

It Takes a Village: *Promising Strategies to Reduce Infant Mortality in Baltimore City*

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Overview

- Describe a Strategic Framework for Reducing Infant Mortality Rates (IMR)
- Show estimates of potential impact of various interventions
 - Earlier estimates
 - Discuss accessing data for updated estimates

Conceptual Timeline



Strategic Framework

- IMRs are a function of the **distribution of risk factors** and **risk specific mortality rates**
- Birthweight and preterm birth are the strongest predictors of IM; improvements are likely to result from reductions in LBW or preterm birth rates
- Some causes of IM will not be reduced by interventions focusing on LBW or preterm births alone

Four Strategies for the Reduction of Infant Mortality

- Reducing the proportion of high-risk pregnancies
- Reducing the incidence of LBW and preterm births by improving the health care and health behaviors of women
- Improving birthweight specific survival by strengthening obstetric and neonatal health systems
- Reducing death from specific causes, such as sudden infant death syndrome (SIDS) during the postneonatal period

Strategies to Prevent High Risk Pregnancies in a Population

- Family Planning
- Preconception Care

Family Planning Strategies

- Reduce the incidence of high risk pregnancies by...
 - Reducing unwanted births (especially in older women)
 - Reducing closely spaced births
 - Reducing births to teenage mothers

Preconception Counseling

- Importance of preconception counseling
 - Risk factors defined before pregnancy
 - Effective in women with diabetes
 - Behavioral interventions possible

Strategies to Prevent LBW and Preterm Births in a Population

- Routine prenatal care
- Comprehensive prenatal care
- Nutritional intervention: WIC
- Health promotion

Routine Prenatal Care

- Historical influence
 - 1980s—heralded as panacea
 - Originally implemented to reduce maternal morbidity
 - Focuses largely on identification and prevention of pregnancy complications
- Mixed results
 - Confounded with self-selection for care and other healthy behaviors

Comprehensive Prenatal Care

- Includes routine medical/clinical plus...
 - Social/psychosocial services
 - Nutrition services
 - Health education/health promotion
 - High-risk referral when necessary
- Emphasis on problems more common to low-income women

Scientific Evidence

- Effective for improving birth weight for adolescents
- Quasi-experimental
 - Lower LBW rates for low-income women
- Two clinical trials
 - First: higher mean birth weight among primigravid women
 - Second: no effect
- Studies have generally evaluated the effect of these programs on LBW

Health Promotion

- Often focus on smoking reduction and substance abuse programs
- Counseling about smoking and substance use during pregnancy is a routine component of public programs
- Coordination of services for women who abuse substances and substance abuse treatment

Health Promotion

- Modest improvements in birth weight associated with smoking cessation programs
- Substance use results not available for birth weight and preterm birth

Strategies to Improve Birth Weight-Specific Mortality

- Regionalization of prenatal care
- New treatments for VLBW newborns

Regionalization of PNC

- Based on the premise that pregnant women and newborns with given risk factors should receive their care from an appropriate level facility
- Coordinated system of linkages between these different care sites, so a woman or neonate in need of a certain level of care is efficiently and appropriately provided with that care

Effect of Regionalization

- No direct evidence that regionalization actually works
- Data which suggest it is effective comes from pre-test/post-test evaluations
- Evidence that VLBW babies born in tertiary centers have better outcomes

New Treatment of VLBW Infants: Surfactant Therapy

- Surfactant therapy credited with reductions in infant mortality in 1989-91 from Respiratory Distress Syndrome
- Not clear if effective in reducing morbidity
- Clinical trials show evidence of reducing mortality rates in VLBW

Strategies to Reduce Postneonatal Mortality

- SIDS: Sleep Patterns
- Smoking

SIDS

- 1992 the American Association of Pediatrics recommended that babies should be placed to sleep in supine position
- Based on results of case-control studies showing that babies in prone position were more likely to die from SIDS than babies placed in supine position

SIDS

- Evidence in Europe showed decline in SIDS due to change in sleep position
- US death rates from SIDS declined significantly with recommendations and education campaigns to place infants in supine position
- A major focus of many Fetal and Infant Mortality Review Programs (FIMR)

SIDS and Smoking

- Prenatal maternal smoking is a risk factor for SIDS
- Postpartum infant exposure to ETS does not appear to be associated with SIDS, when controlling for in-utero exposure

TABLE 6
Summary of Anticipated Reductions in Infant Mortality from Selected Interventions

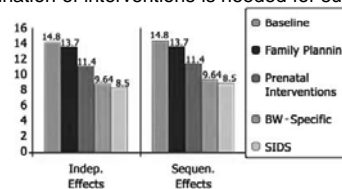
Intervention	Estimated IMR	Estimated deaths averted	Cumulative percent decline in IMR
Baseline	14.48	0	0.0
Unwanted births	14.14	90	2.3
Birth interval	14.07	109	5.1
Teenage births	14.34	37	6.1
Comprehensive prenatal care	14.12	96	8.5
Smoking	14.34	37	9.5
WIC	14.18	79	11.5
Risk-appropriate care	12.64	495	24.2
Surfactant therapy	13.94	142	27.8
SIDS	13.93	146	31.6
Total (maximum effect)	9.91	1,231	31.6

Abbreviations: IMR, infant mortality rate; WIC, Supplemental Nutrition Program for Women, Infants and Children; SIDS, Sudden Infant Death Syndrome.

Source: Strobino D, O'Campo P, Schoendorf KC. (1995). A strategic framework for infant mortality reduction: implications for "Healthy Start." *Milbank Q* 73(4):507-33.

Conclusions from Estimates

- Multi-factorial etiology of IM
- Effects of interventions on total population
- Combination of interventions is needed for success



Impact on Infant Mortality

- Available data to estimate the potential impact of the 11 high-impact areas are limited
 - **Smoking:** meta-analysis of RCTs
 - **Nutrition estimates:** WIC
 - **Alcohol and drugs:** 1 RCT only
 - **Home visiting:** 1 RCT of high-risk women
 - **Preconception Care:** no available data

Impact on Intermediate Pathways

- Several high-impact service areas affect infant mortality indirectly through the intermediate pathways of maternal health and environment
 - **Home visiting:** reduction in pregnancy-induced hypertension; increased interpregnancy intervals
 - **Domestic violence interventions:** maternal adoption of safety behaviors and decreased severity of abuse by perpetrator
 - **Drug and alcohol interventions:** postneonatal home environment safety—parental marijuana use associated with SIDS in 2 studies
 - **Preconception care:** maternal adoption of health behaviors, including following requirements for folic acid supplementation and adequate prenatal physical activity
 - **Mental health interventions:** maternal resolution of psychosocial risk factors including depression

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