

GKEN Reports:
**Taking Action Toward Good Health: Global Examples of Promoting Healthy
Lifestyles and Reducing Risk Factors**
Part 2: Childhood and Adolescent Strategies

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The U.S. Centers for Disease Control (CDC) report that an individual's ability to combat disease and personal injury is greatly determined by both their lifestyle choices and environment. The CDC estimates that approximately 53% of prevention is achievable through personal lifestyle choices, 21% is determined by environmental factors, 10% is determined by physician accessibility, and 16% is the result of predetermined genetic disposition.¹

Amidst the burden of the global economic crisis, policy makers and government officials are faced with the challenge of supporting their increasingly aging populations without adequate financial resources. With dwindling funds to support healthcare, it is imperative that new strategies be implemented to aid in alleviating the strain that both governments and insurance companies are facing as the cost of healthcare continues to rise. Countries may take varied approaches to addressing these health care challenges, depending on the cultural and philosophical underpinnings of their existing health care models, as well as the economic realities each country faces.

One philosophical difference between many countries is the extent to which individuals should share "responsibility" for personal health along with the traditional health system players, i.e. providers, governments, and/or insurance companies. Some countries are addressing health care system challenges by moving toward strategies that promote more active participation by individual citizens in everyday health and lifestyle choices in order to counterbalance the cost of future health care claims.

This report examines a variety of global strategies that encourage active individual participation in health, while remaining cognizant of the fact that many countries differ in their philosophies on the extent to which both governments and individuals are responsible for

¹ CDC. Personal Health Management. [Online] 2009. www.cdc.org.

positive health outcomes. Some countries like the United Kingdom and Sweden both support the concept of governmental responsibility for the health of their citizens, while countries like Germany and the Netherlands both promote and reward citizens for becoming actively responsible for their personal health.²

Preventable illness makes up approximately 80% of the illness incidence and 90% of all health care costs in the US.³ With approximately eighty percent of health care costs linked to diseases that result from unhealthy personal habits such as smoking, drinking, poor diet and lack of exercise, the notion of active participation in health has significant potential in helping to reduce future medical expenses.⁴ However, when designing an intervention strategy, there are several factors that need to be considered. Intervention delivery methods, target groups and formats are factors that need to be considered during the development process.

Several studies have shown evidence supporting the theory that the quality of adult health is a result of an accumulation of health-related events throughout a lifetime.⁵ Multiple life-course studies have found correlations in poor health through childhood and a lower quality of health in adulthood.⁶ Consequently, interventions centered on active individual participation in health should not just target adults, but children and adolescents as well. As youth transition to young adulthood, they eventually will rely less on outside support from parents and teachers and more on their own personal knowledge to aid in them in making health decisions. Therefore, it is important to incorporate a health curriculum in schools that promotes knowledge, accountability, and confident decision-making in order to provide youth with the tools they need to make healthy choices.

There are common variables that universally impact youth and adolescent health in developed countries. Behavioral risk factors such as poor diet, lack of exercise, smoking, drug use, alcohol consumption, and unsafe sex practices play a role in determining the quality of childhood health outcomes. Environmental variables such as adequate sanitation practices, along with access to first aid education (e.g. CPR training), fire safety knowledge, seatbelt usage, and

² Meulen, Ruud Ter., *Individual Responsibility and Solidarity in European Health Care*. Bristol : Journal of Medicine & Philosophy, 2008, Vol. 33.

³ Fries, J., et al. , *Reducing health care costs by reducing the need and demand for medical services*. 1993, New England Journal of Medicine, pp. 321-325.

⁴ Ibid.

⁵ Middlebrooks JS, Audage NC. *The Effects of Childhood Stress on Health Across the Lifespan*. Atlanta, GA : Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, 2008. http://www.cdc.gov/ncipc/pub-res/pdf/Childhood_Stress.pdf.

⁶ Ibid.

general knowledge of diseases such as cancer are also important variables that can impact health outcomes. Psychological factors should also be considered. Issues like stress, peer pressure, personal self-image problems, depression, anxiety, social trust, and learning disabilities are important influential health factors. Access to a physician for annual checkups and keeping up with vaccines is also critical during development, although this method of support may not always be easily accessible.

This report looks at initiatives, strategies, and research that encourage children and adolescents to be active participants in supporting their personal health. This is a cross-country approach organized by risk factor, identifying global examples of health education interventions occurring in various developed countries. While all intervention strategies and support methods may not be universally appropriate for every nation, this report incorporates the attempts of very diverse countries in order to illustrate the worldwide need for youth participation in their own health outcomes.

In addition, this report is also sensitive to the idea that certain barriers may hinder groups from accessing the intervention types discussed. Factors such as financial restraints, regional priorities, or deeply rooted cultural beliefs may create limitations when it comes to the feasibility of implementation of these interventions.

Lifestyle

Diet and Exercise

Japan

The Japanese Ministry of Education (MEXT) develops policies for child health education under three areas: enhancement of education on dietary habits, enhancement of school safety and mental care, and promotion of school health.⁷

MEXT has noticed a trend in Japanese children developing unbalanced dietary habits and an increase in childhood obesity. In March 2005, MEXT introduced the nutritional advisory system to help promote dietary education through schools. School nurses aid in monitoring the weights and nutritional habits of the children while in school and create strategies for children based on the government's published standards for healthy Japanese children.⁸

⁷ Ministry of Education, Culture, Sports, Science and Technology-Japan. Youth Health. *MEXT*. [Online] 2009. <http://www.mext.go.jp/english/shotou/index.htm>.

⁸ *Ibid.*

Germany

Approximately 1.9 million German children (14% of the German population under the age of 15) are reported to be overweight.⁹ In response to this problem, the Child Health Foundation, an independent organization in Munich, created a childhood obesity intervention program called Power Kids. Power Kids is a three month program that uses interactive games and activities to help control obesity in school age children. These activities are packaged and can be ordered by families through their pediatrician or insurance provider.¹⁰ Parents are then able to engage in these activities with their children at home. The program focuses on nutrition and encourages children to be physically active. The program is supported and distributed by one Germany's largest health insurances companies, AOK.

When evaluated, children reported ease of use and enjoyment while participating in the Power Kids activities. The program also succeeded in achieving a recordable drop in BMI index for participating children one year after they completed the program.¹¹

In addition to the Power Kids weight loss program, AOK sponsors Tiger Kids, a childhood obesity prevention program delivered through the kindergarten classroom. The objective of Tiger Kids is to encourage children to be physically active for at least an hour a day, discourage inactive pastimes, introduce more fruits and vegetables into a child's diet, encourage the consumption of unsweetened drinks such as water, and promote the importance of starting each day with a healthy breakfast. An evaluation of the program showed that Tiger Kids also achieved long-term benefits on body mass index even one year after children completed the program.¹²

United Kingdom

In February 2009, the United Kingdom's Department for Children, Schools and Families published a national strategy for child and young people's health called "Healthy Lives, Brighter

⁹ AOK-Nutrition. *AOK Insurance*. [Online] 2009. <http://www.aok.de/bundesweit/>.

¹⁰ Ibid.

¹¹ Ibid.

¹² Powerkids. *Power Kids*. [Online] 2009. <http://www.powerkids.de/>.

Futures.” This publication describes the Healthy Child Program, a core health program that focuses on school-age children and their families.¹³

The Healthy Lives, Brighter Futures strategy promotes the creation of a strong physical education system for children consisting of five physically active hours per week. The strategy also includes the enactment of pilot programs to place free meals in schools, and recommends improving upon the Personal, Social, Health and Economic (PSHE) education in schools.¹⁴

The UK’s national child health strategy also addresses health challenges faced by adolescents through the “You’re Welcome” program of quality criteria. The voluntary “You’re Welcome” initiative aims to improve health services for young people both by making services more “young people friendly,” and by improving the skills of health professionals to address youth needs. By establishing a set of quality criteria for youth health services, the UK Department of Health hopes to make health care services more accessible, appropriate, and equitable for youth across all points of service, including school and university clinics.¹⁵ The national strategy also encourages three hours of physical education in schools per week for adolescents as well as establishes a commitment to an increase in funds invested in contraceptive education.¹⁶

Sweden

In 2004, the Swedish government passed a bill that created the Swedish National Centre on Child Health Promotion (NCFP), establishing mandatory guidelines for child and adolescent physical activity in schools. In 2006, this bill was amended to include guidelines for encouraging healthy eating habits.¹⁷

NCFP consists of a board of representatives that strive to provide equal health opportunities for all Swedish children through their schools. The Centre oversees research and development of new physical activity strategies and healthy eating habits for Swedish youth. This group assists the government in upholding the health education requirements added to the

¹³ Department for Children, Schools and Families. *Healthy lives, brighter futures: The strategy for children and young people's health*. UK : s.n., 2009.

¹⁴ Ibid.

¹⁵ UK Department of Health, “Commissioning Services for Young People,”

<http://www.dh.gov.uk/en/Healthcare/Highqualitycareforall/YoureWelcome/Commissioningservicesforyoungpeople/index.htm>.

¹⁶ Ibid.

¹⁷ Swedish Ministry of Health and Social Affairs. *Sweden is working to achieve the objectives laid down in the Final Document of the UN's Special Session on Children: A World Fit for Children*. March 16, 2007. http://www.unicef.org/worldfitforchildren/files/Sweden_WFFC5_Report.pdf.

National Curriculum, which states that “...by the time pupils have completed their compulsory education, they have a basic knowledge of what is required for good health and understand the significance that their own lifestyle has for their health and the environment. Creative work and play are important aspects of active learning. Schools shall aim to offer all pupils daily physical activity within the framework of the school day.”¹⁸

Smoking

According to the World Health Organization, tobacco use is the second major cause of death in the world, and the leading preventable cause of death. It is estimated that by 2030, eight million people will die annually as a result of their tobacco use habits. The majority of smokers and tobacco users begin their habits before the age of 18, so adolescent intervention is crucial in preventing nicotine addiction.

Australia

Between 1999 and 2001, the Western Australian Health Promotion Foundation funded the Smoking Cessation for Youth Project (SCYP). This project was the first whole-school, cigarette smoking harm-minimization intervention trial in the world. The project’s strategy was to apply an innovative school-based smoking prevention and cessation program based on damage minimization principles. The project focused on 14 and 15 year old smokers in 14 Australian schools, and compared the results of the study to 16 control schools that continued to address cigarette smoking with the Department of Education’s abstinence-only based smoking prevention program. The outcome of this study showed a larger decrease in adolescent smokers in response to smoking education and information delivered through SCYP than those exposed to the traditional abstinence-based program currently being implemented in Western Australia.¹⁹

Drugs/Alcohol/Violence

United States

Initiatives like the Drug Education for Youth (DEFY) camp and mentoring program run by the US Navy targets youth from military families between the ages of nine and twelve. DEFY

¹⁸ Ibid.

¹⁹ Hamilton, G. , *A school-based harm minimisation smoking intervention trial: outcome results*. Western Australia : Addiction Journal, 2005, Vol. 100, pp. 689-700.

teaches the dangers of drugs and gang activities, and works to improve self-image and self-esteem. The one-week summer camp combines education, team development skills and physical fitness and is followed by a year of mentoring. DEFY also provides outplacement to other youth organizations and clubs, such as Big Brothers/Big Sisters and Young Marines, once a child has completed the program. The goal is to provide youth with healthy alternatives to substance abuse and gang membership while building self-esteem and leadership skills and strengthening service member families. Sites for these camps are found in almost all fifty states, as well as overseas sites in Japan, Italy, Cuba, Guatemala, and several other countries around the world.²⁰

Sex Education

Teen pregnancies and sexually transmitted disease are an ongoing health challenge in the youth population. According to the World Health Organization, teenage girls ages 15 to 19 account for approximately 11% of all births globally. Teenage pregnancy rates are higher in low- and middle-income countries and range from 2% of births in China, 18% in Latin America, to 50% in sub-Saharan Africa.²¹ There were 435,436 births to US teenage girls age 14 to 19 in 2006, nearly 11% of all US births that occurred that year.²² One million US adolescents were reported to have chlamydia, gonorrhea, or syphilis the same year.²³ According to the World Health Organization, 40% of all new HIV infections occur among 15 to 24 year olds.²⁴

The Netherlands

The Netherlands has the lowest teen pregnancy rate and the highest use of contraception in the world. In the Netherlands, “Lang leve de liefde” (“Long Live Love”) is a government-subsidized publication that is designed to provide youth with the knowledge they need to make healthy decisions involving their sexual behaviors. Sex education is not separated from the curriculum, but rather incorporated into high school biology class. The teachings focus on the

²⁰ US Navy. DEFY. *Drug Education for Youth*. [Online] 2009. <http://www.donhq.navy.mil/defy/default.htm>.

²¹ World Health Organization, “Fact Sheet: Adolescent Pregnancy – Why is giving special attention to adolescents important for achieving Millennium Development Goal 5?” http://www.who.int/making_pregnancy_safer/events/2008/mdg5/adolescent_preg.pdf.

²² CDC. US Births in 2006. *CDC Health Statistics*. [Online] 2010. <http://www.cdc.gov/nchs/fastats/births.htm>.

²³ CDC. Sexual Health Data. *Sexual and Reproductive Health of Young People*. [Online] 2009. <http://www.cdc.gov/Features/SexualHealthData/>.

²⁴ http://www.who.int/child_adolescent_health/data/adolescents/en/index.html.

process of reproduction, as well as discuss the personal attitudes and values that come along with sexual activities.²⁵

United States

The US has a teen pregnancy rate double that of the UK and Canada and eight times that of Japan.²⁶ While countries like the Netherlands have been successful with their sex education approach, a new study in the US recently looked again at potential effects of an abstinence-only strategy. The study was a randomized control trial targeting 7th and 8th grade children. The groups were divided into an 8-hour abstinence-only program, an 8-hour safer-sex-only program, an 8- or 12-hour program that combined both, and an 8-hour control group that just focused on non-sex related health issues. The study reported that the abstinence-only group had a lower percentage of adolescents engaging in sexual activities over the two years following their course in comparison to the other three groups.²⁷

Environment

Sanitation and Hygiene

United States

A child maintaining clean hands is one of the most effective ways to prevent infections.²⁸ A US survey of 120 middle and high school students in Pennsylvania in 1997 showed that girls wash their hands only 58% of the time after bathroom use, with only a 28% soap usage.²⁹ Boys were reported to wash their hands 48% of the time with only 8% soap usage after using the bathroom. Several studies have shown that hand hygiene education programs in schools are effective at lowering absenteeism rates due to contagious illnesses, yet there is still room for improvement in changing school children's hand washing rates.³⁰

²⁵ Kaan, M. *Long live love*. Amsterdam : Ambo, 2010.

²⁶ Singh, S and Darroch, JE. Adolescent pregnancy and childbearing: levels and trends in developed countries, *Family Planning Perspectives*, 1998, 32(1):14–23.

²⁷ Jemmott, John B. *Efficacy of a Theory-Based Abstinence-Only Intervention Over 24 Months*: Arch Pediatr Adolesc Med., 2010, Vol. 164.

²⁸ CDC. Stopping Germs at Home, Work and School. www.cdc.gov. [Online] 2004.

http://www.cdc.gov/germstopper/home_work_school.htm

²⁹ Guinan M, McGuckin M, Severeid A., *Who washes hands after using the bathroom?*: Am J Infect Control, 1997, Vol. 25, pp. 424-5.

³⁰ University of Auckland. *An Outcome Evaluation of New Zealand Fire Service Fire Awareness and Intervention Programme*. New Zealand : New Zealand Fire Service, 2009. <http://www.fire.org.nz/Research/Publishsed-Reports/Pages/AnOutcomeEvaluationofNewZealandFireServiceFireAwarenessandInterventionProgramme.aspx>.

The CDC recently commemorated the School Network for Absenteeism Prevention, a public-private partnership, for their SNAP middle school initiative. The SNAP program is a “grassroots, education-based effort” that has been developed in response to the number of days children must stay home from school due to the cold and flu virus. The CDC claims that 22 million school days are lost each year in the United States due to the common cold, and that the absenteeism rates due to influenza are very high among the 119,000 public schools in the US.³¹ The SNAP program is used in 40 US states and Canada, and it promotes hand hygiene in schools through a toolkit of strategies for incorporating hand-washing and hygiene education into middle schools. The toolkit includes ideas for development of hygiene-related content in all subject areas, from social studies to science and math; development of school hand-washing campaigns through school newspapers, websites, and other media; a project planning guide; and a national awards program to recognize top classrooms across the country for their innovative hand-washing projects. This program has successfully lowered the cold and flu infection rates in the schools where it has been piloted.³²

First Aid, Fire and Car Safety

Fire

United States

Nearly a quarter of a million fires are started each year by individuals younger than 19 years old.³³ Reportedly, most fires started by children under the age of 8 are accidental, ages 8 to 12 are intentional, and 13 to 18 are mostly set due to psychological problems.³⁴

Due to the high youth contribution rate to home fires, interventions to address this target group are important for decreasing occurrences. The US Fire administration has a sector for youth and adolescents entitled USFA Kids. This program is taught through schools, focusing on 1st, 2nd and 5th graders. Firemen volunteer their times to teach youth about smoke detectors, home fire safety, and the safest way to exit a burning building.³⁵

³¹ Ibid.

³² CDC. SNAP. *School Network for Absenteeism Prevention*. [Online] 2009. <http://www.cdc.gov/cleanhands/Tropical Fire Research Series, Children and Fire. s.l. : U.S. Fire Administration, 2001. http://www.usfa.dhs.gov/downloads/pdf/tfrs/v1i6-508.pdf>.

³⁴ Ibid.

³⁵ Ibid.

New Zealand

In New Zealand, fire service research has shown a strong link between fire-starting behavior that occurs in youth and criminal behavior that occurs in adulthood.³⁶ The Fire Service Fire Awareness and Intervention Programme (FAIP) is a fire safety education program that targets youth who have deliberately set fires in the past. The main goal of the program is to teach adolescents to respect the positive uses of fire and understand the potential damage it can cause when handled recklessly. The program has been in existence for 20 years, and evaluations have shown it to be successful in lowering fire-setting behaviors in youth.³⁷

CPR

United Kingdom

In 2007, a study conducted in the UK reported that adolescents age 13 and older are able to administer cardiopulmonary resuscitation (CPR) as effectively as an adult.³⁸

The Sudden Cardiac Arrest (SCA) Foundation has developed a SCA schools campaign that helps to teach children life saving skills. The “You Can Save a Life at School” concept is a publication that is administered to high school students and faculty.³⁹ It describes real life success stories of students administering CPR and discusses national high school CPR and automatic external defibrillator (AED) programs that have seen high success rates.⁴⁰

In 2009, a study performed at the Medical University in Vienna demonstrated that children as young as nine years old can retain information received during CPR education sessions.⁴¹ In the group of 147 students observed in the study, 86% performed CPR correctly. These children were also successful at retaining AED education knowledge.⁴²

³⁶ University of Auckland. *An Outcome Evaluation of New Zealand Fire Service Fire Awareness and Intervention Programme*. New Zealand : New Zealand Fire Service, 2009. 98.

³⁷ Ibid.

³⁸ Jones, Ian. *At what age can schoolchildren provide effective chest compressions? An observational study from the Heartstart UK schools training programme* 2007, BMJ, Vol. 334, p. Online. http://firstaid.about.com/gi/o.htm?zi=1/XJ&zTi=1&sdn=firstaid&cdn=health&tm=35&gps=148_771_1259_524&f=00&tt=13&bt=1&bts=1&zu=http%3A//www.pubmedcentral.nih.gov/articlerender.fcgi%3Fartid%3D1889955.

³⁹ Sudden Cardiac Arrest Foundation. *You Can Save a Life At School*. SCA. [Online] 2009. <http://www.sca-aware.org/sites/default/files/u1/docs/schools/SCA-Foundation-You-Can-Save-A-Life-at-School.pdf>.

⁴⁰ Ibid.

⁴¹ Fleischhackl, Roman. , *School children sufficiently apply life supporting first aid: a prospective investigation*. Vienna : Critical Care, 2009, Vol. 13

⁴² Ibid.

Automotive Safety

United States

In the United States, car accidents are the leading cause of death for children ages 3 to 14 years old.⁴³ Studies have shown that using seatbelts can reduce fatal injury risk by 45% to 65%. In 2008 in the US, 5,598 children under age 14 were in fatal car accidents, and 46% of these children were unrestrained. From 1975 to 2008, the US government estimates that nearly 9,000 children's lives were saved as a result of restraints.⁴⁵

In 1985, a study conducted in Los Angeles, CA reported that child car safety improved by 44% after school age children received car safety education, such as wearing a seatbelt, sitting in the back seat, and having desirable passenger behaviors.⁴⁶

International programs such as "Bucklebear" work in collaboration with schools to teach car safety in an interactive manner. This particular program incorporates games and other activities to improve the child's receptiveness to the lessons.⁴⁷

Seatbelt usage is not the only safety measure that should be taken by children. Additional education on pedestrian safety is also important. In 2008 in the US, automobiles killed 277 pedestrian children under the age of 14.⁴⁸ Knowledge of traffic signage and safe pedestrian behavior such as looking both ways and using crosswalks are crucial safety skills for children, especially those unaccompanied by an adult.⁴⁹

Educating teenagers on automobile safety is also important, especially since other teen risk factors can influence driving behaviors. In 2008, nine teens died every day in a motor vehicle accident.⁵⁰ As this age group becomes drivers themselves, it is important that they are educated about risky behaviors such as driving under the influence of drugs or alcohol,

⁴³ NHTSA. *2008 Traffic Safety Facts*. 2008. DOT HS 811 157.

⁴⁴ Ibid.

⁴⁵ Ibid.

⁴⁶ Chang, Albert. *Teaching Car Passenger Safety to Preschool Children*. 1985, *Pediatrics*, pp. 425-428.

<http://pediatrics.aappublications.org/cgi/content/abstract/76/3/425?maxtoshow=&HITS=80&hits=80&RESULTFORMAT=&fulltext=car+accident&andorexactfulltext=and&searchid=1&FIRSTINDEX=0&sortspec=relevance&resourcetype=HWCIT>.

⁴⁷ Ibid.

⁴⁸ Ibid.

⁴⁹ Twisk, D.A.M., Vlakveld, W & Commandeur. Leidschendam, *When is education effective? Systematic evaluation of education projects*.: SWOV Institute for Road Safety Research, 2006, Vol. 28.

⁵⁰ NHTSA. *Fatality Analysis Reporting System*. Washington DC : Department of Transportation, National Highway Traffic Safety Administration, National Center for Statistics and Analysis, 2008.

talking/texting on cellular phones while driving, and avoiding passenger distraction. In the case of motorcycle drivers, helmet usage should also be promoted.⁵¹

One strategy that has been implemented in the US, Canada, and New Zealand is Graduated Driver Licensing. This system allows teen drivers to progress through three stages: learner's permit, provisional licensure, and full licensure. Each stage has restrictions placed on the teen driver, giving them the opportunity to gain driving experience before being granted full driving privileges. Studies have shown that this system has helped in dropping the number of crashes involving new drivers by 9%.⁵²

Cancer and Disease Knowledge

There are more than 200 types of known cancers that affect both adults and children.⁵³ For many of them, a healthy lifestyle is a strong defense in reducing the chance of developing cancer. It is essential that children and youth are educated about the scientifically supported links between behaviors and cancer risks, such as smoking and lung cancer, sun exposure and skin cancer, or alcohol abuse and liver cancer.

Australia

The Australian school system requires that all children put on a hat and apply sunscreen before they are allowed to participate in outdoor activities.⁵⁴ Hats and sunscreen are available in each classroom. This is a part of the Sun Smart Program, which promotes sun safety for children, youth and adults in Australia.⁵⁵ Based on this strategy, the American Cancer Society developed the GatorSHADE program.⁵⁶ The 'slip' on a shirt, 'slop' on sunscreen, 'slap' on a hat and 'wrap' on a pair of sunglasses slogan was developed to teach to fourth grade Florida students about proper sun exposure.⁵⁷

⁵¹ Ibid.

⁵² Simpson, HM. *The evolution and effectiveness of graduated licensing*. : Journal of Safety Research , 2003, Vol. 34.

⁵³ CDC. Cancer Prevention and Control. *National Program of Cancer Registries* . [Online] 2009.

<http://www.cdc.gov/cancer/dcpc/data/index.htm>.

⁵⁴ The Cancer Council Victoria. Skin Cancer. *SunSmart Victoria*. [Online] 2009. http://www.sunsmart.com.au/skin_cancer.

⁵⁵ Ibid.

⁵⁶ American Cancer Society. Sun Safety Makes Headway in the Classroom: GatorSHADE. ACS. [Online] 2007.

http://www.cancer.org/docroot/NWS/content/NWS_1_1x_Sun_Safety_Makes_Headway_in_the_Classroom.asp.

⁵⁷ Ibid.

United Kingdom

In the United Kingdom, the Macmillan Cancer Support Charity has developed the “Cancertalk” program.⁵⁸ This program guides the teachers of students aged 9 to 14 in cancer education class activities. Macmillan has created the Cancertalk teaching pack, which includes an information booklet, activity sheets and an educational DVD. This system is designed to clarify common misconceptions that children have about cancer, reduce fear, and educate students on ways to protect themselves. While this system has only been piloted in a few schools, every school in the UK has received a pack with hopes that it will be incorporated into the national curriculum.⁵⁹

Cancer is not the only health issue to which youth are susceptible. The links between obesity and increased risk of diabetes and heart complications should also be addressed in school health curricula. It is also important to emphasize sexually transmitted diseases like HIV/AIDS, and the link between certain STDs and cancer (for example, HPV and cervical cancer, which claimed the lives of 240,000 American women in 2006).⁶⁰

Psychological

Stress

Studies have shown that high levels of stress at an early age can interfere with brain development. In 2008, the CDC and National Center for Injury Prevention and Control reported their findings collected through the Adverse Childhood Experiences Study on the relationship between childhood stress levels (positive, tolerable, or toxic) and adult behavioral and psychological outcomes.⁶¹ There was a clear correlation between a reported prevalence of toxic stress levels in childhood and violence, poor health behaviors, and suicide attempts in adulthood. With 17,000 American respondents above the age of 18, this was the largest study of its kind.⁶² The study suggests using the social-ecological model, a preventative model that helps to curb violent behavior in youth, to counteract these outcomes. This model incorporates the individual, the quality of their social relationships, the local community, and society as a whole. At the

⁵⁸ Macmillan Cancer Support. Cancertalk Teaching Pack. *Cancertalk*. [Online] 2009. http://www.cancertalk.org.uk/class-activities/cancertalk-pack_cancertalk.html.

⁵⁹ Ibid.

⁶⁰ Ibid.

⁶¹ Middlebrooks, JS and Audage, NC. *The Effects of Childhood Stress on Health Across the Lifespan*. Atlanta, GA : Centers for Disease Control and Prevention, National Center for Injury Prevention.

⁶² Ibid.

individual level, certain factors may increase the likelihood of becoming a victim or perpetrator of violence, such as age, education, income, substance use, or history of abuse. At the relationship level, the model examines risk factors related to interactions with peers, intimate partners, and family members. Community environments such as schools, workplaces, and neighborhoods can also influence behaviors and then seeks to identify the characteristics of these settings that are associated with becoming victims or perpetrators of violence. Finally, the model examines broader societal factors that encourage or inhibit violence and other negative behaviors. Additional suggestions include family interventions and physiological screenings for children and adolescents in order to increase early detection rates of toxic stress levels.⁶³

Peer pressure/Peer involvement/Social trust

A study performed in Iceland in 2006 reported that adolescents partook in risky health behaviors as a means of peer involvement and socialization.⁶⁴ Interestingly, this behavior was also influenced by parental reactions to the behavior. The study showed no real variance between sexes, and recommended a multilevel intervention approach incorporating both family involvement and intervention strategies catered to encourage the movement of adolescent attitudes away from risky health behavioral choices.⁶⁵

Vaccinations

It is a generally accepted fact in the medical community that vaccines are a critical and effective method of protecting against a number of potentially fatal infectious diseases at an early age. It is recommended that children around the world be vaccinated for polio, measles, diphtheria, pertussis, rubella, mumps, tetanus, and several types of influenza. While the US national coverage rate for vaccinations averages around 95%, that average drops significantly when all US territories are included (27%-93% range).⁶⁶ There have been several major vaccine-related global successes. The eradication of smallpox in 1979 was the first and currently only

⁶³ CDC. The Social-Ecological Model: A Framework for Prevention. http://www.cdc.gov/ncipc/dvp/Social-Ecological-Model_DVP.htm.

⁶⁴ Kristjansson, Algeir Logi. *Perceived parental reactions and peer respect as predictors of adolescent cigarette smoking and alcohol use..* 2010, *Addictive Behaviors*, pp. 256-259.

⁶⁵ Ibid.

⁶⁶ CDC. National Immunization Program. Coverage Estimates for School Entry Vaccinations . CDC [Online] 2010. <http://www2.cdc.gov/nip/schoolsurv/nationalAvg.asp>.

disease to be successfully and completely eradicated.⁶⁷ With the development of the polio vaccine, organizations such as the WHO hope that polio will soon become the second disease successfully eradicated in response to thorough vaccination coverage.⁶⁸

The proof that vaccinations work can be found in the statistics. An increase in measles vaccinations has dropped the global measles-related death toll from 750,000 in 2000 to 164,000 in 2008.⁶⁹ In the United States, diseases like diphtheria, polio, rubella, and haemophilus influenza Type B are reported to have a near zero annual mortality rate - a drastic statistical change from the pre-vaccine era for each disease.⁷⁰

The WHO currently promotes several vaccine initiatives. In April 2010, the WHO had another round of the annual Vaccination Week event in both the Americas and in Europe.⁷¹ The fifth European Immunization Week (EIW) and the eighth Vaccination Week in the Americas (VWA) was promoted via social networking sites such as Facebook, Bkohtakte (Russia), and Studivz (Germany), and the popular media site YouTube. Free vaccinations were offered to the public through participating clinic and hospitals for an entire week in April. As a result, millions of children and adults have been vaccinated over the past seven years.

⁶⁷ CDC. Smallpox Overview. *Centers for Disease Control and Prevention*. [Online] 2010.
<http://www.bt.cdc.gov/agent/smallpox/overview/disease-facts.asp>.

⁶⁸ WHO. *Global Polio Eradication Initiative Strategic Plan*. Geneva : WHO, 2004-2008.

⁶⁹ WHO. Measles Fact Sheet. *World Health Organization*. [Online] 2010.
<http://www.who.int/mediacentre/factsheets/fs286/en/index.html>.

⁷⁰ *Vaccines Work*. CDC. 18, s.l. : JAMA, 2007, Vol. 298, pp. 2155-2156. <http://www.immunize.org/catg.d/p4037.pdf>.

⁷¹ WHO. Immunizations, Vaccinations, and Biologicals. *WHO*. [Online] 2010.
http://www.who.int/immunization/newsroom/regions_unite_millions_vaccinated/en/index.html.