimates of Extent of Alcohol Use Among Women. The most recent estimates of alcohol use among U.S. women come from the 1991 and 1995 Behavioral Risk Factor Surveillance System (BRFSS) surveys and the 1995 and 1997 NHSDA. In the 1991 BRFSS, 49.4 percent of women aged 18-44 years reported any drinking (at least one drink) in the past month and 12.4 percent reported frequent drinking, as defined by consumption of five or more drinks on one occasion or an average of seven drinks or more per week. These percentages were
similar in the 1995 BRFSS, at 50.6 and 12.6, respectively. The percentage of women who reported drinking over 14 drinks per week in the past month was 1.4 percent in 1991 and 1.1 percent in 1995. In the 1997 NHSDA, 45.1 percent of women reported drinking in the past month and 59.8 percent in the past year. The percentage of women who reported drinking at least 51 days or more throughout the year is 14.6.

In the National Comorbidity Survey conducted between September 1990 and February 1992, which involved a fully structured diagnostic interview based on a modified version of the composite International Diagnostic Interview, the prevalence of alcohol abuse without dependence was 1.6 percent among women aged 15 to 54 in the past 12 months and 3.7 percent among those with dependence. The respective lifetime prevalence rates were 6.4 and 8.2. The rates for alcohol abuse without dependence were about half those reported by men; for alcohol dependence, they were about 40 percent of the male rates.

The major risk period for initiation of alcohol use is over by the age of 20, and almost no individuals initiate use after age 29. Use of alcohol peaks at ages 19-21 and declines thereafter, although a sizable percentage of younger women still use alcohol on a regular basis. For example, in 1997, 19.9 percent of young women aged 12-17 in the NHSDA reported using alcohol in the past month, down from a high of 37.8 percent in 1985.

In the 1995 and 1997 NHSDAs, non-Hispanic White women reported the highest prevalence of lifetime use and past year use of alcohol, followed by non-Hispanic Black and Hispanic women. Alcohol abuse is rare in Asian women. Native American women are particularly vulnerable to problem drinking, although they drink less than Native American men. Black women appear to begin drinking at a later age than White women but have an earlier onset of alcohol-related problems.

Studies of monozygotic and dizygotic twins and family histories support the inheritability of alcoholism. Other risk factors for heavy drinking include drinking by a woman’s partner or spouse, drinking by friends, and the amount of time spent in drinking situations or social events. Women who drink heavily are more likely to report behavioral or emotional problems in childhood and adolescence, particularly in response to early painful experiences, and a history of sexual abuse and childhood victimization. Some women report heavy drinking in response to the stresses of daily living or in times of crisis. Interestingly, women are more likely than men to drink alcohol when experiencing positive emotions.

Rates of Related Disorders and Consequences of Alcohol Use. Chronic, frequent alcohol use may have an especially deleterious effect on women. The effect of alcohol abuse on subsequent health problems for women appears to occur after shorter periods of use and lower amounts of drinking than for men. Alcohol use in women is more strongly associated with affective disorders than for men, and women suffer greater social stigma because of their alcohol use. Finally, women are more frequently the caretakers of their children, and this role makes it more difficult for them to seek or obtain appropriate treatment.

The most frequently reported direct effect of heavy alcohol use on chronic diseases is liver disease, particularly cirrhosis of the liver. Women who abuse alcohol have higher
rates of liver disease and related mortality than men at earlier ages. This “telescoping effect” occurs at least in part because of the lower body water content of women, which increases their blood alcohol levels when ingesting the same amount of alcohol as men, and because the activity of the enzyme alcohol dehydrogenase is less in women.12,13

Overall death rates for women who are chronic heavy users of alcohol are higher than for male alcoholics.87 Mortality rates are especially high for suicide,15 alcohol-related accidents, circulatory diseases,87 and breast cancer.87 Alcohol-related mortality is particularly a problem among Native American women.87 The incidence of breast cancer also appears to increase directly with alcohol intake, at least across the levels which are generally consumed by most U.S. women.25

The effect of alcohol on cardiovascular heart disease (CHD) is somewhat paradoxical. Heavy alcohol users are more likely to experience hypertension and mortality from cardiovascular diseases and stroke due to subarachnoid hemorrhage.96 While increased rates of CHD mortality have been reported among heavy alcohol drinkers, Kannel and Ellison (1996) argue that this may be the result of mislabeling as CHD some alcohol-induced cardiovascular diseases like alcohol-induced cardiomyopathy, dysrhythmias and hypertensive cardiovascular disease.97 On the other hand, there is now considerable evidence from large, well-conducted studies in diverse human populations and from animal experiments that low or moderate intake of alcohol may be protective against CHD.97 This protective effect may be due to the positive relation between alcohol consumption and high density lipoproteins (the good cholesterol) or to the possible anti-thrombotic effect of alcohol.96,97

Alcohol use among women is also related to domestic violence.87,98 Bergman and colleagues (1989) found that alcoholic women showed patterns of severe, prolonged physical abuse similar to those of women in a shelter for battered women.99 Alcohol abuse is also associated with comorbidity of mental health problems in women, depression and anxiety disorders, in particular.18 This relation is believed to be due, in part, to women using alcohol as a form of self-medication.87 Female alcoholics also report more troubled marriages than male alcoholics and are more likely to believe that their drinking is the cause of their marital problems.94

Interventions. Primary prevention models that reduce substance use among middle and high school students have also been shown to be effective in reducing alcohol use; two of these models, Project Star29,30 and the Life Skills Training Program 31-33 have specifically addressed alcohol use in their curricula. As was described previously, there are few evaluations of prevention models for adult women.

There are few well-designed studies of interventions for nonpregnant alcoholic women, although providers and advocates for women have recommended particular types of needed services based on their experience working with alcoholic women. Some investigators describe different models of providing treatment to women, including family and psychosocial interventions such as using family advocates in the community or offering education on self-esteem, assertiveness training, and other positive behaviors. Others have expressed concerns relating to the packaging of services for women with alcohol dependence; for example, whether women-only groups or the use of more skills building and
counseling interventions are better for women than the more confrontational interventions used for male alcoholics. There are few answers to these questions, especially because most recent studies of interventions deal primarily with services for women who abuse illicit drugs.

One randomized controlled study conducted in Stockholm, evaluated a woman-specific (WS) treatment program for female alcoholics which stressed employment and family concerns and development of individualized treatment plans. Women randomly assigned to the WS program remained in treatment longer (8 months) than women assigned to the traditional program (5 months). They also had less hospital care for alcoholism, improved relationships with their partners and children, and improved work capacity.

A major barrier to providing services for women with alcohol-related problems is the failure of health care providers to screen for alcohol abuse among women and, when confronted with symptoms, to identify them as alcohol-related. In a study of patients receiving inpatient hospital care, Dawson and colleagues (1992) found lower rates of screening and identification of alcohol-related problems among women by resident physicians than among men. Moreover, Gehshan (1993) found, in a survey of 94 substance abuse treatment facilities across the southern U.S., that the three most common sources of referral of women to treatment were the criminal justice system, family members, and child protective services. Only 4 percent of programs reported the medical community as the most common source of referral—and only 14 percent as the second most common source. Gehshan also found, based on interviews with 181 women in treatment, that only 9 percent reported that a doctor or a nurse tried to intervene with their substance use during their period of addiction.

Alcohol Use and Preconception Care

Preconception interventions for women who abuse alcohol are very important because of the clear link between excessive alcohol use during early pregnancy and craniofacial abnormalities associated with fetal alcohol syndrome and fetal alcohol effects. Because its effect on the fetus may already have occurred when a woman learns she is pregnant, heavy alcohol consumption must be prevented prior to the start of pregnancy. A critical component of preconception care is health promotion and counseling, including discussion of alcohol use for women who are planning to become pregnant. It is also important to screen for and identify women who abuse alcohol at family planning and emergency room visits and visits for treatment of sexually transmitted disease.

Impact of Pregnancy on Alcohol Use and of Alcohol Use on Pregnancy Outcomes

*Indicators of Alcohol Use.* The percentage of pregnant women reporting alcohol use in the two recent BRFSS surveys is considerably lower than for all women of childbearing age. While 49.4 percent of all women reported use in the past month in 1991, only 12.4 percent of pregnant women did so. Similarly, 0.8 percent of pregnant women reported frequent use in 1991 compared with 12.4 of all women. The data for 1995 are cause for concern, however, because over four times as many pregnant women, 3.5 percent, reported frequent use in the past month in 1995 than in 1991.
The percentages of women reporting use of alcohol during pregnancy in the BRFSS surveys are somewhat lower than other estimates because they are estimates of prevalence at one point in time, rather than throughout pregnancy. Moreover, the number of pregnant women in the samples is sufficiently small to be concerned about random variability and possible systematic errors. In the NPHS, 18.8 percent of women reported using alcohol during pregnancy, but use dropped markedly as pregnancy progressed. Although 34.7 percent of women reported drinking alcohol in the three months before pregnancy, 15.7 reported alcohol use in the first trimester, and less than 9 percent in the second and third trimester.

Young women (under the age of 25) in the NPHS were less likely to report using alcohol in pregnancy (12.4 percent) than women aged 25-29 (21.8 percent) or over 30 (24.0 percent). White women reported higher rates of use (22.7) than Black (15.8) or Hispanic (8.7 percent) women, although Native American women continue to have the highest rates of use. Age differences in use are similar for White, Black, and Hispanic pregnant women.

Impact of Alcohol Use on Pregnancy. The effect of alcohol abuse or heavy alcohol use during pregnancy on fetal alcohol syndrome (FAS) and fetal alcohol effects (FAE) has been consistently noted in a number of studies. The threshold at which either FAS or FAE occurs, however, is not known. A particularly vulnerable group of infants are Native American infants, who have very high rates of FAS and FAE relative to other groups.

In a comprehensive review of the research on the timing of effects of heavy alcohol use in epidemiologic and animal studies, Coles (1994) argued that exposure to alcohol early in pregnancy is clearly associated with the facial malformations characteristic of FAS, especially exposure in the first two months. There may also be some effect of heavy alcohol use on growth retardation, especially for head circumference in both the first two months and third trimester. These deficits may be permanent. Correlational studies suggest that early exposure to heavy alcohol use may also be related to behavioral problems, but animal studies also indicate an effect on the hippocampus and cerebellum in the third trimester, effects that lead to deficits in learning and motor skills. Coles (1994) concluded that even for fetuses with early exposure, stopping heavy use later in pregnancy may be beneficial.

The evidence of an effect of moderate alcohol use on pregnancy outcomes is mixed and the research limited, especially regarding inclusion of appropriate confounders with alcohol use. While some recent studies have included important confounders, such as cigarette smoking, weight gain and prepregnancy weight, they have not included illicit drug use. This exclusion is problematic because of the greater likelihood of polydrug use among women who use alcohol. However, even in a recent study based on data for the large sample of women in the 1988 NMHIS, there was no effect of moderate alcohol use on mean birth weight, and its effect on low birth weight (LBW) and fetal and infant death was small. There does not appear to be any valid evidence that slight alcohol use has an effect on outcomes. However, because a safe level of alcohol consumption has not been established, it is recommended to advise women to abstain from alcohol use during pregnancy or when planning pregnancy.

Interventions. The early initiation of alcohol use among American teens in recent years indicates that prevention of alcohol use during pregnancy must occur early with programs
for young women in school and must focus on preconception counseling. Few interventions to reduce alcohol use during pregnancy have been evaluated. In a recent study of a low-cost, self-help program for pregnant women, women who consumed two or fewer drinks per week, a low-risk group, were successful in reducing alcohol use. Women who were less likely to quit felt that drinking led to positive results like helping them to relax.

Like programs for women in general, those for pregnant women with alcohol dependence include a range from inpatient detoxification to outpatient programs. Much of the literature includes evaluation of small projects, some with empirical data, but most describing the components or services needed for pregnant women. A fuller discussion of these components is provided below.

Policy Issues: Illicit Substance and Alcohol Use

Policy and programmatic approaches to preventing and treating substance abuse among women of childbearing age have largely centered around pregnancy and the postpartum period for women with children. This emphasis is partly a result of society’s indignant response to substance abuse among pregnant women, which has given rise to a major ethical dilemma involving the conflict of the rights of the mother for autonomy with the rights of the fetus for beneficence. A complete discussion of this debate is beyond the scope of this paper, but it will be briefly raised in regard to issues of screening and treatment for pregnant women.

This discussion of policy centers first on prevention of substance abuse in women, focusing on strategies related to primary, secondary, and tertiary prevention. At each juncture, recommendations are made for needed research. A brief discussion follows of particularly thorny issues like mandatory screening and reporting of substance abuse among pregnant women, mandatory treatment for substance abuse, legislative reforms in recent years (both positive and negative), reconciling the needs of women with those of their unborn fetuses and children, and the status of women in the drug treatment world.

Primary Prevention of Substance Use. Primary prevention of substance abuse must begin in early adolescence or pre-adolescence before young women start to experiment with substances. Protective factors, such as school connectedness, family connectedness, and self esteem, are components that could be targeted in prevention programs—as should efforts to retain women in school.

Programs to prevent substance abuse have primarily been targeted to middle and high school students. Successful programs generally incorporate substance abuse education into health education curriculum already in middle schools and include periodic booster sessions in latter grades. The more successful programs have a parent component or a mass media or community education component. Outcomes related to use of substances other than tobacco, alcohol, or marijuana have generally not been reported in these evaluations. The most recent evaluations of school programs have involved randomized trials, which improve policymakers’ ability to draw inferences about program effects. These trials need to be expanded to address the specific components that are the most effective.
The lack of primary prevention efforts beyond those for middle and high school students remains a major gap in services. While the school-age child is an appropriate focus for prevention of initiation of substance use, use of hard core drugs like cocaine and heroin or chronic excessive alcohol use often occurs later in the course of substance abuse and must be addressed with secondary prevention. Also, there is a need for more creative prevention strategies for hard-to-reach, high-risk populations, like school dropouts.

Secondary Prevention of Substance Use. Secondary prevention relates primarily to treatment programs and other interventions to reduce substance use. An important contribution to gender-sensitive treatment services was application of the relational model to treatment approaches for women. This model stresses the importance of relationships to women’s growth and development, and the consequences of low self-esteem, depression and anxiety when women fail to make attachments. Based on application of this model, interventions that are family-centered, focus on the importance of relationships to women, address depression and other affective disorders related to substance use, and deal with skill building and enhancement of self-esteem are presumed to be the most effective. Moreover, discussions of the need for gender-sensitive care for women and services that address their unique needs generally suggest the following components: a life-cycle approach that addresses the importance to women of relationships with their partners, children, and other family members; counseling and other supportive approaches; competency-building and empowerment; community-based services; multidimensional services that address the concrete problems related to lack of child care and transportation to care, homelessness, unemployment, and mental health problems; and services based on the individual needs of each woman and her family. The need for long-term outpatient services providing continuity of care for women must also be addressed in order to prevent relapse. With the exception of a women-centered approach, provision of child care, and indirect assessment of comprehensive services, these components of care have not been subjected to rigorous evaluation. Given the relative scarcity of gender-specific services and other related components, there is still considerable opportunity to conduct trials of various combinations of services to determine the most effective ones.

Screening for substance use among women is necessary in order to reduce use or to break the transition to more addictive drugs. Recommendations for screening and identification of substance abuse problems in women include the need to educate providers about substance use in women—how it differs from use by men and how to screen for it; how to use more adequate tools for screening in primary care; and how to assure the availability of adequate services for women. Screening among women has not been very common or effective, as suggested by the lower rates of screening among women than men and by the fact that when women are screened, providers often fail to identify women with substances problems. Education of medical students, residents, and nurse practitioners in training must be improved. Less than 10 percent of medical schools provide a course on substance abuse or alcohol addiction.

Reluctance by providers to screen may result from the still limited availability of treatment programs for women, especially pregnant and parenting women, and the limited experience of most treatment programs with women. There has also been a reluctance of private providers to screen for substance use among their patients for many reasons, including denial that their patients engage in such behavior (the “not in my practice”
phenomenon\textsuperscript{119}), lack of time, lack of reimbursement, lack of training, and failure of third-party payers to cover ongoing treatment.

Additional creative efforts are needed to educate the public about the effects of substance abuse. Only about one-quarter of pregnant women are aware of warning labels on alcoholic beverages, although women who are frequent alcohol drinkers are more likely to have knowledge of them.\textsuperscript{120} There are facilities and agencies that women with children use that also may be sites for education or intervention, including pediatric offices, schools, and parent-teacher associations. Additionally, public education is needed that promotes understanding of substance abuse as a chronic, relapsing, but treatable disease.\textsuperscript{36} This would help counteract the strong social stigma associated with substance use among women, especially pregnant and postpartum women.

The tools used in screening for substance use also have constrained screening efforts. No single method of screening is optimal,\textsuperscript{55} but there is a tendency among the medical community to prefer a biologic marker to maternal reports,\textsuperscript{51} as it may be perceived to be less intrusive. Morse and colleagues (1997) argue that self-reports are still the best approach to screening women for substance use.\textsuperscript{57} They also recommend instruments, such as AUDIT, 4P’s, T-ACE, TWEAK, and the Ten Questions Drinking History (TQDH), that can be used by providers at all health care visits and that include questions to specifically identify women with abuse or addiction problems. Many of these instruments have good sensitivity and specificity\textsuperscript{121} and are effective in measuring use when administered by caring professionals, although some may be inappropriate for specific ethnic groups.\textsuperscript{116}

A major ethical dispute about screening women for substance use, particularly pregnant women, is whether or not screening should be mandatory or selective. Reluctance of policymakers to recommend selective screening is due in part to evidence of racial and income bias in screening; for example, a study in Pinellas County, Florida\textsuperscript{122} indicated selective screening of low-income women and women of color. Moreover, women screening positive for substance use were considerably more likely to be reported to child welfare authorities than more advantaged women with positive screens. Mandatory screening not only violates the autonomy of the woman but also places her in jeopardy of being reported to child welfare authorities in states with mandatory reporting laws.

\textit{Tertiary Prevention}. The increasing use of substances among women in the 1980s focused attention on the need for treatment for women. While services for women became a greater policy priority, substance abuse treatment is still not adequate; many substance abuse providers know little about how to treat women, and programs have not accommodated the needs of women with children. Finklestein (1989) noted that two-thirds of the major hospitals in 15 large cities in the late 1980s did not have a place to refer pregnant women for addiction treatment. Although the set-aside of funds for women in state block grants for alcohol and drug treatment service was raised in the early 1990s to 10 percent, and states were required to provide access to services for pregnant women within 24 hours of seeking care,\textsuperscript{1} services are still not adequate to meet the needs of pregnant and parenting women.\textsuperscript{40}

States have considerable discretion about how to use the substance abuse block grant funds. The results of two surveys conducted by Chavkin and colleagues (1998) in
Charting a Course for the Future of Women’s and Perinatal Health

1992 and 1995 of state directors of substance abuse programs indicate that many states had begun providing or had expanded services in the early 1990s for pregnant and parenting women. However, more recently, there has been an increase in local control of these services and a concurrent reduction in funding.

Despite improvements in the availability and quality of treatment services for substance-abusing pregnant and parenting women, there remain barriers to provision of care to this population. Some of these barriers include concern about medical issues surrounding detoxification and its effect on the fetus, liability related to negative birth outcomes and provision of care to infants and children, lack of insurance reimbursement for some services, inadequate training of substance abuse providers about pregnancy and addiction in pregnancy, and realistic concerns about the complexity of the issues that must be dealt with for women with children. Moreover, because of the chronic, relapsing nature of substance abuse, women may frequently drop out of and re-enter treatment, meaning that treatment should be available when a woman is motivated to seek it.

There are other challenges to providing appropriate services to women. For example, managed care organizations (MCOs) are increasingly involved in the provision of health care for American women. Substance abuse treatment and counseling services, along with mental health services in general, are often carve-outs in MCOs, administered separately from primary care or prenatal care. Because these services require referral and potentially additional bureaucratic constraints, timely access to treatment, or to care at all, for substance-abusing women may be more difficult to obtain. Moreover, some MCOs may not pay for substance abuse assessment. There is need to document the access to and use of substance abuse treatment and counseling among women not only in MCOs but in the health care system in general, as there are virtually no data about these issues.

Although not many in number, incarcerated women are a particularly vulnerable group of substance-abusers. Teplin and colleagues (1997) note that prison inmates have no Constitutional rights to substance abuse rehabilitation services; they only have the right to emergency detoxification treatment, creating a barrier to accessing other needed services. With the increasing numbers of women in prisons for drug-related offenses and the criminal prosecution of pregnant women, these barriers increasingly affect more women. Maryland addressed this problem with legislation in 1996 that provides for specific substance abuse treatment services for female inmates in state-operated correctional facilities during the final months of their imprisonment and immediately after their release into the community. This legislation also calls for a broader needs assessment concerning the substance abuse treatment needs for pregnant, postpartum, and parenting women.

One group often ignored in discussions of treatment services are adult women with no children, who are not pregnant, and who are not planning to become pregnant in the near future. These women are less likely to interface with the health care system unless they develop an acute medical problem requiring treatment. There are few outreach efforts made to them and no discussion in the literature of their substance abuse treatment needs.

Systems Coordination. The substance-abusing pregnant or parenting woman (and most women in general) represents a major dilemma for health care and other related providers because she is at the center of a complex network of cultural, community, family, economic,
and personal relationships that must be considered in the provision of services to her. There is no single system that can address all of women’s needs. At the very least, the health care, substance abuse treatment, and child welfare systems must be involved; the criminal justice system may also become involved particularly for pregnant women even if she has not committed a criminal act (see section on legislative reforms). Without cooperation and coordination among these systems, fragmentation of care is almost a certainty. These systems are categorical; problem-oriented; operate independently at the federal, state, and local levels; and often work at cross objectives and purposes. Moreover, providers within each system often have divergent agendas or philosophies that make it difficult for them to understand the unique needs of the substance-abusing woman, especially if she is pregnant or has children. Funding at the federal, state, and local levels is also categorical, problem-oriented, and often not family-centered.

The substance abuse treatment system and prenatal care providers have only recently begun to develop strong linkages. Breyel and Hill (1993) and Jones and Hutchins (1993) describe some creative approaches that states have used to address the complex needs of substance-abusing women and the systems they must confront in obtaining appropriate services. For instance, the Center for Substance Abuse Prevention and the Maternal and Child Health Bureau have jointly funded demonstration grant projects for the prevention and treatment of substance-abusing pregnant and parenting women.

At the individual and community level, providers must coordinate services for women from multiple agencies, such as prenatal care providers, substance abuse treatment facilities, social service agencies, housing authorities, food banks, nutrition programs, and other related service agencies; case management has most frequently been adopted to facilitate this coordination. Linkages among systems during pregnancy and the postpartum period must ensure the provision of comprehensive services that not only treat women’s substance use and provide prenatal care but also address their special nutrition, counseling, and social service needs as well as those of their unborn fetuses. Linkages with the child welfare system may also begin during pregnancy so that family intervention services are begun before a child requires placement in foster care.

There is still considerable work to be done in coordinating the health, substance abuse treatment, child welfare, and criminal justice systems, which have often been at odds with each other historically. Welfare reform may cause another break in already fragile alliances among systems. Chavkin (1997) notes that with welfare reform one source of payment for substance abuse treatment will be eliminated because welfare payments have been used in the past by providers to cover the costs of residential treatment for women. Substance abuse treatment must be a part of welfare reform if substance-abusing women are to successfully make the transition to participation in the labor force. The costs of substance abuse among pregnant and parenting women will also be borne by society if treatment is not part of welfare reform—but they will be much greater than if treatment were made available.

The focus of welfare-to-work programs is on quick entry to the work force, which is inconsistent with the long-term needs of women with substance abuse problems. The Oregon JOBS program is one program that has directly addressed substance abuse among its participants. Because of the angry response of participants at some sites to mandatory
screening, selective screening is now done of individuals identified based on non-compliant behavior with job training. Substance abuse professionals perform assessments, provide referrals, and monitor progress with substance abuse problems. The Oregon experience also indicates the need to develop substance abuse treatment providers in communities where capacity is insufficient, to train staff to refer participants for treatment and to monitor their progress, to determine whether penalties should be imposed for non-compliance, and to select the appropriate outcomes to monitor.

**Legislative Reforms.** Chavkin (1990) notes that society has responded to the problem of substance abuse among pregnant women in three ways: criminally prosecuting mothers; using allegations of substance use as justification for removing a child from the custody of the mother; and treating the mother’s substance abuse problem. A number of states responded to the reported epidemic of drug use among pregnant women in the 1980s by passing laws that infringed on the right of autonomy of the mother and took punitive actions against women who were known to abuse substances during pregnancy. These laws singled out pregnant women for criminal liability while they failed to redress similar noncriminal behaviors in nonpregnant women and men (See Nelson and Marshall, 1998 for a recent complete discussion of these policies).

In sharp contrast to these laws, other states promoted development and provision of treatment services for pregnant women and coordination of services through individual case management (see Breyel and Hill (1993) for a more extensive account of the positive responses of several states). Both Moss (1991) and King (1991) offer perspectives on substance abuse among pregnant women that do not pit the mother’s needs against those of the fetus. King (1991), in particular, suggests viewing the maternal-fetal relationship as an interactive one that closely parallels a women’s experience with her children and intimate others. This focus presumes that the mother will try to promote the well-being of her offspring. As such, it broadens the scope of strategies for substance-abusing pregnant women, particularly related to her treatment needs and those of her children and significant others.

Health care providers have been reluctant to report substance-abusing women to authorities for fear that the women will not return for prenatal care. The degree to which women’s fear of being reported to the authorities is a real impediment to accessing care is unknown. Gehshan (1995) noted that about one-quarter of her sample of women in substance abuse treatment avoided prenatal care because of fear of being reported to child protective services and one-quarter because of fear of getting in trouble with the law.

**Substance Abuse and the Status of Women.** A particularly menacing aspect of society’s moral outrage about substance use among pregnant women is that its effect falls disproportionately on the most disadvantaged women, particularly low-income women and women of color—which is clearly seen in the differential reporting of these women to child welfare authorities as well as in the more widespread screening for substance use in programs among low-income women. Roberts (1991) also noted that the majority of pregnant women who have been prosecuted for positive toxicology screens have been poor, Black women addicted to crack, largely because of their more frequent contacts with government agencies.
Medicaid restrictions on the types of providers that can be reimbursed for substance abuse treatment (for example, Medicaid does not pay for substance abuse treatment for individuals residing in institutions for mental illness with more than 16 beds) also limit the options of low-income women for residential treatment. Also, the “not in my practice” response of some private providers limits the likelihood they will screen patients for substance abuse, resulting in a possible lower likelihood of women obtaining needed treatment. Indeed, Morse and colleagues (1997) note that women in treatment often report that they wanted help with their substance use during pregnancy but were afraid to ask. The frequency of this latter problem, however, needs further investigation.

Research Implications

Additional research is needed about the health effects of substance use among women, about preventive strategies to reduce substance use, and about the effect of policies and treatment programs for substance-abusing women. Regarding the effects of substance use, there are many issues to address. These include: 1) whether the “telescoping” effect of alcohol use for women is also seen for other substances; 2) what levels of alcohol intake positively affect the health of women while not jeopardizing the health of their fetus if they become pregnant; 3) whether the effect of substance use on pregnancy outcomes is a result of the substance or other life circumstances of women who use substances; 4) what the effects of poly-substance use are; and 5) what the long-term effects are on children of substance use during pregnancy.

Research is also needed on specific aspects of programs that are successful in preventing substance use among adolescents and in treating substance-abusing women in general and pregnant women specifically. Rigorous evaluations using strong randomized or quasi-experimental designs should be conducted on prevention programs for adult women. More must be learned about the factors that lead women to seek substance abuse treatment and to achieve success in preventing relapse and promoting positive life circumstances. Finally, the short- and long-term effects of welfare reform on substance-abusing women and their families need to be studied, as well as outcomes of federal, state, and local efforts to link systems for substance-abusing women and their children.

Conclusion

Substance abuse has only recently been recognized as a problem of women, particularly in response to the increase in cocaine use in the 1980s. Women suffer considerable mortality and morbidity from substance use, especially heavy, chronic use—as do their offspring. The effects of substance use during pregnancy are still unclear, particularly for cocaine and for moderate levels of alcohol use.

Prevention programs targeted towards teenagers, though widespread, are most often implemented in schools, thus missing high-risk youth who drop out. Also, many such programs do not begin until the late middle school grades. Both late initiation and omission of vulnerable target populations of adolescents may at least partially explain the apparent ineffectiveness of the most commonly implemented programs for preventing substance use among teens.
Failure of medical providers to screen for substance use among women or to refer them to appropriate care remains a major problem requiring new approaches to educating medical providers. Women-specific services may be effective in treating women with substance dependence, but the specific components that are most effective remain unknown. Moreover, the availability of services for women is still a problem and has not been adequately addressed in the substance abuse treatment community. Managed care organizations present some special challenges in assuring that women are screened for substance use and receive the appropriate needed services. Finally, to advocate for additional treatment services for women, the field must know the magnitude of the need and the extent to which women in need actually get appropriate treatment.
References


Effects of Smoking on Women’s Health

Donna Strobino

The health consequences of smoking for women and their children have been widely described in the clinical and research literature as well as in the media. This brief overview describes the prevalence of and risk factors for smoking among adolescent and adult women and the effects of smoking on their health; examines the effects of smoking on conception and pregnancy, as well as on the children of women who smoke; reviews the research on prevention and treatment programs for women and teens; and offers some policy recommendations regarding prevention, treatment, and research.

Smoking and Women’s Health

Prevalence and Risk Factors for Smoking. During most of the twentieth century, smoking rates have been considerably higher among men than women in the United States, particularly during the first half of the century. The lower rates among women generally have been attributed to social stigma. During the 1950s and 1960s, however, women began taking up cigarettes, especially those living in the northern regions of the country. Following the first report of the Surgeon General about the health hazards of smoking in 1964, overall rates of smoking declined in the U.S. These rates initially declined more rapidly among men than among women, but between 1983 and 1994, decreases in smoking rates were similar for men and women. Today, there are more ex-smokers among men (25 million in 1995) than among women (19 million), largely because of the greater number of absolute numbers of men who have ever smoked.

<table>
<thead>
<tr>
<th>Year</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1974</td>
<td>32.5</td>
<td>42.9</td>
<td>37.2</td>
</tr>
<tr>
<td>1979</td>
<td>30.3</td>
<td>37.2</td>
<td>33.5</td>
</tr>
<tr>
<td>1985</td>
<td>28.2</td>
<td>32.1</td>
<td>30.0</td>
</tr>
<tr>
<td>1990</td>
<td>23.1</td>
<td>28.0</td>
<td>25.4</td>
</tr>
<tr>
<td>1995</td>
<td>22.6</td>
<td>27.0</td>
<td>24.7</td>
</tr>
</tbody>
</table>

In 1995, 22.6 percent of adult women were estimated to be current cigarette smokers, based on data from the National Health Interview Survey (NHIS), compared to 27.0 percent of
Current smokers were defined in the NHIS as having smoked at least 100 cigarettes during this lifetime and as smoking every day or some days at the time of the interview. Only a small percentage of women use other tobacco products like smokeless tobacco or cigars, although the use of the latter has become more trendy among women in recent years. Large differentials in smoking between men and women are still found in the South as well as among Asian Americans, likely resulting from cultural norms about women's smoking in these groups.

The vast majority of smokers begin tobacco use between the sixth and ninth grade; few adopt smoking after age 20. In 1995, 30 percent of female high school students had never tried cigarette smoking. Use of tobacco increases with age among youths, according to the Youth Risk Behavior Survey (YRBS). The prevalence of current use, defined as at least one cigarette in the past 30 days, is similar among males and females and college students, but current use of smokeless tobacco is considerably greater among male high school students (19.7 percent) than among female students (2.4 percent).

The most alarming data for tobacco use by children come from the Bogalusa Health Study, which surveyed third- to sixth-grade children in 1993 and 1994. It indicated that at least 15 percent of children had tried smoking cigarettes, although only 1.2 percent reported smoking at least once a week. Moreover, 7.5 percent of the children reported current use of tobacco products, with the vast majority of them using chewing tobacco (4.3 percent of all children) or snuff (2.2 percent). Forty-six percent of the children who had tried smoking received their first cigarette from a family member or from home. Black children were less likely to experiment with tobacco products than White children. More nationally representative data from the Monitoring the Futures Study (MTFS) show reported rates of daily smoking among eighth grade girls of 10 percent in 1996 and 9 percent in 1997.

Adolescents usually get cigarettes from their friends. In 1995, 32 percent of high school girls who smoked reported borrowing cigarettes from someone else and 22 percent reported giving someone money to buy them; only 36 percent reported buying cigarettes in a store and only 1 percent in a vending machine. In a study of eighth to tenth grade students in rural Minnesota, factors associated with students providing cigarettes to their peers included smoking by their mothers, increased number of friends who smoke, increased number of cigarettes smoked per week, commercial outlet as the last source of cigarettes, and attempting to buy cigarettes in the past 30 days.

<table>
<thead>
<tr>
<th>Year</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976</td>
<td>28.8</td>
<td>28.0</td>
<td>28.8</td>
</tr>
<tr>
<td>1980</td>
<td>23.5</td>
<td>18.5</td>
<td>21.4</td>
</tr>
<tr>
<td>1984</td>
<td>20.5</td>
<td>16.0</td>
<td>18.7</td>
</tr>
<tr>
<td>1988</td>
<td>18.1</td>
<td>17.4</td>
<td>18.1</td>
</tr>
<tr>
<td>1992</td>
<td>16.7</td>
<td>17.2</td>
<td>17.2</td>
</tr>
<tr>
<td>1996</td>
<td>21.8</td>
<td>22.2</td>
<td>22.2</td>
</tr>
</tbody>
</table>

*Daily cigarette smokers reported smoking at least 1 cigarette per day during the 30 days before the survey.*
The results of two recent studies, one in Baltimore\textsuperscript{17} and the other in California,\textsuperscript{18} indicate that personnel in small convenience stores, where most adolescents purchase their cigarettes, were very likely to sell adolescents cigarettes despite laws prohibiting their sale to minors.\textsuperscript{17,18} Moreover, the California study also found that these personnel were more likely to sell cigarettes to girls aged 10 and 14 than to boys of similar ages, perhaps because they tend to look older. In addition, minority children were more likely to be sold cigarettes than White children.\textsuperscript{18} Seventy-eight percent of high school seniors in the 1995 YRBS reported not being asked to show proof of age when buying cigarettes.\textsuperscript{10}

The targeting of youth in advertising by the tobacco industry has also been cited as a reason for the sustained levels of tobacco use among adolescents.\textsuperscript{19} For example, the number of youth who smoke Camel cigarettes increased following the use of the Joe Camel cartoon character in product advertisements.\textsuperscript{20,21} Young women and men are likely to buy the most heavily marketed cigarette brands like Marlboro, Camel, and Newport. Moreover, Pierce and Gilpin (1994, 1995) noted increases in smoking among young women historically coincident with large-scale marketing to them.\textsuperscript{22,23}

The percentage of women who smoke as well as the number of cigarettes smoked per day increases with the age of the woman through the childbearing years. Recent trends show plateauing rates of smoking among young adult women, but a rise in the adoption of smoking by female students in grades 8 to 12.\textsuperscript{3} Smoking rates also vary by ethnicity and socioeconomic status. Asian-American women have the lowest rates of smoking (4.3 percent in 1995), followed by Hispanic women (14.9 percent), African-American women (23.5 percent) and White women (24.1 percent); the highest rates are found among Native-American women (35.4 percent).\textsuperscript{4}

The rate of decline in smoking since 1965 has been greatest among African-American women aged 18-24 years. Moreover, Black girls are the only ethnic group among female adolescents for whom overall rates of smoking have dropped in very recent years.\textsuperscript{24} Indeed, smoking rates declined dramatically from 24.7 percent in 1976-77 among Black, female, high school seniors to 3.5 percent in 1991-92. A resulting cohort effect has meant dramatic declines are now being reported for young Black women, along with an increasing divergence of smoking rates for young Black and White women.\textsuperscript{2}

Women from low-income families or with low levels of education are more likely to smoke than their higher socioeconomic counterparts. Results from the 1995 NHIS show a 2.5-fold differential in smoking prevalence for women with 9-11 years of education compared to women who are college graduates. The differential by poverty status is somewhat less.\textsuperscript{1} Low-income African-American adult women have particularly high rates of smoking as well as difficulty quitting. The reason for these high rates appears to be related in part to the use of smoking for stress management.\textsuperscript{25,26}

Once they start, women continue to smoke for a number of reasons, most often because of nicotine addiction. Other common reasons include stress management and to combat depression. They also may continue to smoke as a form of weight management. Once a woman depends on smoking to address one of these reasons, it becomes more difficult for her to quit. Moreover, women appear to respond more than men to non-nicotine effects of smoking, such as smoking in social groups, adding to their difficulty quitting.\textsuperscript{17}
Among female teenagers, smoking is related to other risk-taking behaviors including use of marijuana, binge drinking, and multiple sex partners. Resnick and her colleagues (1997) found smoking among teenagers to be related to access to substances in the home, working more than 20 hours per week, and repeating a grade in school. Among adult women, heavy smoking is related to having friends who smoke, being overweight, smoking within 30 minutes of waking, smoking similar amounts at work and home, and smoking for more than 10 years.

One of the most discussed reasons why women continue to smoke is their fear of weight gain following quitting. Women who smoke weigh less on average than women who never smoked or who are former smokers. However, when women stop smoking, weight gain is largely temporary and their average weights stabilize at levels similar to non-smokers. Thus, women’s fears of large weight gains are not supported by research. Nevertheless, women tend to gain more weight than men after quitting, perhaps because of biological reasons, as similar gender differences have also been noted in rats. There may be particular groups at risk of large weight gains. For example, Black women have a much higher risk of major weight gain following smoking cessation than White women as do women who were underweight or sedentary at the time of quitting. There has been some discussion in the literature that fluctuations in hormones during the menstrual cycles of women may affect their ability to sustain cessation from smoking, but there is no consistent evidence of this relation.

*Rates of Disease and Related Disorders.* Cigarette smoking is the major preventable cause of mortality among adult men and women alike. The most well-known smoking-related health problem is lung cancer. While men experienced higher rates of lung cancer during most of the twentieth century, the rates for women and men have converged in recent years due to the increasing numbers of women who took up smoking during the second half of the century. In fact, lung cancer surpassed breast cancer in 1987 as the leading cause of cancer death in women. Cigarette smoking is also strongly associated with other diseases of the lung, including chronic obstructive pulmonary disease and diseases of the bronchial tubes, esophagus, and oral mucosa. Some studies also suggest an association with lung metastases from breast cancer, although data are limited in this regard. Other cancers for which smoking has been consistently found to be a risk factor include bladder and cervical cancer, although the evidence for the association of smoking with cervical dysplasia and cervical cancer is more recent.

Cigarette smoking is also a major preventable cause of heart disease, the number one killer of adult women, as well as a risk factor in the development of cerebrovascular diseases and atherosclerotic peripheral vascular disease. Cigarette smoking may also complicate pre-existing chronic illnesses, like hypertension and diabetes. Moreover, smokers have higher levels of triglycerides and lower levels of high-density lipoproteins than non-smokers.

Exposure to environmental smoke has also been associated with an increased risk of lung cancer, reduced pulmonary function, asthma, respiratory infections, and cardiovascular diseases. Pirkle and colleagues (1996) estimated that, in 1988-1991, 37 percent of adult non-smokers lived in households with at least one smoker or were exposed to smoke at work in the workplace. Eighty-seven percent of these individuals had measurable levels of serum
cotinine, a biologic marker used to assess exposure to cigarette smoke. Cotinine levels were directly related to the number of smokers in the household and the number of hours exposed to smoke in the workplace.39

Smokers miss more days of work, make more visits to the doctor, and have greater average lifetime medical costs than nonsmokers.40 Women who smoke also appear to experience “accelerated aging,” including a greater risk of osteoporosis, early menopause, and skin wrinkling.41 In addition, smoking has been shown to be detrimental to healing following periodontal treatment, as well as to the severity of periodontal disease in post-menopausal women.42

Finally, an adverse effect of smoking unique to women is an increased risk of cardiovascular disease among smokers who use oral contraceptives; this risk increases with age and amount smoked. There is also a synergistic effect of smoking and using oral contraceptives containing high doses of ethinyl estradiol for women over 35, on the risk of myocardial infarction (MI) and death from MI.43

Interventions. Interventions related to smoking prevention and smoking cessation are described here. Preventive strategies have been largely targeted to middle or junior high school children, because the vast majority of smokers begin the habit during these years. In a meta-analysis of studies of health education strategies involving social or peer influences for children in grades six to nine, Rooney and Murray (1996) found only a five percent relative reduction in smoking due to the programs.44 On the other hand, they found that the potential effect of optimal programs was a 19-29 percent reduction in smoking. These optimal programs featured implementation early in the transition to middle school, same-age peer leaders who were not overly trained, integration with a multi-component health program, and booster sessions in subsequent years. Many of these features, except the training of peer leaders, are consistent with the recommendations for school-based smoking prevention programs proposed by a National Cancer Institute’s expert panel in 1987.45 The Centers for Disease Control and Prevention (CDC) has also recently established guidelines for school health programs to prevent tobacco use and addiction.46

Less commonly evaluated are strategies with mass media messages specifically targeted for adolescent girls. In a recent study, Worden and colleagues (1996) found reduced rates of smoking for girls who received both a school intervention and targeted media messages than for girls who only received a school intervention.47

Legislative and public policy interventions have been used to reduce the rates of smoking among adolescents as well as adults. For example, some jurisdictions have raised the legal age for purchasing cigarettes or increased cigarette taxes. Sometimes the resulting tax revenue is earmarked for smoking prevention programs. Other laws restrict the public places where individuals may smoke, thereby reinforcing a social taboo on smoking.48,49 Many of these strategies have been reported to reduce smoking rates50,51 but they have not been extensively tested in empirical studies.

Smoking cessation treatment is the most common approach to assisting women to quit or reduce smoking. The Agency for Health Care Policy and Research in collaboration with the CDC has published extensive guidelines for smoking cessation treatment in clinical
Charting a Course for the Future of Women’s and Perinatal Health

practice. These guidelines are based on an extensive review by a panel of experts of smoking cessation efforts, including a meta-analysis of the most rigorously designed studies. The panel came to several major conclusions. First, although brief cessation treatments are effective, there is a dose response relation between the intensity and duration of treatment and its effectiveness—meaning that the longer and more intense the dose, the better the response. Moreover, the greater the intensity of the program, the more effective it is in producing long-term abstinence. The panel identified three particularly effective strategies: nicotine replacement therapy using nicotine patches or gum; encouragement and assistance provided by a clinician; and problem solving and skills training on techniques to achieve and maintain abstinence. Variables found to impede cessation in general include high nicotine dependence, psychiatric morbidity, low motivation, low readiness to change, low self-efficacy, exposure to other smokers at work, and stressful life circumstances.

Prochaska’s and DiClemente’s stages-of-change model (1983) is often used in formulating smoking cessation treatment. It identifies four stages leading to quitting—pre-contemplation, contemplation, preparation for action, and action—and an additional relapse phase, and suggests different strategies and health education messages at each stage. Smoking cessation programs based on this model also deal with smokers’ behavioral reinforcements that make it difficult for them to quit, such as smoking when first waking in the morning, following a meal, or when stressed. The AHCPR guidelines do not recommend the stages-of-change model because there was insufficient evidence to support it. Similarly, there was not sufficient evidence to justify inclusion of such newer cessation strategies as proactive peer support by telephone.

While it is generally believed that women have lower quit rates but are more likely to attempt to quit than men, women currently quit smoking at rates similar to men. There are subgroups of women, nonetheless, who appear to have particular difficulty quitting: those who are depressed, who are heavy smokers, who perceive that they have little control over their lives or limited self-efficacy, or who are from lower socioeconomic environments. Women with friends or family members who are smokers and with limited social support to quit smoking are also less likely to quit and are more likely to relapse once they do quit.

Even among women who are committed to quitting, smoking cessation programs have not shown very high quit rates. In fact, 80 to 90 percent of women and men who quit have not participated in organized programs. Individuals who seek help to quit smoking tend to be heavier smokers and have made more quitting attempts than individuals who do not seek help. Smoking cessation treatment, nevertheless, has consistently been found to be cost effective. While the costs of programs rise according to their intensity and duration, cessation rates are higher for more intensive and longer programs. Cromwell and colleagues (1997) estimated the costs saved from implementing the 15 smoking cessation interventions recommended in the AHCPR guidelines would range from $1,108 to $4,542 per life-year saved.

It is often assumed that women have trouble quitting smoking because they are concerned about resulting weight gain. Pirie and colleagues (1992) conducted a clinical trial evaluation that found that adding nicotine gum to a standard smoking cessation program produced greater quit rates at a twelve-month follow-up than the standard program alone,
but that adding a weight management component did not improve quit rates and, in fact, yielded lower quit rates than the addition of nicotine gum alone.\textsuperscript{59} There also was no effect on the amount of weight gain following cessation on relapse rates. An unexpected finding, however, was that the participation rate in the trial was much higher than for previous cessation programs offered by the investigators, suggesting that addition of weight management components may make smoking cessation programs more appealing for women.

Some smoking cessation programs seek to engage mothers at places they are likely to frequent like pediatric clinics and public schools.\textsuperscript{60,61} Wall and colleagues (1995) found that smoking mothers who received written advice at the two-week and two-, four-, and six-month well-baby visits to their newborn's pediatrician, as well as a cessation packet during their postpartum hospital stay, had higher quit rates and lower relapse rates than women who received only the packet.\textsuperscript{62} Pediatric clinics and schools are particularly good for reaching low-income or minority women who may have little contact with other agencies or workplace programs.

**Preconceptional Health and Smoking**

The preconception period offers a special opportunity to get women to stop smoking, because they are aware of the health consequences for their babies if they continue smoking. There are few studies that specifically address smoking cessation programs during the preconception period. Moreover, although there are no reliable data available about women who obtain preconception visits,\textsuperscript{63} women who smoke are less likely to get adequate prenatal care, and, by inference, may be less likely to obtain a preconception visit as well.

An increased risk of infertility has been reported for women who smoke.\textsuperscript{64} One possible mechanism for this effect is interference by the alkaloid components of tobacco on estrogen synthesis or shifting estrogen metabolism to less active forms.\textsuperscript{65} One study by Baird and Wilcox (1985) reported fertility rates of smokers to be only about 70 percent of those for nonsmokers, and smokers were over three times more likely to take longer than one year to conceive.\textsuperscript{66}

**The Impact of Smoking on Pregnancy**

*Indicators of Smoking During Pregnancy.* The most commonly used approach to measuring smoking among women is self-reports, which, when compared with biochemical markers show high levels of sensitivity and specificity among men and nonpregnant women.\textsuperscript{67} Biochemical markers have been frequently used in studies of smoking cessation programs during pregnancy. In general, studies in which cotinine or nicotine levels have been used to determine the accuracy of self-reports suggest that pregnant women, in contrast to nonpregnant women, may underreport rates by as much as 10-15 percent. These biochemical measures are limited, however, in that they do not measure the amount of smoking; self-reports must be used to measure amount.\textsuperscript{68}

About 20 percent of women smoke during pregnancy. Women of lower socioeconomic status and unmarried women have higher than average rates of smoking during pregnancy.\textsuperscript{69} Smoking during pregnancy is less frequent among young Black women than
among young White and older Black women, but the lowest rates are noted for Asian-
American and Hispanic women. Women who drink or use illicit substances during preg-
nancy are also more likely to smoke during pregnancy than women who do not use these
substances. Rates of smoking are higher among young pregnant women (ages 18-24) than
rates for the general population of women in this age group. Women continue to smoke
during pregnancy for most of the same reasons that they do when they are not pregnant.

The Effect of Pregnancy on Smoking Rates. Most women who smoke are aware of the risks
to developing fetuses. As a result, pregnant women are less likely to smoke than women
who are not pregnant because they are more likely to spontaneously quit or reduce smok-
ing during pregnancy. Fingerhut and colleagues (1990) noted that 39 percent of White
smokers reported quitting smoking while pregnant, 27 percent at the time they learned
about the pregnancy and 12 percent later. Women who stop smoking spontaneously prior
to or early in pregnancy have been found to have stronger beliefs about the harmful effects
of smoking, to enter prenatal care earlier, and to be less likely to live with someone who
smokes. College-educated women are more likely to quit smoking during pregnancy
than women who did not complete high school.

Smoking cessation during pregnancy has been associated with attempting to quit
in the past, having a partner who doesn’t smoke or getting support from significant oth-
ers, and believing in the harmful effects of smoking. It is also more likely when women
feel a high sense of self-efficacy about quitting, are experiencing their first pregnancy, and
are having nausea. O’Campo and colleagues (1995) found that close to 40 percent of
women who stop smoking during pregnancy relapse 6-12 weeks postpartum. Fingerhut
and colleagues (1990) reported relapse rates within a year of delivery of 70 percent among
White women, 66 percent among women who quit when they found out they were preg-
nant, and 81 percent among later quitters (data were not presented for Black women). The
relapse rates for early quitters are lower than for the general population, which is 80 per-
cent within one year.

The Effect of Smoking on Pregnancy. Women who smoke during pregnancy are twice as
likely to give birth to a low birth weight (LBW) baby (weighing less than 2500 grams at
birth) as women who do not smoke; their babies weigh on average 200 grams less than
non-smokers’ babies. This increased risk of LBW is largely due to intrauterine growth
retardation (IUGR) and primarily affects birth weights in the higher range of LBW births.
As a result, not many very low birth weight (VLBW) babies (weighing less than 1500
grams) are due to smoking. VLBW births generally result from early labor, premature rup-
tures of membranes, or maternal complications, most of which are unrelated to smoking.

One hypothesis for reduced birth weights of infants born to smokers is lower
weight gain by the mothers during pregnancy. However, Hellerstedt and colleagues (1997)
found that the effect of smoking was independent of weight gain during pregnancy, regard-
less of the pre-pregnancy weight of the woman. The effect of smoking appears to be less-
ened for women who reduce smoking during pregnancy, although not to the level of
women who stop smoking altogether. Martin and Bracken (1986) also reported a reduc-
tion in birth weight associated with nonsmoking mothers’ exposure to environmental
smoke, although the reduction was much less than for smokers and found only among
term births. In a more recent study in Norway, Nafstad and colleagues (1998) found an
association between passive exposure to smoke, as measured by moderate levels of nicotine in the hair of the mother, and small for gestational age (SGA) births.\textsuperscript{83}

The evidence regarding effects of smoking on preterm birth is less convincing, and even when an increased risk is reported, it is less than the risk for a LBW infant.\textsuperscript{77} There appears to be little effect of passive smoke on preterm birth rates.\textsuperscript{82} Although smoking has been reported to affect perinatal and neonatal mortality, this effect is due largely to the increased risk of LBW among smokers. In fact, the paradox that LBW infants of smokers have higher survival rates than infants of nonsmokers with similar birth weights results largely from the increased risk of LBW among smokers due to IUGR.\textsuperscript{77} This is because the mortality rate of IUGR (or small-for-gestational-age) babies of a given birth weight is generally less than the rate for appropriate-for-gestational-age babies of the same weight.\textsuperscript{84}

**Interventions.** Smoking cessation programs for pregnant women have not met with great success, perhaps because high spontaneous quit rates among pregnant women eliminate from clinical trials women most likely to quit smoking. Nevertheless, there is evidence of improvements in birth weights of infants of smoking mothers who were exposed to these programs, although the magnitude of these improvements is not large.

After reviewing clinical trials, the AHCPR expert panel (1996) concluded that counseling interventions of at least ten minutes duration increased quit rates relative to women with no intervention or standard care. The effect of the interventions on the health of the women or her offspring was not evaluated. No trials of nicotine replacement therapy in pregnancy were available.\textsuperscript{43}

O’Campo and colleagues (1995) recommend a number of strategies to enhance the effectiveness of smoking cessation programs for pregnant women, including undertaking a needs assessment and formative evaluation of the program before it is implemented, tailoring the interventions to the cultural needs of the participants, assessing participants’ degrees of addiction and readiness to quit, using materials specifically written for pregnant women, and employing multiple methods to assist women to stop smoking.\textsuperscript{73} Windsor and associates (1985) indicate that tailoring the smoking cessation efforts to the individual needs of a woman improves the effectiveness of these efforts.\textsuperscript{85} The use of videotape modeling of smoking behavior change has also been found to be effective.\textsuperscript{86} Albrecht and colleagues (1994) suggest that, because of the high prevalence of relapse and of initiation of smoking postpartum by low-income women, brief self-help programs with little follow-up are not enough to sustain continued abstinence.\textsuperscript{71} Ershoff and colleagues (1995), on the other hand, did not find a serialized self-help book for spontaneous quitters to be successful in preventing relapse.\textsuperscript{87}

Several investigators have found smoking cessation efforts to be cost-effective.\textsuperscript{88-91} Li and colleagues (1992) estimated that a 15 percent reduction in smoking rates would save $22.59 million dollars yearly in total direct health care costs nationwide.\textsuperscript{92} Hueston and colleagues (1994) found that if the quit rate for women in smoking cessation programs (who would not have otherwise quit smoking) was 18 percent, programs costing less than $84 per woman would be cost effective.\textsuperscript{93} Finally, Marks and his associates (1990) estimated that smoking cessation programs costing $30 per participant with a 15 percent quit rate would save $3.31 per dollar spent, if the costs of neonatal intensive care for LBW infants
were considered. If long-term care for disability associated with LBW were added, the costs savings increase to six dollars per one dollar spent.\textsuperscript{90} These latter cost savings may, however, be overestimated; VLBW infants are the most costly of LBW infants, but smoking is more closely related to infants that are IUGR than to VLBW.

**Smoking Among Women and Its Effect on Their Children**

The effect of environmental smoke on disease in young children has been documented in recent years, particularly in relation to asthma, other respiratory diseases, and rates of hospitalization. There is some evidence that the growth retardation seen at birth among infants of smokers may be permanent.\textsuperscript{81,94} The limited evidence of cognitive deficits among children of smokers may be misleading as these deficits are likely due to their greater risk of being low birth weight, rather than to smoking, per se.\textsuperscript{8}

Several recent studies\textsuperscript{95-97} have shown an increased risk of sudden infant death syndrome (SIDS) for infants of mothers who smoked during pregnancy. These studies also show an association of exposure to environmental smoke and SIDS, independent of maternal smoking during pregnancy.

**Policy Concerns**

*Primary Prevention Strategies.* In recent years, federal and state governments have been aggressively pursuing policies to reduce smoking. The federal Food and Drug Administration (FDA) classified nicotine as a drug and has required that all individuals under 27 be asked for identification when buying cigarettes. State attorneys general have filed suits against the tobacco industry, leading to massive settlements in several states, although they must also be sanctioned by the Congress and the President.\textsuperscript{98} At this writing, comprehensive, national tobacco legislation has not yet been passed.

Additional policy and legislative changes can be taken on the state and national levels, however. More states could increase taxes on cigarettes and use the proceeds to support prevention and cessation programs, as Massachusetts,\textsuperscript{49} California, Arizona, and Oregon have done (N. Maddox, personal communication, March, 1998). Prohibiting advertisements and promotional gimmicks like “Camel cash” that are targeted to vulnerable groups, such as adolescents and minority communities, and restricting tobacco companies from sponsoring sporting events have received public support as well as encouragement from FDA leadership.\textsuperscript{48} Providing subsidies to tobacco farmers who agree to plant substitute crops may also have preventive effects by reducing the amount of tobacco available and raising its price. Finally, a number of states have passed legislation prohibiting smoking in public places, such as work sites and restaurants in an effort to prevent exposure of nonsmokers to environmental smoke.\textsuperscript{99}

One way to stem the high rates of smoking among young women would be to start smoking prevention programs before the sixth grade. The CDC\textsuperscript{46} and National Cancer Institute\textsuperscript{45} have established guidelines for interventions for school systems and public health agencies. The Institute of Medicine’s “Growing Up Tobacco Free” (1994) provides prevention strategies for adolescents in more general settings.\textsuperscript{100} Another complementary
Charting a Course for the Future of Women’s and Perinatal Health

approach is anti-tobacco public education campaigns; Massachusetts and Arizona have developed excellent media campaigns that target youth (N. Maddox, personal communication, March, 1998).

More must be done to combat the tobacco industry’s targeting of high tar and nicotine cigarette brands to minorities. The use of mini-billboards advertising tobacco products has increased in inner-city, minority neighborhoods. These billboards are more visible to children because they are placed low and close to the street. The American Public Health Association has called for the removal of these and other billboards, although the success of this appeal is unknown at present. It is clear, however, that additional research is needed to assess the impact of these targeting activities by the tobacco industry.101

Secondary and Tertiary Prevention. Low-income women are a particularly important group to target for smoking cessation interventions because of their higher smoking rates and limited access to resources. Innovative strategies for reaching these women include locating them through Medicaid providers, programs for their children (like Head Start), and the school systems. System changes may be necessary to support the provision of cessation treatment to non-pregnant and pregnant women. Including stress management education and services for treating depression in smoking cessation programs for women may help address the root causes of their continued smoking.

Health care providers, particularly those serving adolescents, must be trained to ask patients about smoking and to follow-up on smokers’ progress in quitting. In a study of physicians in adolescent medicine in California, Franzgrote and colleagues (1997), found that only 71 percent screened regularly for smoking among adolescents during preventive visits. During acute care visits, only 24 percent screened younger (11-14) and 40 percent screened older (15-18) adolescents for tobacco use.102 Since adolescents are more likely to see a doctor for an acute problem than for a preventive visit, screening for tobacco use during acute visits is very important. One caveat about screening adolescents is that there is a dearth of information about successful cessation treatment for this population.57 There is evidence for adults, however, that increases in cessation interventions by clinicians are related to efforts to assess and document smoking in their patients. Although the evidence is less clear, higher rates of quitting smoking may also result from these efforts.57

The findings of Franzgrote also suggest that providers need information about screening children at relatively young ages when they begin to experiment with tobacco products but have not yet become addicted to nicotine. Managed care organizations may be particularly receptive to these efforts given the reduced costs of health care for non-smokers and former smokers.

The types of cessation programs that appear to have the greatest appeal to women not only address smoking but also weight management through diet and exercise. While inclusion of weight management in cessation programs may not improve quit rates, it appears to draw more women into care, thereby improving outreach. Moreover, tailoring these programs to the special needs of women, particularly with regard to culturally sensitive approaches, appears to increase their effectiveness,103 although the AHCPR (1996) panel was silent on this issue. Smoking cessation efforts will be more effective if they address the reasons women continue to smoke—to reduce stress or depression. Finally, cessation programs should use nicotine replacement therapy to help women deal with their addiction.57
The efforts to reduce smoking among pregnant women, while not as successful as originally hoped, appear to be cost effective. A major limitation of many of these programs, however, is that they fail to prevent relapse among women. Emphasizing the effect of environmental smoke on infants and young children is a strategy that should be used to engage women attending maternal and child health programs.

**Research Implications**

Continued research is needed on interventions to prevent and reduce smoking in women, particularly prevention and cessation treatment strategies for adolescents. A major challenge is preventing young women from experimenting with tobacco products. Improving our knowledge of the impact of the marketing approaches used by the powerful tobacco industry is also important in combating this problem for men and women alike, as is research on the effects of social policy on prevention of smoking and cessation rates.
References

1. McIntosh H, 1997. For women smokers, the gender gap is narrowing. *Journal of the National Cancer Institute* 89(2): 120-121.


Epilogue

Undergirded by the philosophical, historical, and demographic background, the Charting a Course initiative's investigations of specific health issues for women of reproductive age reveal several broad implications for health programs, policies, and research. First, while childbearing is an important event for most women, focusing only on women's health during pregnancy is far too narrow. Preconception health status affects pregnancy and birth outcomes, and pregnancy itself affects women's subsequent health status. Moreover, women perform many roles in their lifetimes, and these roles not only affect their health, but their health status also affects their ability to successfully fulfill these roles, including, but not limited to, parenting.

Second, women need comprehensive, integrated programs and services, including preventive services, that address their unique needs and circumstances throughout their lives. This lifespan perspective recognizes that events that occur earlier in a woman's life may have a profound effect on her subsequent health.

Third, health care providers need to receive better training about women's health issues, including knowledge about the unique health care needs of women, the differential effects of some problems—like alcohol abuse—on women relative to men, and the consequences for women of certain chronic health problems like heart disease, which heretofore have been considered to be problems primarily among men.

Fourth, social policies must be developed that ensure economic security for women and continuous access to health care throughout their lives.

Fifth, challenges for improving women's health research methodology are also apparent and warrant further attention. Discipline-specific health research is often narrowly conceptualized such that the joint effects of several risk factors are not simultaneously studied (e.g., the joint effects of stress, nutrition, poor mental health, and social class on outcomes), nor are the multiple effects of single exposures examined (e.g., stress events compounded over time may lead to mental and physical symptoms). Another issue is that definitions of adverse outcomes used within various disciplines can be gender biased. For example, initially, the definition of AIDS did not include the typical symptoms experienced only by women. Similarly, “depression” may be a biased diagnosis as many of its symptoms describe characteristics that are more commonly seen among women in general. Pregnant women, or women with significant likelihood of becoming pregnant, have historically been excluded from research trials involving drugs. This has resulted in an information gap on how women of reproductive age or pregnant women respond to certain therapeutic regimens.

Finally, the field is challenged with respect to understanding the health services system—the impacts and interrelationships between medical care and population-based interventions, and the optimal ways to organize and link health services of various types.

Although the task may appear daunting, with a strong commitment to collaboration and bold action on behalf of women, meeting these challenges is within our reach.
Appendix

Participants: Charting a Course for the Future Meeting of Experts, April 1998

Maribeth Badura, MSN, RN
Chief, Program Operations Branch
Division of Healthy Start
Maternal and Child Health Bureau
Health Resources and Services Administration
Department of Health and Human Services

Donna M. Barber, RN, MPH
Director, Division of Family Health Services
Florida Department of Health

Doris Barnette, ACSW
Principal Advisor to the Administrator
Health Resources and Services Administration
Department of Health and Human Services

Barbara A. Bartman, MD, MPH
Assistant Professor of Medicine, General Medicine
University of Maryland Medical Center

Claire Brindis, DrPH
Director, Center for Reproductive Health and Policy Research
Institute for Health Policy Studies
University of California, San Francisco

Yvonne Bronner, ScD, RD, LD
Assistant Professor, Department of Population and Family Health Sciences*
Johns Hopkins School of Public Health

Charlyn Cassady, PhD
Research Associate, Department of Population and Family Health Sciences*
Johns Hopkins School of Public Health
Charlotte Catz, MD
Chief, Pregnancy and Perinatology Branch
National Institute of Child Health and Human Development
Department of Health and Human Services

Janet Chapin, RN, MPH
Associate Director, Division of Women's Health Issues
American College of Obstetricians and Gynecologists

Alice J. Dan, PhD
Director, Center for Research on Women and Gender
Chicago, Illinois

Catherine Ehlen, MA
Research Associate, Medical Affairs
American Association of Health Plans

Norma Finkelstein, MSW, PhD
Director, Coalition on Addiction, Pregnancy and Parenting, Inc.
Cambridge, Massachusetts

Loretta P. Finnegan, MD
Special Advisor to the Director
Center for Substance Abuse Treatment
Department of Health and Human Services

Sally Fogerty, BSN, MEd
Deputy Director
Bureau of Family and Community Health
Massachusetts Department of Public Health

David Gagnon, MPH
President, National Perinatal Information Center
Providence, Rhode Island
Representing the Secretary's Advisory Committee on Infant Mortality

Rita Goodman, RNC, MS
Chief Nurse, Division of Community and Migrant Health
Bureau of Primary Health Care
Health Resources and Services Administration
Department of Health and Human Services

Barbara R. Gottlieb, MD, MPH
Assistant Professor, Department of Maternal and Child Health
Harvard University School of Public Health

Holly Allen Grason, MA
Associate Scientist, Department of Population and Family Health Sciences*
Director, Women's and Children's Health Policy Center
Johns Hopkins School of Public Health
Maureen Greer
Assistant Deputy Director, Bureau of Child Development
Part C Coordinator, Indiana Family and Social Services Administration
Representing the National Perinatal Association

Joy Grohar, RNC, MS, CNM
President, Comprehensive Perinatal Consultants
Lockport, Illinois

Marcy Gross
Director, Women’s Health
Agency for Health Care Policy and Research
Department of Health and Human Services

Bernard Guyer, MD, MPH
Professor and Chair, Department of Population and Family Health Sciences*
Johns Hopkins School of Public Health

Betty Hambleton, BS
Senior Advisor for Women’s Health
Health Resources and Services Administration
Department of Health and Human Services

Catherine A. Hess, MSW
Executive Director
Association of Maternal and Child Health Programs

Heddy Hubbard, RN, MPH
Health Scientist Administrator
Agency for Health Care Policy and Research
Department of Health and Human Services

Ellen Hutchins, ScD, MSW
Health Care Administrator
Division of Healthy Start
Maternal and Child Health Bureau
Health Resources and Services Administration
Department of Health and Human Services

Donna Hutten, MS, RN
Chief, Program Development and Coordination Branch
Division of Healthy Start
Maternal and Child Health Bureau
Health Resources and Services Administration
Department of Health and Human Services

Bonnie Connors Jellen, MHSA
Director, Section for Maternal and Child Health
American Hospital Association
Lisa Kaeser, JD  
Senior Public Policy Associate  
The Alan Guttmacher Institute

Laurie A. Konsella, MPA  
Regional Women's Health Coordinator  
Region VIII, Public Health Service  
Department of Health and Human Services

Ann M. Koontz, CNM, DrPH  
Associate Director for Perinatal Policy  
Division of Healthy Start  
Maternal and Child Health Bureau  
Health Resources and Services Administration  
Department of Health and Human Services

Carol C. Korenbrot, PhD  
Associate Professor, Department of Obstetrics, Gynecology, and Reproductive Sciences  
Institute for Health Policy Studies  
University of California, San Francisco

Milton Kotelchuck, PhD, MPH  
Professor, Department of Maternal and Child Health  
School of Public Health  
University of North Carolina at Chapel Hill

Joan M. Leiman, PhD  
Executive Director  
Commission on Women's Health  
The Commonwealth Fund

Tamara Lewis-Johnson, MBA, MPH  
Senior Public Health Advisor  
Office of Minority and Women's Health  
Bureau of Primary Health Care  
Health Resources and Services Administration  
Department of Health and Human Services

Susan M. Lieberman, MS  
Director, Office of Maternal and Child Health  
Philadelphia Department of Public Health

George A. Little, MD  
Professor of Pediatrics, Obstetrics and Gynecology  
Dartmouth-Hitchcock Medical Center

Tbruma McCann Goldman, MD, MPH  
Director  
Division of Healthy Start  
Maternal and Child Health Bureau  
Health Resources and Services Administration  
Department of Health and Human Services
Cynthia Minkovitz, MD, MPP
Assistant Professor, Department of Population and Family Health Sciences*
Johns Hopkins School of Public Health

Dawn Misra, PhD
Assistant Professor, Department of Population and Family Health Sciences*
Johns Hopkins School of Public Health

Claudia Morris, MPH
Deputy Director
National Healthy Mothers, Healthy Babies Coalition

Wanda Nicholson, MD, MPH
Assistant Professor, Department of Obstetrics and Gynecology
Assistant Professor, Department of Epidemiology/Preventive Medicine
University of Maryland

Audrey H. Nora, MD, MPH
Associate Administrator for Maternal and Child Health
Maternal and Child Health Bureau
Health Resources and Services Administration
Department of Health and Human Services

Judy Norrisian
Program Director
Boston Women’s Health Book Collective
Women’s Health Information Center

Patricia O’Campo, PhD
Associate Professor, Department of Population and Family Health Sciences*
Johns Hopkins School of Public Health

Melissa Perry, ScD
Visiting Scientist, Occupational Health Program
Harvard University School of Public Health

Phyllis T. Piotrow, PhD
Professor, Department of Population Dynamics
Director, Center for Communication Programs
Johns Hopkins School of Public Health

Carolina Reyes, MD
Assistant Professor
George Washington University Medical Center
Representing National Coalition of Hispanic Health and Human Services Organizations

Helen Rodriguez-Trias, MD
Co-Director, Pacific Institute for Women’s Health
Public Health Institute
Marjory Ruderman, MHS  
Project Director, Women's and Children's Health Policy Center  
Johns Hopkins School of Public Health

Sberyl Burt Ruzek, PhD, MPH  
Professor, Department of Health Studies  
Temple University

William Sappenfield, MD, MPH  
Assistant Professor, MCH Epidemiologist  
CityMatCH  
Representing CityMatCH

Richard H. Schwarz, MD  
Department of Obstetrics and Gynecology  
New York Methodist Hospital

Gillian B. Silver, MPH  
Research Assistant, Women's and Children's Health Policy Center  
Johns Hopkins School of Public Health

Deborah M. Smith, MD, MPH  
Assistant Professor of Obstetrics and Gynecology, Howard University College of Medicine  
Representing the American College of Obstetricians and Gynecologists

Phillip Smith, MD  
MCH Coordinator  
Indian Health Service  
Department of Health and Human Services

Terrence Smith, MD, MPH  
Chief, Perinatal Care Section  
California State Department of Health Services

Beverly Stauffer, RN, MS  
Health Officer/Director  
Pottawatomie County Health Department  
Westmoreland, Kansas  
Representing the National Association of County and City Health Officials

Donna Strobino, PhD  
Professor, Department of Population and Family Health Sciences*  
Johns Hopkins School of Public Health

Carol S. Weisman, PhD  
Professor, Department of Health Management and Policy  
University of Michigan School of Public Health
Lynne Wilcox, MD, MPH
Director, Division of Reproductive Health
Centers for Disease Control and Prevention
Department of Health and Human Services

Carol W. Williams, DSW
Associate Commissioner for Children’s Bureau
Administration on Children, Youth and Families
Department of Health and Human Services

Deanne Williams, CNM, MS
Executive Director
American College of Nurse-Midwives

Gail J. H. Wilson, MS, MPH
Director, Chicago Healthy Steps for Young Children
Advocate Health Care

Susan F. Wood, PhD
Assistant Director for Policy
Office on Women’s Health
Department of Health and Human Services

*Subsequent to the April 1998 meeting, the Johns Hopkins School of Public Health Department of Maternal and Child Health was renamed the Department of Population and Family Health Sciences.
Charting a Course for the Future of Women’s and Perinatal Health

Volume 1: Concepts, Findings, and Recommendations

Holly Grason, John Hutchins, and Gillian Silver
Editors

A Collaborative Initiative of the Women’s and Children’s Health Policy Center
Department of Population and Family Health Sciences, The Johns Hopkins University and the Maternal and Child Health Bureau Health Resources and Services Administration, U.S. Department of Health and Human Services

ISBN 1-893692-02-7