



What are the main factors that influence the implementation of disease prevention and health promotion programmes in children and adolescents?

June 2005

## ABSTRACT

This Health Evidence Network (HEN) report discusses the reasons for success or failure in implementing disease prevention or health promotion programmes. Many of these programmes are directed at the health of children and young people because they can prevent both immediate problems (mortality and morbidity) and long-term problems. However, even where there is evidence to support such public health interventions, implementation in different settings and countries has met with varying degrees of effectiveness and sustainability.

The research evidence shows that the most effective programmes for children and young people are carried out at the government level, supported by society in general, and promote national policies to decrease poverty and increase social equality.

HEN, initiated and coordinated by the WHO Regional Office for Europe, is an information service for public health and health care decision-makers in the WHO European Region. Other interested parties might also benefit from HEN.

This HEN evidence report is a commissioned work and the contents are the responsibility of the authors. They do not necessarily reflect the official policies of WHO/Europe. The reports were subjected to international review, managed by the HEN team.

When referencing this report, please use the following attribution:

Macfarlane A (2005). *What are the main factors that influence the implementation of disease prevention and health promotion programmes in children and adolescents?* Copenhagen, WHO Regional Office for Europe (Health Evidence Network report; <http://www.euro.who.int/Document/E86766.pdf>, accessed [day month year]).

### Keywords

HEALTH PROMOTION  
HEALTH EDUCATION  
PRIMARY PREVENTION  
ADOLESCENT HEALTH SERVICES  
CHILD HEALTH SERVICES  
PROGRAM EVALUATION  
SOCIOECONOMIC FACTORS  
META-ANALYSIS  
DECISION SUPPORT TECHNIQUES  
EUROPE

Address requests about publications of the WHO Regional Office to:

- *by e-mail* [publicationrequests@euro.who.int](mailto:publicationrequests@euro.who.int) (for copies of publications)  
[permissions@euro.who.int](mailto:permissions@euro.who.int) (for permission to reproduce them)  
[pubrights@euro.who.int](mailto:pubrights@euro.who.int) (for permission to translate them)

- *by post*

Publications  
WHO Regional Office for Europe  
Scherfigsvej 8  
DK-2100 Copenhagen Ø, Denmark

### © World Health Organization 2005

All rights reserved. The Regional Office for Europe of the World Health Organization welcomes requests for permission to reproduce or translate its publications, in part or in full.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Where the designation "country or area" appears in the headings of tables, it covers countries, territories, cities, or areas. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

The World Health Organization does not warrant that the information contained in this publication is complete and correct and shall not be liable for any damages incurred as a result of its use. The views expressed by authors or editors do not necessarily represent the decisions or the stated policy of the World Health Organization.

*What are the main factors that influence the implementation of disease prevention and health promotion programmes in children and adolescents?*

WHO Regional Office for Europe's Health Evidence Network (HEN)

June 2005

---

Summary .....	4
The issue.....	4
Findings.....	4
Policy considerations.....	4
Type of evidence .....	4
Introduction .....	6
Sources for this review .....	7
Findings.....	7
Examples of public health interventions that show evidence of effectiveness .....	7
Interventions where there are gaps in evidence or conflicting evidence of effectiveness .....	8
Discussion of factors that influence the success and failure of public health programmes ...	9
Required research .....	13
Current debate .....	13
Discussion .....	14
Summary of findings.....	14
Strength of evidence of effectiveness.....	14
Generalizability of findings.....	14
Policy considerations.....	15
Conclusions .....	15
References .....	16

## Summary

### The issue

Many disease prevention and health promotion programmes are directed at the health of children and young people because they can prevent both immediate problems (mortality and morbidity) and long-term problems. However, even where there is evidence to support such public health interventions, implementation in different settings and countries has met with varying degrees of effectiveness and sustainability. The issues addressed in this synthesis concern the main reasons for the success or failure of such programmes in Europe.

### Findings

Evidence exists to support use of the following disease prevention and health promotion interventions: immunization programmes;

- folic acid supplementation during pregnancy;
- promotion of breast feeding;
- prevention of sudden infant death syndrome;
- promotion of use of cycle helmets, child restraints, etc.;
- smoking cessation aids;
- screening for post-natal depression; and
- psychosocial interventions for those at high risk of mental health problems.

The factors that affect the successful implementation of such programs are:

- national planning, political factors and capacity;
- availability of data about the target population and intervention impacts;
- influence of socio-economic factors and special considerations regarding the age of target population;
- burden of the health problem to society, family and individual;
- use of intervention in a multifactorial setting;
- communication strategies through media and school to reach vulnerable and minority groups; and
- engagement of all levels of the society (from government to individual) in the process.

### Policy considerations

The research evidence shows that the most effective programmes for children and young people are carried out at the government level, supported by society in general, and promote national policies to decrease poverty and increase social equality. The second most effective interventions are coordinated government policies such as pricing, legislation and other policies. (E.g. the most effective interventions against tobacco use are increasing the price of tobacco, banning tobacco product advertising, banning smoking in public places and legislation prohibiting the sale of tobacco products to young people.) There is also evidence that simultaneous, multi-dimensional inputs at national, local and individual level increase the effectiveness of general health promotion campaigns. The health promotion interventions that are least likely to work are ones that deal with single issues, are 'negative in the message', and delivered at only one level of society.

### Type of evidence

This synthesis is a narrative, non-systematic review of scientific (mainly sociological) and grey literature.

*What are the main factors that influence the implementation of disease prevention and health promotion programmes in children and adolescents?*

WHO Regional Office for Europe's Health Evidence Network (HEN)

June 2005

---

The author of this synthesis is:

Dr Aidan Macfarlane

MB, BChir, MA (Oxon), MA (Cantab), FRCP, FRCPC, FFPH.

Independent International Consultant in the Strategic Planning of Child and Adolescent Health Services.

6 Cobden Crescent,

Oxford,

OX1 4LJ.

U.K.

Tel and Fax: +44 (0)1865 721758

Mobile: +44 (0) 7768 367 622

Email: [aidanmacfa@aol.com](mailto:aidanmacfa@aol.com)

The technical editor of this synthesis is:

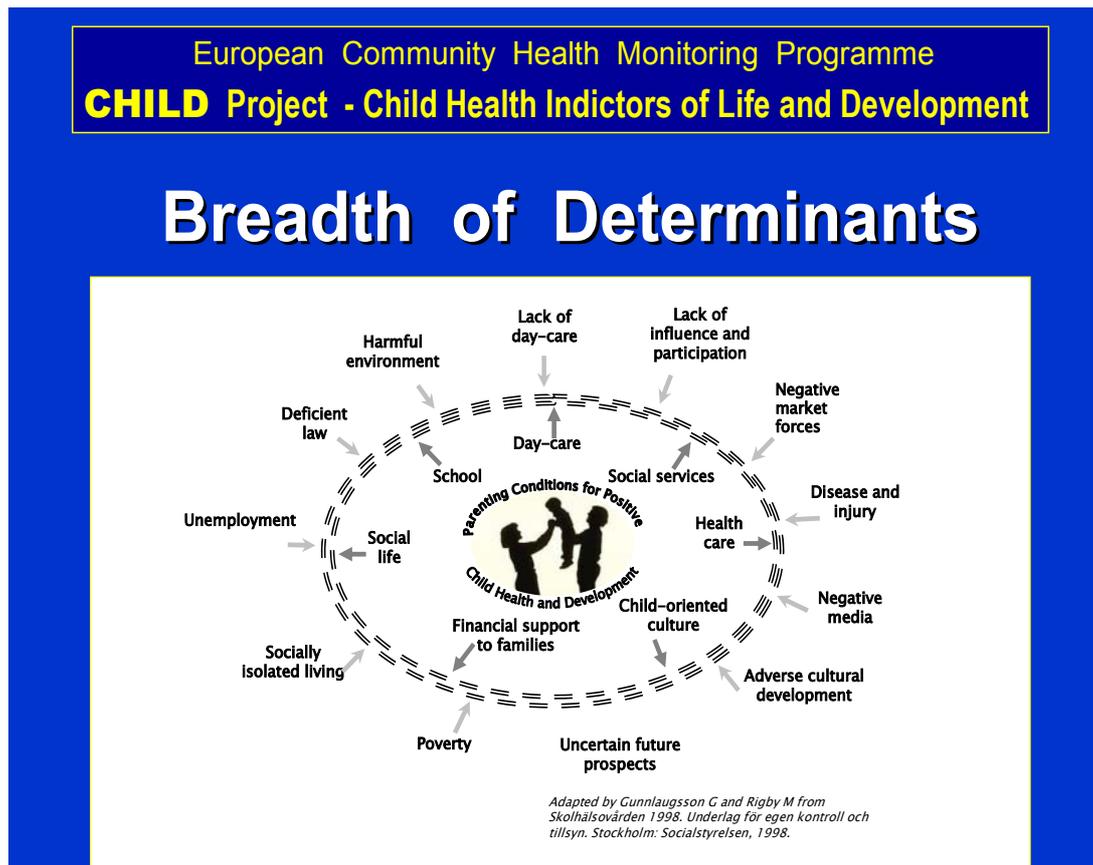
Professor Karen Facey, Health Evidence Network.

Acknowledgements:

The author would like to thank Professor Nicholas Spencer, Dr Richard Parish and Dr Antolij Nosikov for their extremely helpful comments on the early drafts of the review.

## Introduction

The greatest threats to health in both developing and developed countries are the consequences of poverty and socio-economic inequity. These will remain the major threats to the health of children, young people and adults even in developed countries. Some of the factors influencing child health and development are summarized in Figure 1. As evidence from Scandinavian countries and poor countries, such as Cuba and the Indian state of Kerala, has demonstrated, it is the elimination of these factors that will have most effect on child health (1).



**Figure 1.** Determinants of Child Health and Development (2)

(From Child Health Indicators of Life and Development (CHILD), reproduced by permission of the editors.)

In examining effective public health interventions it is essential not to conceptualize children as "mini-adults," but rather to see them as having specific health needs related to their age and stage of development. Nevertheless, a child is also a person, a citizen, and an individual in his or her own right with equal value to any other individual. This statement is clearly laid out in the United Nations Declaration and Convention on the Rights of the Child (3).

Further, the burden of ill-health in children and young people has, in many ways, greater significance than the burden of ill health in adults as it can have a longer life-time effect and wider impact – on parents, families and society. Ill health in children and young people, especially when it is of medium-term or long-term duration, can comprise the following burdens:

- discomfort and pain for the child;
- loss of normal play and socialization, thus impeding normal development;

## *What are the main factors that influence the implementation of disease prevention and health promotion programmes in children and adolescents?*

WHO Regional Office for Europe's Health Evidence Network (HEN)

June 2005

---

- loss of education, which may jeopardize career prospects and income;
- anxiety, distress and possible loss of earnings for the parents;
- the financial burden of providing suitable health services, education and social services;
- in severe cases, a lifetime burden on the country's social welfare system; and
- consequences on future generations as the disabled child becomes a parent (2).

There is evidence that some disease prevention and health promotion interventions, when carefully planned, systematically implemented, well assessed and aimed at specific health problems, can make a difference (2). Some of these are outlined in the next section, along with interventions where the evidence is unclear. Such interventions may work in a controlled setting (for example, a vaccine trial), but the effectiveness of a programme will depend on a sustainable strategy for long-term application in the local context. The following two items will be considered in this review to determine the factors that influence effective implementation of programmes: interventions applicability in settings other than those of the original research and their sustainability over time.

### **Sources for this review**

A systematic search was undertaken in the Cochrane, WHO and Medline databases from January 2001 to January 2004. Papers were selected and evidence reviewed according to the judgement of the reviewer. Given the practical nature of the synthesis question, no formal inclusion or quality assessment criteria were used.

## **Findings**

### **Examples of public health interventions that show evidence of effectiveness**

#### *Preventing or decreasing social inequalities and poverty*

The consequences of poverty and socio-economic inequity, including parenting difficulties, are still the major threats to child health, even in developed countries. Epidemiological and other evidence (2) clearly indicates that the elimination of these factors will, in the long term, have the greatest effect on child, adolescent and adult health (1).

#### *Immunization*

Evidence indicates that immunization programs with high coverage offer one of the most cost-effective health interventions, compared to other methods of preventing illness (4).

#### *Folic acid supplementation during pregnancy*

A meta-analysis undertaken by the Cochrane collaboration has shown that folic acid supplementation taken by women in the period around the time they conceive has a strong protective effect against foetal neural tube defects (5).

#### *Promotion of breast feeding*

A meta-analysis undertaken by the Cochrane collaboration indicates that extra support for mothers reduces cessation of breast feeding before the child being six months old (6). Extra health or medical professional support is beneficial for any breast feeding (mixed with bottle feeding) and non-health or medical professional support is effective in exclusive breast feeding. The benefits of professional support for breast feeding include a significant reduction in the risk of gastro-intestinal infections and atopic eczema. Research indicates that general support both from health and medical professionals and non-professionals enhances both the number of mothers breastfeeding and the length of time for which they do so.

*What are the main factors that influence the implementation of disease prevention and health promotion programmes in children and adolescents?*

WHO Regional Office for Europe's Health Evidence Network (HEN)

June 2005

---

*Prevention of sudden infant death syndrome (SIDS)*

Sudden death in the first year of life was moderately common (around 1 to 2 per 1000 live births) in Europe until a decade ago. Systematic epidemiological reviews found an association between babies sleeping face downwards and an increased risk of these sudden deaths, which led to the general recommendation that babies, during the first year of life, should be put down to sleep on their backs. Subsequently there has been a significant drop in sudden infant deaths (7).

*Injury prevention*

Examples of interventions that have been shown, by epidemiological studies, to be effective in reducing unintentional injury in children and young people include compulsory cycle helmet use, area-wide traffic calming methods, child-safety restraints, child-resistant containers and window bars to prevent falls (8). Legislation generally has been found to be most effective means of implementing these (9), but environmental modification and education also play a part in preventing or reducing childhood injuries and their effect when combined is encouraging (9).

*Cessation of cigarette smoking*

A synthesis of the Health Evidence Network on interventions for tobacco control has shown that one of the most effective public health interventions to encourage cessation of smoking in adults and adolescents is increasing the price of cigarettes (10). Smoking restrictions, cigarette advertising bans and more accessible nicotine replacement therapy are also recommended. There is little evidence that school-based programmes for the prevention of smoking uptake by young people are effective (11), but there is some limited support for the effectiveness of community interventions in helping prevent the uptake of smoking in young people.

**Interventions where there are gaps in evidence or conflicting evidence of effectiveness**

*Nutrition, obesity and exercise*

A 2003 WHO report states that good nutritional practices and physical activity should be encouraged as early as possible in life, and that parental knowledge, attitudes and behaviours related to healthy diet and physical activity are important in creating role models (12). At the present time programmes to improve nutrition and increase exercise have tended to focus on educational interventions in schools, such as the Healthy Schools Program (see for example <http://www.wiredforhealth.gov.uk/cat.php?catid=837> accessed 7 June 2005). There is some evidence that multifactorial school-based programmes that promote physical activity and dietary modification while targeting sedentary behaviours, may help to reduce obesity in school children, particularly girls (13). However, a recent American attitudinal study found that although healthy eating messages are reaching adolescents, interventions are needed to assist them in translating these messages into health behaviours.

*Prevention of unwanted pregnancy and sexually transmitted infections (STIs)*

There is little evidence for the effectiveness of interventions to prevent unwanted pregnancy in teenagers (14-17), and conflicting research as to whether abstinence promotion has any effect on sexual behaviour. However, a review of available research indicates that sex education does not increase sexual activity or pregnancy rates (15). None of the included 13 randomized trials of health promotion interventions to prevent pregnancy reviewed for three outcomes in both boys and girls – sexual intercourse, use of birth control, and pregnancy – showed any significant benefit.

As teenage pregnancy rates vary widely around Europe, it would appear that long-term cultural attitudes as well as educational factors play an important role in this area. Community-level programs using social networks and institutions (such as the media) and providing a supportive environment have led to reductions in sexual risk behaviour as well as maintenance of low-risk behaviours over time (16). Nevertheless, a review conducted by the Health Education Authority of the United

Kingdom (17) concluded that the following "may be effective in reducing the rate and negative consequences of teenage parenthood":

- preventing unintended conceptions (rather than reducing pregnancy levels through higher abortion rates);
- strengthening secondary preventive efforts – education, employment and support – aimed at helping the mother and child, particularly single mothers;
- integrating prevention efforts with other related services; and
- providing sex education before young people become sexually active, with open attitudes and a positive approach to sexual health and relationships.

#### *Parent training programs*

Despite a great deal of interest in programs to improve parenting skills, research into the effectiveness of such programs is still in its infancy. Again, social circumstances including poverty would appear to have a profound influence on the success or failure of parenting generally (18).

#### *Mental health problems including self-harm and suicide*

There is evidence that screening for postnatal depression identifies the problem and that home visiting improves outcomes. Some evidence also exists for the efficacy of behavioural training programmes for parents of children with conduct disorders (19).

Understanding the prevalence of mental health problems in different groups can help target interventions to those at high risk of suicide, especially those suffering from conduct disorder, schizophrenia, major affective disorder, drug and alcohol misuse and anorexia nervosa. Research indicates that early assessment and treatment of the more serious and enduring mental health disorders can reduce the incidence of later problems (20).

In the general school population some suicide prevention programmes based on behavioural change and coping strategies were found to be effective. In adolescents at high risk, school-based suicide prevention programmes based on skills training and social support appeared to be effective in reducing risk and enhancing protective factors (21).

## **Discussion of factors that influence the success and failure of public health programmes**

#### *National planning*

To be most successful, public health interventions need to address all the direct and indirect influences on children's and young people's health and take action on many fronts – including public policy, local communities and families and children themselves. This is demonstrated in a national plan (see Figure 2) to improve children's and young people's health and well-being put forward by the National Heart Forum (22).



**Figure 2.** A national plan for children's and young people's health and well-being [Reproduced with the kind permission of the National Heart Forum].

#### *Multifactorial interventions*

There is evidence that multifactorial interventions with coordinated inputs at national and local community levels are more effective than interventions at one level only, because they recognize the complex interactions of the individual, social, economic and environmental factors that influence people's behaviours.

#### *Availability of relevant and reliable data on the target population*

Reliable, relevant data are needed to judge the success of any programme. Data collection is the starting point to knowing whether, at population level, a health promotion intervention should be instituted and whether it is effective. Such data collection needs to be at the national and regional or local level to assess epidemiological prevalence, political willingness, health-system capacity and community preferences. The indicators to be used should be scientific, robust and comparable (2).

#### *Socio-economic factors*

As already stated, socio-economic factors are the major determinants of health in children, young people and adults (1). They have a profound effect on both mortality and morbidity ranging from birth defects through many childhood diseases, health-related behaviours and life expectancy. Socio-economic conditions have to be taken into account when implementing any public health intervention because if the population is of high economic status then the prevalence of a given health problem may already be low and the intervention may not reach a significant level of benefit. If, however, the population is of low economic status the intervention may have a more significant effect.

There are many ways in which poverty affects health, including unemployment, debt, resources and fuel poverty, poor housing, environment, nutrition and education, and psychosocial effects such as social exclusion and feelings of powerlessness and deficits in social support and social capital, services access, availability and use (1). It appears that poverty can exert a negative influence on the development and intellectual aspects of children's health independently of the educational levels of the parents (23). Research indicates a clear association between parental education – particularly maternal – and health outcomes in children in developed countries. Education is not only associated with greater earning capacity, but also with enhances of self esteem and confidence. Although most

*What are the main factors that influence the implementation of disease prevention and health promotion programmes in children and adolescents?*

WHO Regional Office for Europe's Health Evidence Network (HEN)

June 2005

---

developed countries tend to have high levels of literacy there are also marked variations in the availability of education across all social and gender groups (24,25). Poverty itself would seem to have a direct effect on child health through loss of self esteem and increased chances of mental illness (26). Other possible effects include iron-deficiency anaemia, suboptimal maternal nutrition influencing embryonic growth of the foetus.

*Political factors*

Governmental policies and programmes (national and local) will have an effect on the levels of poverty and socio-economic inequality within the population. In the field of nutrition for instance, research shows that among low-income families affordability was the most important factor in food choice (27). Further, other research studies suggest that low income not only restricts the ability to buy foods rich in protective nutrients, but it also limits access to the shops where healthy foods may be purchased more cheaply (28). Political support in terms of resources and public support for specific public health interventions are both crucial to their success (1).

The willingness of governments not only to enact legislation concerning public health matters (for example, safety belts use) but to ensure that such legislation is enforced is important (for example, if no resources are provided to enforce the law and monitor the wearing of safety belts then the intervention may not be effective). Furthermore, governments can have a profound effect on health interventions via pricing and taxation policies and these can be effective for reducing both alcohol and tobacco use and there is evidence that such measures may be more effective than educational policies (10,29,30,31).

*Approaches to health promotion and disease prevention*

There are various approaches to health promotion and disease prevention. Two basic approaches are:

- to look at the underpinning influences of health, like poverty, education, socio-economic standing, etc.; and
- to look at specific risk factors for a specific health outcome, for example, obesity, hypertension and lack of exercise, which give a greater risk of atherosclerosis and therefore higher risk of coronary heart disease (32,33).

The latter approach lays the responsibility for change on the individual rather than on the government or on society as a whole. However, in general, the available evidence suggests that promotion and prevention programmes aimed at influencing the underpinning influences on health are more successful than those aimed at dealing with the risk factors (1).

*Perception of risks*

Prevention of smoking in young people is an example where there is little perception by the adolescents of the harms of smoking and its effects on immediate health outcomes and long-term risks. However, in many societies, non-smoking adults perceive the passive inhalation of other people's cigarette smoke as dangerous, unnecessary and an infringement of individual rights (10,11).

*National and health system factors*

Within each country there is a need to consider how to adapt a public health intervention to local needs (34), for example, how far regional needs in child health should be taken into account at the national level (35), or how resources are redirected to prevention programmes with a high political profile for example, AIDS prevention programmes (34).

Other national factors include the degree of development and organization of a country's health system (national systems versus local private systems); its health system strengths, weaknesses, infrastructure, current coverage and utilization; health care seeking patterns influenced by socio-economic and cultural factors; the various financing options, and human and financial resources; the

*What are the main factors that influence the implementation of disease prevention and health promotion programmes in children and adolescents?*

WHO Regional Office for Europe's Health Evidence Network (HEN)

June 2005

---

human and other resources available; the acceptability and availability of non-governmental resources (36).

*Mass media programmes*

There is some evidence for the effectiveness of mass media advertising programmes (37). The education of the population, the duration over which the programmes are delivered and their intensity all appear to be important factors, as well as the credibility of the source of the information (38).

*School health education*

Health education in schools has been used extensively in health promotion programmes because of a perceived ease of access to large populations of young people. However, by itself, such promotions have been shown to have little effect on outcomes in many areas. For example, research indicates little evidence of effectiveness of such programmes in reducing smoking uptake (35). Therefore, in many European countries there has been a move away from dealing with single-issue interventions towards programmes teaching young people social skills for handling pressure to smoke, drink, take illegal drugs, etc. At present, the evidence for the effectiveness of the programmes is scarce, mostly because of lack of appropriate research.

*Targeting interventions to vulnerable groups*

Certain groups of children, young people and adults are more vulnerable than others to specific health-related behaviours such as smoking, drinking, poor diet and lack of exercise. Examples of such populations include those living in poverty, cultural minority groupings, the socially excluded and those with mental health problems (1). Debate about the effectiveness of programs targeted at specific vulnerable groups versus whole populations is ongoing (1) and so each population and intervention need to be considered carefully.

*Cultural, religious and gender factors*

When setting up public health interventions, it is essential to take into account a number of factors concerning the population or sub-population involved. These should include cultural, religious and social factors. For example, a study found that youths, minority groups and low-income smokers were two to three times more likely to stop smoking than other smokers in response to price increases (39).

It is clear that there are certain interventions where gender issues will be of prime importance, for example, the prevention of cervical cancer. Meanwhile, there will be other obvious areas where different approaches may need to be taken for the male and female populations for example, prevention of pregnancy. Finally there is some evidence that although some health behaviours may be different between the sexes, as in the case of smoking, the interventional approach may be the same, for example, banning cigarette advertising and increasing the price of tobacco products (10).

*Age and developmental stage*

The age and the developmental stage (for example, pre- or post-pubertal) of the target population needs to be taken into account. For example, targeting programmes for the prevention of illegal drug use may be effective with 9 or 10 year olds, whereas a drug harm-minimization programme may be more suitable for older teenagers who may already be using illegal drugs.

*Harm-minimization approaches*

In certain areas harm-minimization rather than total prevention can be a beneficial option. For instance, programmes relating to the use of illegal drugs for recreational purposes are common throughout the European Union and there is evidence of their usefulness in specific circumstances (40).

## *What are the main factors that influence the implementation of disease prevention and health promotion programmes in children and adolescents?*

WHO Regional Office for Europe's Health Evidence Network (HEN)

June 2005

---

### *Immunization programmes*

For some programmes, specific research has been undertaken into the factors needed to create a successful disease prevention or health promotion programme. For example, the factors needed to create a successful immunization programme include:

- the availability of effective vaccines;
- the availability of resources to provide the vaccines;
- a properly managed system for ensuring the distribution of vaccines;
- effective media communication about both the benefits and the side effects of the vaccines; and
- an effective information system about the individual and overall immunization coverage within a population as a whole.

### **Required research**

A systematic programme of research to answer questions about optimal delivery of child public health interventions is needed. The first, and most essential step is a clear conceptual framework describing the contextual factors that affect intervention delivery, sustainability and the achievement of high and equitable coverage (36) (that is, children's public health interventions coverage tends to be lowest in poor countries and amongst the poorest populations).

At a national level, the need for relevant and reliable data has been discussed. It is recognized that is not possible to determine precise cause and effect when dealing with multi-factorial, community-based population interventions, because of the inability to control all the variables. However, this does not mean that research in these areas is not valid, but rather that it may be impossible to have absolute proof of effectiveness when taking action. Action may need to be taken on the basis of the best evidence available at the time.

### **Current debate**

Current debate on the implementation of disease prevention and health promotion programmes for children covers a wide range of issues including:

- sustainability of effective interventions;
- national versus regional interventions;
- provision of many interventions with poor coverage versus few interventions with large coverage;
- whether some interventions should be carried out without government policy back up;
- the need for governmental policies decreasing poverty;
- a lack of research to indicate effectiveness in many areas;
- the use of mass media campaigns; and
- governmental controls versus individual freedom (for example, in issues like use of seat belts or public smoking).

Wanless (41) highlighted the need for full engagement of the public in their own health to make the best use of health services resources in England and achieve maximum health gain. However, he notes that this is an optimistic scenario and that people need to be supported more actively to make better decisions about their own health and welfare. Undoubtedly, the issues related to engagement of children and adolescents are even more difficult.

## **Discussion**

### **Summary of findings**

There is evidence to support disease prevention and health promotion interventions in children and adolescents in a number of areas, including:

- immunization programmes;
- folic acid supplementation during pregnancy;
- promotion of breast feeding;
- prevention of sudden infant death syndrome (SIDS) by laying babies on their back;
- injury prevention via cycle helmets, child restraints, etc.;
- interventions to help stop cigarette smoking;
- screening for post-natal depression; and
- behavioural change and social skills programmes targeted to those at high risk of mental health problems.

For other interventions evidence is less clear and further research is needed.

Examples include:

- in-school programmes to promote nutrition and physical activity;
- parenting training programmes; and
- prevention of unwanted pregnancies.

Even when sufficient evidence of the benefit of an intervention has been proven it is necessary to determine whether this evidence is applicable to a country or region's target population and infrastructure and whether it is sustainable. Factors affecting the implementation of effective programs are:

- national planning, political factors and capacity issues;
- use of intervention in a multifactorial setting;
- availability of data about the target population and intervention impact;
- influence of socio-economic factors and the special considerations regarding age of the target population;
- the health problem's burden on to society, family and the individual;
- communication strategies through media and school to reach vulnerable and minority groups; and
- engagement of all levels (from government to individual) in the process.

### **Strength of evidence of effectiveness**

As already suggested – there are at least two types of evidence necessary to the implementation of effective public health interventions: evidence that a given intervention works and evidence that it is sustainable in different populations.

Sources of information about both these are provided in the literature referred to in this review. In some cases, reliable information about the sustainability of the intervention in different populations will be available (e.g. lying babies on their back to prevent sudden unexpected death) and in other cases there will be variable information about the effectiveness of the intervention itself and about its sustainability (e.g. promoting physical exercise among young people).

### **Generalizability of findings**

Some of the major results in the field of public health interventions are generalizable, particularly governmental interventions to promote socio-economic equality and decrease poverty. Appropriate

legislation includes, banning cigarette advertising, ensuring seat belt wearing, traffic-calming methods. Medical advice such as the recommendation that newborn babies should be laid on their back or promoting breast feeding are readily generalizable. However, it should not automatically be assumed that research done in one country can be assumed effective in another without taking into account such factors as socio-economics, governmental support, and various cultural aspects.

### **Policy considerations**

To improve the effectiveness of public health programmes the following issues should be considered:

- the importance of the health problem to society as a whole;
- the strength of evidence for effectiveness and the conditions that pertained;
- the need for support for the intervention at national, regional, community and individual levels;
- the evidence of the intervention's sustainability;
- whether the intervention will reach the entire target population;
- other relevant factors – new legislation, demographic change, etc. – that might affect the intervention;
- whether appropriate data collections systems are in place for evaluating the intervention.

### **Conclusions**

Poverty and socio-economic inequalities remain the greatest barriers to health in children, young people and adults. Many public health interventions are targeted at the health and development of children and young people because of the potential for quality life-years to be saved. The evidence about the effectiveness of such interventions is variable and needs to be critically examined as some may not be generalizable or sustainable.

Interventions carried out or supported by governments are more likely to be successful, as are multifactorial interventions. When generalizing an intervention found to be effective under specific conditions, a number of target-population factors should be taken into account, including the socio-economic and political circumstances, the degree of government support that can be expected, culture and religion, and type of health service delivery system.

## References

1. Spencer N. *Poverty and Child Health*, 2nd Ed. London, Radcliffe Medical Press, 2000.
2. Rigby M, Kohler L, eds. *Child Health Indicators of Life and Development (CHILD): Report to the European Commission*. European Union Country Health Monitoring Programme, Luxembourg, 2002.
3. United Nations Convention on the Rights of the Child. General Assembly resolution 44/25 of 20 November, New York, 1989.
4. Hinman AR. Economic aspects of vaccines and immunizations. *Comptes rendus de l'Academie des sciences, Serie III*, 1999, 322:989-994.
5. Lumley J et al. Peri-conceptual supplementation with folate and/or multivitamins for preventing neural tube defects. *The Cochrane Database of Systematic Reviews*, 2001, 3.
6. Sikorski J, et al. Support for breastfeeding mothers. *The Cochrane Database of Systematic Reviews*, 2002, 1.
7. Leach CEA, et al. Epidemiology of SIDS and explained sudden infant deaths. *Paediatrics*, 1999, 104:e43.
8. Dowswell T, et al. Preventing childhood unintentional injuries – what works? A literature review. *Injury Prevention*, 1996, 2 (2):140–149.
9. Towner E, Errington G (2004) How can injuries in children and older people be prevented? Copenhagen, WHO Regional Office for Europe (Health Evidence Network report; <http://www.euro.who.int/Document/E84938.pdf>).
10. Gilbert A, Cornuz J (2003) Which are the most effective and cost-effective interventions for tobacco control? WHO Regional Office for Europe (Health Evidence Network report; <http://www.euro.who.int/Document/E82993.pdf>).
11. Jepson R. The effectiveness of interventions to change health related behaviours: a review of reviews. Occasional Paper No3, MRC Social and Public Health Sciences Unit, May 2000.
12. World Health Organization & Food and Agriculture Organization. *Diet, nutrition and prevention of chronic diseases*. WHO, Geneva, 2003.
13. Gortmaker S L, et al. Impact of school-based interdisciplinary interventions on diet and physical activity among urban primary school children: Eat well and keep moving. *Archives of Paediatric Adolescent Medicine*, 1999, 153:975–983.
14. Oakley A, et al. Sexual health education interventions for young people; a methodological review. *BMJ*, 1995, 310:158–62.
15. NHS Centre for Reviews and Dissemination. Preventing and reducing the adverse effects of unintended teenage pregnancies. *Effective Health Care*, 1997, 3:1–12.
16. DiClemente RJ. Development of programmes for enhancing sexual health. *The Lancet*, 2001, 358:1828-1829.
17. Kane R, Wellings K. *Reducing the rate of teenage conceptions - an international review of the evidence: data from Europe*. London: Health Education Authority. 1999.

<http://www.hda-online.org.uk/documents/pregnancyinternationalpt1.pdf> and <http://www.hda-online.org.uk/documents/pregnancyinternationalpt2.pdf> Accessed 7 June 2005.

18. Barlow J, Coren E. Parent-training programmes for improving maternal psychological health (Cochrane Review) *Cochrane Library*, 2003, 4.
19. Barlow J. *Systematic review of effectiveness of training programmes in improving behavioural problems in children aged 3-10 years*. Oxford, Department of Public Health. Health Services Research Unit, 1999.
20. Birchwood M, et al. Early intervention in schizophrenia. *British Journal of Psychiatry*, 1997, 170:2-5.
21. Guo B, Harstall C (2004) *For which strategies of suicide prevention is there evidence of effectiveness?* Copenhagen, WHO Regional Office for Europe (Health Evidence Network report; <http://www.euro.who.int/Document/E83583.pdf>).
22. Giles A., ed. *A life course approach to coronary heart disease prevention: scientific and policy review*. National Heart Forum. The Stationery Office, Norwich, 2003.
23. Garrett P, Ng'andu N, Ferron J. Poverty experiences of young children and the quality of the home environments. *Child Development*, 1994, 65:331-345.
24. United Nations Development Programme. *Human Development Report*. Annual report. UNDP and Oxford University Press, New York.
25. Penny M, et al. Effectiveness of an educational intervention delivered through the health services to improve nutrition in young children: a cluster-randomised controlled trial. Published online. *The Lancet*, 2005, May 10;DOI:10.1016/S0140-6736(05)66426-4.
26. Rutter M, Smith D (eds). *Psychosocial disorders in young people*. Chichester, Wiley, 1995.
27. Gordon D, et al. *Poverty and Social Exclusion in Britain*. York, Joseph Rowntree Foundation, 2003.
28. Sooman A, Macintyre S, Anderson A. Scotland's health – a more difficult challenge for some? The price and availability of healthy foods in socially contrasting localities in West of Scotland. *Health Bulletin* (Edinburgh), 1993, 51:276-284.
29. Institute of Alcohol Studies. Scottish national alcohol strategy calls time on binge drinking. *Alcohol Alert*, 2002, 1:9-12.
30. Crawford MA, Balch GI, Mermelstein R. Responses to tobacco control policies among youth. *Tobacco Control*, 2002, 11:14-19.
31. Österberg E. (2004) *What are the most effective and cost-effective interventions in alcohol control?* Copenhagen, WHO Regional Office for Europe (Health Evidence Network report; <http://www.euro.who.int/document/E82969.pdf>).
32. Truett J, Cornfield J, Kannel W. A multivariate analysis of risk of coronary heart disease in Framingham. *Journal of Chronic Diseases*, 1967, 20:511-524.

*What are the main factors that influence the implementation of disease prevention and health promotion programmes in children and adolescents?*

WHO Regional Office for Europe's Health Evidence Network (HEN)

June 2005

---

33. Klenbaum DG, et al. Multivariate analysis of risk of coronary heart disease in Evans County, Georgia. *Archives of Internal Medicine*, 1971, 128:943–948.
34. Jones G, et al. How many child deaths can we prevent this year? *The Lancet*, 2003, 362:65–71.
35. Black R, Morris S, Bryce, J. Where and why are 10 million children dying every year? *The Lancet*, 2003, 361:2226–2234.
36. Bryce J, et al. Reducing child mortality; can public health deliver? *The Lancet*, 2003, 362:159–164.
37. NHS Centre for Reviews and Dissemination. Preventing the uptake of smoking in young people. *Effective Health Care*, 1999, 5(5):1–11.
38. Gallichan C. *Public policy advertising campaigns: what works and what doesn't*. London, Food Advertising Unit, 2003.
39. Mackay J, Eriksen M. *The Tobacco Atlas*. WHO, Geneva, 2002.
40. *Recreational drug use – a key EU challenge*. Lisbon, European Monitoring Centre for Drugs and Drug Addiction, 2002 (Drugs in Focus No. 6).
41. Wanless D. *Securing good health for the whole population*. London, HMSO, 2004.