

Non-Communicable Diseases and Adolescents

An opportunity for action



AstraZeneca 

Young Health Programme

A global community investment initiative

in partnership with

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™



JOHNS HOPKINS
BLOOMBERG
SCHOOL OF PUBLIC HEALTH



international pediatric association
association internationale de pédiatrie
asociación internacional de pediatría

**The AstraZeneca
Young Health Programme**

This document is a product of the Young Health Programme, AstraZeneca's global community investment programme.

The Young Health Programme is designed to help young people in need around the world deal with the health problems they face and improve their chances of living a better life.

The programme is a partnership between AstraZeneca, the Johns Hopkins Bloomberg School of Public Health and Plan, a leading international children's charity.

www.astrazeneca.com

www.jhsph.edu

www.plan-international.org

Our co-sponsors



Behaviors established during adolescence have life-long consequences for Non-Communicable Diseases (NCDs): A focus on adolescents in national programmes is essential for preventing NCDs

In 2008, 36 million people died from NCDs. NCD-related deaths are increasing, especially in low and middle-income countries ⁽¹⁾ and over half are associated with behaviors that begin or are reinforced during adolescence, including tobacco and alcohol use, poor eating habits, and lack of exercise ⁽²⁾. Global trends indicate that these NCD-related behaviors are on the rise among young people, and that they establish patterns of behavior that persist throughout life and are often hard to change. In 2011, the World Health Assembly endorsed a resolution calling upon member states to address the needs of youth in the context of NCDs ⁽³⁾. Evidence points to adolescence as a crucial period in the development of adult NCDs:

- **Diabetes, stroke and cancer:** Nearly three out of four obese adolescents remain obese as adults, increasing their risk of heart disease, type 2 diabetes, stroke and cancers ⁽⁴⁻⁷⁾.
- **Cancer:** Early unprotected sexual intercourse increases the risk of HPV and thus the risk of adult cervical cancer ⁽⁸⁾; and excessive exposure to the sun in adolescence predisposes to skin cancer later in life ⁽⁹⁾.
- **Cardiovascular disease:** Between 20 to 40% of adolescents are overweight ⁽¹⁰⁾. When they become adults, overweight adolescents are twice as likely to develop cardiovascular disease and have seven times greater risk of developing atherosclerosis ⁽¹¹⁾. They also face an increased risk for cancer, stroke, hypertension, and type 2 diabetes ⁽¹⁰⁾.
- **Chronic lung disease and cancer:** 90% of adult smokers begin before age 18 ⁽¹²⁾. Globally, between 80,000 and 100,000 young people start smoking every day ⁽¹³⁾ and one in four adolescents who smoke started using tobacco before the age of ten ⁽¹⁴⁾.
- **Chronic alcohol dependence:** Adolescents who start to drink before they are 15 years old are five times more likely to abuse alcohol as adults than those who start drinking at age 19 or older ⁽¹⁵⁾.
- **Cardiovascular disease and diabetes:** Adolescent mothers are more likely to have low birth weight infants, which is associated with increased risk of adult coronary artery disease, hypertension, and diabetes ⁽¹⁶⁾.
- **Chronic Lung Disease:** Two million children under five die annually from pneumonia caused from indoor open stoves ⁽¹⁷⁾ and exposed young people have two to three times the risk of asthma and lower respiratory conditions ⁽¹⁸⁾.



Addressing Adolescent NCDs and Predisposing Behaviors

Interventions aimed at reducing the burden of NCDs must include addressing risk factors during adolescence. There are many examples of effective policies and programs from around the world:

School-level intervention:

Tackling Childhood Obesity in Chile ^{(30-31)*}:

To address youth obesity in Chile, the Ministry of Health's school-based *Vida Chile* program aimed to reduce sedentary behavior and tobacco use, and to promote physical activity and healthy eating. After participating, boys showed lower BMI scores, and both genders improved in fitness tests.

⁽³⁰⁾ World Health Organization. (2008).

⁽³¹⁾ Kain, J., Ugay, R., Albala, Vio, F., Cerda, R., & Leyton, B. (2004).



Combined: Schools, Parents and Communities: Preventing Smoking among Indian Youth ^{(29)*}:

In India, nearly 20% of adolescents report using tobacco. Project MYTRI (Mobilising Youth for Tobacco-Related Initiatives) aims to decrease tobacco use in 32 schools in Delhi and Chennai, using classroom curricula, posters, parent postcards, and peer-led activism. An initial evaluation showed increased knowledge and changing attitudes – both key to reducing tobacco use.

⁽²⁹⁾ Stigler, M.H., Perry, C.L., Arora, M., Shrivastav, R., & Reddy, K.S. (2007).

Non-communicable diseases during adolescence

Adolescents are not immune to NCDs. Rather, the prevalence of cardiovascular disease, hypertension, diabetes and chronic respiratory conditions is substantial and increasing globally:

- Hypertension: The prevalence of hypertension among adolescents is 4.5% ⁽¹⁹⁾.
- Diabetes: By the age of 15 more than 25% of obese adolescents have early signs of diabetes ⁽²⁰⁾.
- Cardiovascular disease: Among obese youth, 70% have at least one risk factor for cardiovascular disease by the age of 20 ⁽²¹⁾.
- Chronic lung disease: Approximately one in ten young people have asthma ⁽²²⁾.
- Cancer: In Europe, for young people under 15 years, leukaemia is the most common malignancy with an incidence of 47 per million ⁽²³⁾.

Adolescents also suffer from chronic non-communicable diseases that have been mostly neglected by the international community: Diagnosing and treating NCDs and other chronic conditions during adolescence need to be incorporated into national programmes

- **Mental health disorders:** By the age of 20, one in four young people will suffer from at least one mental health disorder. Three-fourths of all mental health diseases start before the age of 24 ⁽²⁴⁾.
- **Intentional and unintentional Injuries:** Homicide, suicide and motor vehicle injuries account for 75% of all adolescent deaths in high income countries. So too, injuries from interpersonal violence and motor vehicles accidents are the major cause of disability among adolescents and youth, accounting for the greatest loss of Disability Adjusted Life Years (DALYs) ⁽²⁵⁾.
- **Violence:** Over 500 young people die every day due to interpersonal violence ⁽²⁶⁾.
- **Chronic anaemia:** Globally, one in four school age children aged between 5-15 years suffers from anaemia ⁽²⁷⁾.



Combined: Schools, Parents and Communities: Preventing Underage Alcohol Use in the United States ^{(28)*}:

Project Northland includes activities for 6th through 8th grade students and their parents and peers, covering alcohol use and resistance to social pressures, and promoting community participation. Parents receive information on underage drinking, and community members work to change social norms. By the end, participants have shown lower rates for alcohol use and smoking. Project Northland has since run in more than 15 countries.

⁽²⁸⁾ Perry, C.L., Williams, C.L., Veblem-Mortenson, S., Toomey, T.L., Komro, K.A., Anstine, P.S., McGovern, P.G., Finnegan, J.R., Forster, J.L., Wagenaar, A.C., & Wolfson, M. (1996).



Policy-level intervention:

Reducing Motor Vehicle Fatalities in New Zealand ^{(32-33)*}:

In the early 1980s, adolescents represented 8% of New Zealand drivers, yet caused over a quarter of crashes. In 1987, the government implemented a three-tier Graduated Driver Licensing System (GDLS): A six-month learner's license at age 15 (always accompanied by a fully licensed driver, and with limits on night-time driving and alcohol); a one-year restricted license; then a full license. An 8% decrease in crash injuries resulted, with fewer crashes at night. Fifteen years later, adolescent crash rates remain well below pre-1987 levels.

⁽³²⁾ Langley, J.D., Wagenaar, A.C., Begg, D.J. (1996).

⁽³³⁾ Begg, D., & Stephenson, S. (2003).

1

**WHO Recommendations:
Preventing and
responding to NCDs
must integrate a focus
on adolescents**

Policies and Legislation

Policies and legislation to protect adolescents from harmful substances such as tobacco, alcohol and foods containing high levels of saturated fats, trans-fats, sugar and salt, are the cornerstones of national programs to respect and fulfil adolescents' rights and prevent behaviors that increase the risk of NCDs. Policies must target product design, advertising, marketing, sponsorship and promotion of harmful substances. Increasing taxes on unsafe products such as tobacco is another way to decrease demand, especially for adolescents who are particularly sensitive to price increases. Policies and legislation can limit young people's access to, and use of such products by creating and enforcing a minimum age of purchase, for example, on tobacco and alcohol and by mandating public places, schools and other places where adolescents congregate be 100% smoke and alcohol-free.

2

Schools

Schools and other educational establishments provide important opportunities to prevent the behaviors that underlie NCDs, and can contribute to the prevention and referral of mental illness and violence. They are well positioned to provide young people and their families with information and the life-skills that are necessary to use this knowledge to promote health, and to limit adolescents' access to tobacco and to harmful foods and beverages. They can create a health promoting culture by increasing access to healthy foods, teaching healthy choices and ensuring daily vigorous physical activity.

3

Health services

Health services also have a role to play when clinicians ask youth about tobacco and alcohol use, sexual behaviors and diet and physical activity as part of routine visits. Counselling and information can help young people avoid health risks. So too, clinicians are well positioned to identify mental health problems as well as behaviors that put the young person at risk for injury, providing early diagnosis and prompt and adequate access to treatment.

4

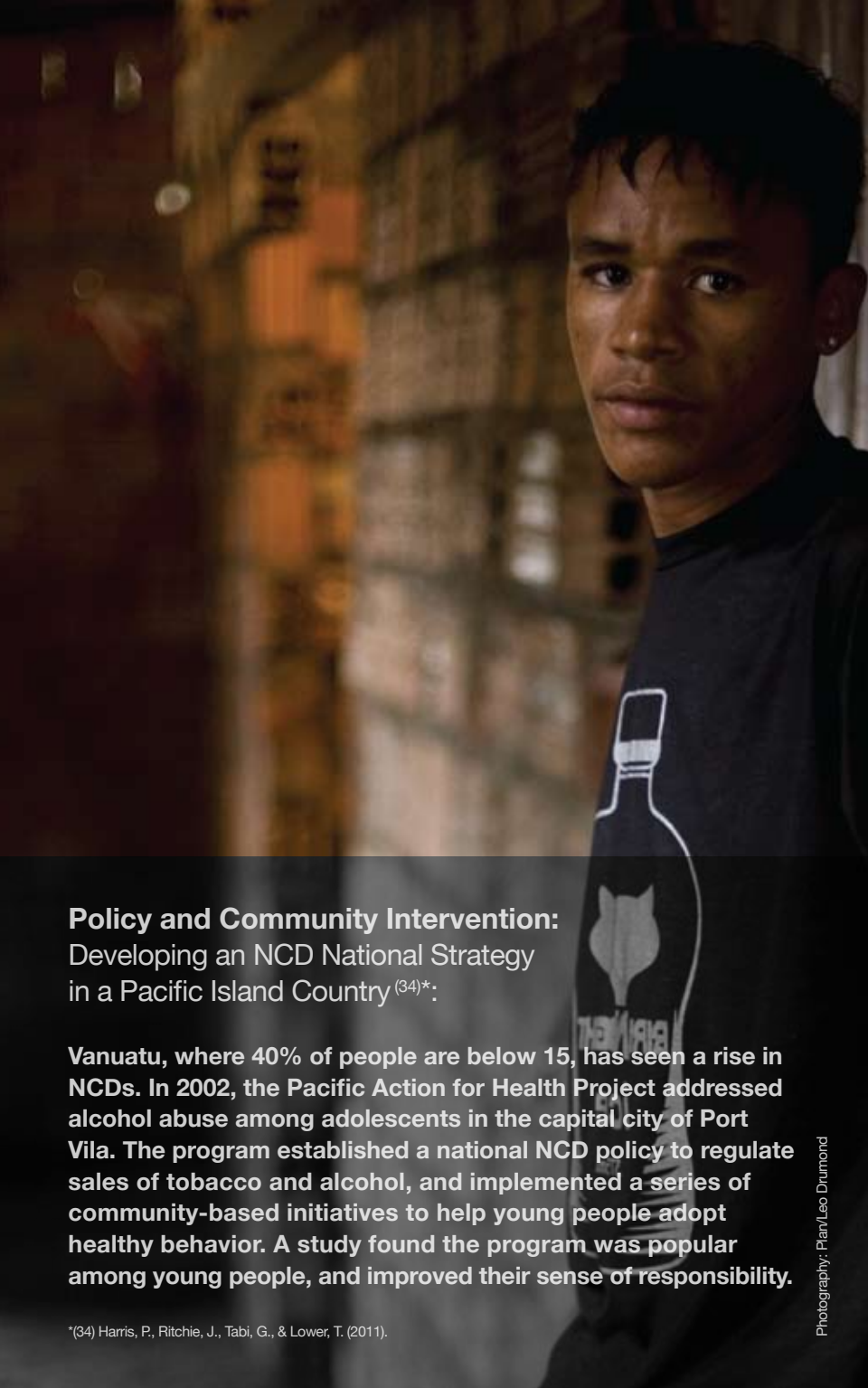
Families and communities

Families and communities play a key role in preventing and responding to NCD-risk behaviors during adolescence. Parental monitoring and expectations have substantial influence on adolescent behaviors. There is an on-going need to increase parent awareness about adolescent psychosocial development and to expand opportunities for young people to be engaged with their community, thereby improving mental health and reducing health compromising behaviors.

5

Information technology and the media

Young people are connected to media and new information technologies capable of reaching populations in ways never before possible. Those who work with youth need to harness these resources for health promotion and health monitoring. They are tools to reach the most disengaged as well as all other youth.



Policy and Community Intervention:
Developing an NCD National Strategy
in a Pacific Island Country^{(34)*}:

Vanuatu, where 40% of people are below 15, has seen a rise in NCDs. In 2002, the Pacific Action for Health Project addressed alcohol abuse among adolescents in the capital city of Port Vila. The program established a national NCD policy to regulate sales of tobacco and alcohol, and implemented a series of community-based initiatives to help young people adopt healthy behavior. A study found the program was popular among young people, and improved their sense of responsibility.

⁽³⁴⁾ Harris, P., Ritchie, J., Tabi, G., & Lower, T. (2011).

NCDs and Adolescents: A matter of rights

The Universal Declaration of Human Rights⁽³⁵⁾ emphasizes that laws and regulations should help all people, including adolescents, enjoy the highest attainable standard of health. Similarly, the United Nations Convention on the Rights of the Child⁽³⁶⁾, which defines “child” as up to the age of 18 years, is very clear about the rights of adolescents to information, services, a safe and supportive environment, free from exploitation and abuse, and to have opportunities to participate in decisions that affect their lives⁽³⁷⁾. A human rights context emphasizes that governments have an obligation to implement policies that respect, protect and fulfil adolescents’ rights to health and development. Thus, attending to NCDs among adolescents is an issue of rights as well as health.

References

- (1) **World Health Organization. (2011).** Global status report on non-communicable diseases 2010. Geneva: World Health Organization. Accessed at: http://www.who.int/nmh/publications/ncd_report2010/en/. Retrieved on: 22 July 2011.
- (2) **World Health Organization. (2002).** The world health report 2002: Reducing risks, promoting healthy life. Geneva: World Health Organization. Accessed at: <http://www.who.int/whr/2002/en/>. Retrieved on: 22 July 2011.
- (3) **World Health Assembly. (2011).** Youth and Health Risks. World Health Organization. A64/28, 1-4.
- (4) **Dehghan, M., Akhtar-Danesh, N., & Merchant, A.T. (2005).** Childhood obesity, prevalence and prevention. *Nutrition*. 4, 24.
- (5) **Niklas, T.A. (2001).** Eating patterns, dietary quality and obesity. *Journal of the American College of Nutrition*. 20, 599-608.
- (6) **Whitaker, R.C., Wright, J.A., Pepe, M.S., Seidel, K.D., Dietz, W.H. (1997).** Predicting obesity in young adulthood from childhood and parental obesity. *New England Journal of Medicine*. 337, 869-873.
- (7) **Parsons, T.J., Power, C., Logan, S., & Summerbell, C.D. (1999).** Childhood predictors of adult obesity: A systematic review. *International Journal of Obesity*. 23, S8, S1-S107.

- (8) Monk, B.J., & Wiley, D.J. (2006).** Will wide spread papillomavirus prophylactic vaccination change sexual practices of adolescent and young adult women in America? *Obstet Gynecol.* 108, 2, 420-424.
- (9) Thompson, C.S., Woolnough, S., Wickenden, M., Hiom, S., & Twelves, C.J. (2010).** Sunbed use in children aged 11-17 in England: Face to face quota sampling surveys in the National Prevalence Study and Six Cities Study. *BMJ.* 340, c877.
- (10) Wang, Y., & Lobstein, T. (2006).** Worldwide trends in childhood overweight and obesity. *International Journal of Pediatric Obesity.* 1, 11-25.
- (11) Must, A., Jacques, P.F., Dallal, G.E., Bajema, C.J., Dietz, W.H. (1992).** Long-term morbidity and mortality of overweight adolescents: A follow-up of the Harvard Growth Study of 1922 to 1935. *New England Journal of Medicine.* 327, 1350-1355.
- (12) National Center for Chronic Disease Prevention and Health Promotion. (2001).** Youth Tobacco Surveillance – United States, 2000. *MMWR Surveillance Summaries.* 50, SS04, 1-84.
- (13) World Health Organization Western Pacific Region. (2002).** Smoking statistics. Accessed at: http://www.wpro.who.int/media_centre/fact_sheets/fs_20020528.htm. Retrieved on: 22 July 2011.
- (14) World Health Organization. (2002).** The Tobacco Atlas. Geneva: World Health Organization. Accessed at: http://www.who.int/tobacco/statistics/tobacco_atlas/en/. Retrieved on: 22 July 2011.
- (15) DeWit, D.J., Adlaf, E.M., Offord, D.R., Ogborne, A.C. (2000).** Age at first alcohol use: A risk factor for the development of alcohol disorders. *Am J Psychiatry.* 157, 745-750.
- (16) Bhargava, S.K., Sachdev, H.S., Fall, C.H.D., Osmond, C., Lakshmy, R., Barker, D.J., Biswas, S.K.D., Ramji, S., Prabhakaran, D., Reddy, K.S. (2004).** Relation of serial changes in childhood body-mass index to impaired glucose tolerance in young adulthood. *New England Journal of Medicine.* 350, 9, 865-875.
- (17) Black R.E. Morris S.S. Bryce J. (2003).** Where and why are 10 million children dying every year? *Lancet* 2003;361:2226-2234
- (18) Smith K.R.Samet J.M. Romieu I. Bruce N. (2000).** Indoor air pollution in developing countries and acute lower respiratory infections in children. *Thorax* 2000;55:518-532.
- (19) Sorof, J.M., Lai, D., Turner, J., Poffenberger, T., & Portman, R.J. (2004).** Overweight, ethnicity and the prevalence of hypertension in school-age children. *Pediatrics.* 113, 3, 475-482.
- (20) Goran, M.I., Ball, G.D.C., & Cruz, M.L. (2003).** Obesity and the risk of Type 2 Diabetes and Cardiovascular Disease in children and adolescents. *Journal of Clinical Endocrinology & Metabolism.* 88, 4, 1417-1424.

NCDs and Adolescents

- (21) Freedman, D.S., Zuguo, M., Srinivasan, S.R., Berenson, G.S., & Dietz, W.H. (2007). Cardiovascular risk factors and excess adiposity among overweight children and adolescents: the Bogalusa Heart Study. *Pediatrics*. 150, 1, 12–17.
- (22) Bloom, B., Cohen, R.A., & Freeman, G. (2010). Summary health statistics for U.S. children: National Health Interview Survey, 2009. National Center for Health Statistics. *Vital and Health Statistics*. 10, 247, 1-80.
- (23) World Health Organization Europe. (2009). Incidence of childhood leukaemia. World Health Organization. Accessed at: http://www.euro.who.int/__data/assets/pdf_file/0005/97016/4.1.-Incidence-of-childhood-leukaemia-EDITED_layouted.pdf. Retrieved on: 22 July 2011.
- (24) Patel, V., Flisher, A.J., Hetrick, S., & McGorry, P. (2007). Mental health of young people: A global public health challenge. *The Lancet*. 369, 1302-1313.
- (25) Gore, F., Bloem, P., Patton, G., Ferguson, J., Joseph, V., Coffey, C., Sawyer, S., Mathers, C. (2011). Global burden of disease in young people aged 10–24 years: A systematic analysis. *Lancet*. 377, 2093-2102.
- (26) World Health Organization. (2006). Child and adolescent injury prevention: A WHO plan of action, 2006-2015. Geneva: World Health Organization. Accessed at: http://whqlibdoc.who.int/publications/2006/9241593385_eng.pdf. Retrieved on: 22 July 2011.
- (27) DeBenoist, B., McLean, E., Egli, I., & Cogswell, M. (Eds). (2008). Worldwide prevalence of anaemia 1993-2005. World Health Organization. Geneva: WHO Press.
- (28) Perry, C.L., Williams, C.L., Veblem-Mortenson, S., Toomey, T.L., Komro, K.A., Anstine, P.S., McGovern, P.G., Finnegan, J.R., Forster, J.L., Wagenaar, A.C., & Wolfson, M. (1996). Project Northland: Outcomes of a communitywide alcohol use prevention program during early adolescence. *American Journal of Public Health*. 86, 7, 956-965.
- (29) Stigler, M.H., Perry, C.L., Arora, M., Shrivastav, R., Mathur, C., & Reddy, K.S. (2007). Intermediate outcomes from Project MYTRI: Mobilizing youth for tobacco-related initiatives in India. *Cancer Epidemiol Biomarkers Prev*. 16, 1050-1056.
- (30) World Health Organization. (2008). School policy framework: Implementation of the WHO global strategy on diet, physical activity, and health. Geneva: WHO Press.
- (31) Kain, J., Uauy, R., Albala, Vio, F., Cerda, R., & Leyton, B. (2004). School-based obesity prevention in Chilean primary school children: Methodology and evaluation of a controlled study. *International Journal of Obesity*. 28, 483-493.
- (32) Langley, J.D., Wagenaar, A.C., Begg, D.J. (1996). An evaluation of the New Zealand graduated driver licensing system. *Accid Anal and Prev*. 28, 2, 139-146.

(33) **Begg, D., & Stephenson, S. (2003).** Graduated driver licensing: the New Zealand experience. *Journal of Safety Research*. 34, 99-105.

(34) **Harris, P., Ritchie, J., Tabi, G., & Lower, T. (2011).** Addressing the social determinants of alcohol use and abuse with adolescents in a Pacific Island county (Vanuatu). *Social determinants approaches to public health: From concept to practice* (pp 175-186). Geneva: WHO Press.

(35) **Universal Declaration of Human Rights (1948), Article 25; International Covenant on Economic, Social and Cultural Rights (1966), Article 12; General Comment No. 14, The Right to the highest attainable standard of Health: Substantive Issues Arising in the Implementation of the International Covenant on Economic, Social and Cultural Rights (2000); United Nations Convention on the Rights of the Child (1989).**

(36) **United Nations Convention on the Rights of the Child (1989).**

(37) **General Comment No. 14, The Right to the highest attainable standard of Health: Substantive Issues Arising in the Implementation of the International Covenant on Economic, Social and Cultural Rights (2000).**

Glossary

Adolescents: 10-19 year olds

Youth: 15-24 year olds

Young People: 10-24 year olds

Non-Communicable Diseases in Adolescence:
A non-communicable disease is a disease that is not infectious

HPV: Human Papillomavirus

