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Behaviour change strategies and health: the role of health systems

Behavioural risk factors are the leading causes of the occurrence of, and morbidity and mortality due to, chronic health conditions and injuries in the world – and indeed within the WHO European Region. There is convincing evidence that healthy behaviours including smoking abstinence, weight management, blood pressure control and regular exercise are associated with longer life span and better quality of life. However, health promotion activities – and mass public health campaigns in particular – have often failed to have the desired effect in terms of reducing disease incidence and burden, simply because compliance with the message, in the form of the intended behaviour change, is harder to achieve than its precursors of raising awareness, providing knowledge and altering attitudes.

This paper aims to help Member States and their institutions plan interventions that are feasible, acceptable, equitable and effective in inducing behaviour change leading to healthier lives. Accordingly, the objectives of the paper are:

- (i) to consolidate the evidence documenting which interventions have been proven to be (cost-) effective under which circumstances in leading to healthy behaviour change;
- (ii) to outline the critical factors for success and assess their feasibility, robustness and replicability in different settings across the WHO European Region; and
- (iii) to explore their implications for health systems and the wider government response.

The paper argues that for any intervention to be effective, it first needs to have a sound causal and intervention theory backed up with solid evidence. In addition, there has to be a well-documented programme design and implementation strategy, to reach and fully cover the target population and ensure that both programme staff and the population adhere to programme imperatives. Accordingly, proper execution of the main health system functions of stewardship, resource generation, service delivery and financing becomes a determinant of the intermediate objectives of behavioural interventions, namely targeting, full coverage and ensuring user and provider compliance.

The Regional Committee discussion on behaviour change strategies is expected to focus on country-based evidence for a selected list of behavioural interventions across the spectrum of personal, population-based, primary and secondary preventive measures, as “tracers” of specific health system responses along the lines of the conceptual model proposed in the paper, for improved effectiveness, replicability and sustainability under various circumstances.

A draft resolution is submitted for the Regional Committee’s consideration.

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Why focus on behaviour change?

1. Behavioural risk factors are the leading causes of the occurrence of, and morbidity and mortality due to chronic health conditions and injuries in the world. The most prevalent chronic medical conditions in the WHO European Region include cancer, cardiovascular diseases, obstructive lung diseases and diabetes, all of which have in their web of causation at least one predominant risk factor related to unhealthy lifestyles or habits. These include, among others, smoking, lack of physical exercise, high calorie intake and excessive alcohol consumption leading to obesity, high cholesterol levels and high blood pressure as precursors of the occurrence of many noncommunicable diseases. The burden of chronic diseases and injuries, and therefore the relative importance of behavioural factors in health, longevity, health care costs and social welfare, is likely to increase with the ageing of the European population and the improved health care that results in reduced case fatality, and thus higher prevalence over a longer adult life span often spent with co-morbid conditions requiring continuous and more complex medical care.

2. There is convincing evidence that healthy behaviours, including smoking abstinence, weight management, blood pressure control and regular exercise, are associated not only with enhanced lifespan but also with good health and function during older age (1). Conversely, estimates of loss of life adjusted for quality attributable to these risk factors vary, but a global assessment of the burden of such risk factors on the quality of life estimated that smoking accounted for 11.7% of the lost disability-adjusted life years (DALYs) in developed nations (the equivalent figure for alcohol was 10.7% and for physical inactivity 4.3%) (2).

3. Many of these risk factors are modifiable. Increased emphasis on primary prevention obviates the need for more expensive attempts to cure or, as is often the case, for long-term disease management. In the United Kingdom, for example, each quality-adjusted life year (QALY) gained via a brief and targeted smoking cessation intervention costs around £500, while the cost per QALY of treating patients with advanced cancer is estimated at between £40 000 and £50 000. However, what has been proven to work under ideal conditions (such as in efficacy trials) seldom works in real-life conditions (effectiveness). This is because when an experimental project is scaled up to a larger programme, (cost-) effectiveness is determined not by the nature of the intervention but rather by how well the programme targets the population at greatest risk, covers them fully and ensures their compliance with its imperatives. Indeed, health promotion activities – and mass public health campaigns in particular – have often failed to have the desired effect in terms of reducing disease incidence and burden, simply because compliance with the message, in the form of the intended behaviour change, is harder to achieve than its precursors of raising awareness, providing knowledge and altering attitudes.

4. Indeed, there is more to behaviour change than merely empowering the targeted individuals, communities and populations with the necessary information. By the same token, the argument that individuals should take greater responsibility for their health and health care, and adopt healthier behaviours to avoid ill health in later life, is bound to be simplistic, if not unrealistic or perceptibly accusatory. While increased awareness and knowledge and changed attitudes are necessary to behaviour change, they are seldom sufficient, whence the role of the State and of social institutions in devising and implementing a mix of legislative and regulatory instruments, or using both financial and non-financial incentives to induce change from unhealthy to healthy behaviours for the good of the individual and of society as a whole.

5. This paper aims to help Member States and their institutions plan interventions that are feasible, acceptable, equitable and effective in inducing behaviour change leading to healthier lives. Accordingly, the objectives of the paper are:

- to consolidate the evidence documenting which interventions have been proven to be (cost-) effective under which circumstances in leading to healthy behaviour change;

- to outline the critical factors for success and assess their feasibility, robustness and replicability in different settings across the WHO European Region; and
- to explore their implications for health systems and the wider government response.

What do we know from theory?

6. Over the past four decades, several models have been developed to explain or predict behaviour change, all of which borrow widely from various disciplines, mainly psychology and medical sociology. Within the field of public health in particular, behaviour change theory is applied to interventions delivered by those working at the levels of the individual (e.g. one-to-one health counselling and advice), the community (e.g. services such as community development and health outreach projects, in settings such as health promoting hospitals or neighbourhood regeneration schemes) and the population (e.g. mass media, targeted campaigns and programmes to increase awareness, regulation of the supply of goods such as tobacco, and legislation governing environmental conditions that promote health such as water supply or spaces for play and exercise).

7. There is a need to make a distinction between interventions targeting individuals, settings, communities and populations, and to monitor and document how the determinants of effectiveness rather than efficacy (i.e. accurate targeting of the population at greatest risk, full coverage of those targeted, and ensuring compliance with programme imperatives by both the intended beneficiaries and programme staff) affect the intended outcomes. While targeting, coverage and provider compliance are, in their turn, mainly determined by supply-side factors directly related to programme design and implementation, compliance of programme beneficiaries is more complex, in that it is determined by an individual's behavioural intentions, his/her own abilities to undertake the behaviour change (i.e. values, attitudes and knowledge, habits and behavioural norms, self-perception and capacity for sustaining change of behaviour, and expectations of success or failure before embarking on a change programme) and external environmental factors (e.g. socioeconomic standing, regulatory environment, access to media and advertising campaigns, community and peer expectations).

8. One should also bear in mind the fact that behavioural models have been more successful in explaining or predicting behavioural intentions, the commonest primary end points of most efficacy or effectiveness trials, rather than in delivering better health outcomes, a rare endpoint for measuring true effectiveness.¹

What do we know about what works in practice?

Theoretical efficacy, or the importance of having sound causal and intervention hypotheses

9. Any programme that aims at changing health-related behaviour needs to be built on the premise that: (i) the targeted behaviour is a documented causal risk factor; (ii) it has a high relative risk in the occurrence of the health condition at issue; (iii) and the potential for reducing the preventable excess risk is relatively high enough to warrant the intervention, for a programme built on an equivocally presumptive or spurious causal association is not likely to succeed.

10. The second consideration is the soundness of the intervention hypothesis. There should be convincing evidence that, at least when put to the test under ideal conditions, the programme has been proven to change the targeted behaviour and that its activities can be successfully delivered in the right quantity, quality, mix and sequence that can indeed result in the desired outcome. The evidence for

¹ The effectiveness of a behavioural change intervention is the impact it 'achieves in the real world, under resource constraints, in entire populations, or in specified subgroups of a population.' Its efficacy is the 'improvement in health outcome achieved in a research setting, in expert hands, under ideal circumstances' (3).

theoretical efficacy comes from a combination of epidemiological, mostly observational, studies and clinical and community trials or demonstration projects.

Real effectiveness, or the soundness of the implementation hypothesis

11. While the soundness of the underlying theory – its theoretical efficacy – is a necessary condition for any programme, it is seldom sufficient for making decisions about adoption, implementation or scaling up of the programme. Indeed, the more rigorously designed and tested a programme is, the more difficult it is to generalize, or replicate, its impact in other social, economic and environmental settings. This may be either because many programmes are not sufficiently robust, i.e. not equally effective in a variety of settings, irrespective of constraining circumstances, or because their effectiveness is very sensitive to variations in implementation.

12. Taking tobacco control as an illustrative example, there is convincing evidence that tobacco use has a very high relative risk for lung cancer and chronic obstructive lung diseases; that, given its prevalence in society, the potential for reducing the preventable excess risk is very high; and that there is enough evidence, based both on trials (theoretical efficacy) and on real country examples (effectiveness) that excess mortality attributable to smoking can be reduced if comprehensive programmes are designed to target young adults before they take up the habit, smokers for cessation counselling and nicotine replacement therapy, schools and work settings for banning smoking, and the population as whole through advertisement bans and increased taxation. On the other hand, while taxation of tobacco products is a highly effective intervention regardless of the setting, the extent of its effectiveness may vary depending upon the price elasticity of demand for tobacco products, which varies from one economy to another. Similarly, the effectiveness of banning smoking in public places can be less robust simply because of the variation in its enforcement in different countries. Both these examples point to the importance of giving full consideration to the determinants of the intervention and the implementation hypotheses. Box 1 below depicts five cameos, including one from outside the WHO European Region, implicitly referring to the causal, intervention and implementation hypotheses of five large-scale programmes aimed at behaviour change.

Box 1: Examples of behaviour change programmes

Harstad child traffic injuries prevention programme, Norway (4)

Aims: Pursued as part of a broader public health goal to reduce road traffic accident rates among children, the programme sought to increase awareness of risk of traffic accidents in children and families and to influence the adoption of safer behaviours.

Methods: Reports containing information about traffic injuries were distributed quarterly to all households in Harstad. The information focused on victim stories, medical statistics and data on the location of the accidents. Dissemination of the relevant information was targeted specifically to a local community, with “personalized” messages about the effects of traffic injuries and precise locations.

Results: 56% of respondents reported having acquired information or good advice about traffic safety from the reports. From the first 2 years to the last 2 years of the 10-year programme, there was a significant (59%) reduction in traffic injury rates among Harstad children. Overall rates for all ages decreased by 37%. The intervention suggests that combining general educational material with tailored messages can bring about sufficient awareness to effect a change in behaviour.

Smoking in pregnancy, England (5)

Aims: To reduce the number of women in Sunderland who smoke during pregnancy.

Methods: Aimed at pregnant and non-pregnant smokers from lower income backgrounds, the initiative

targeted both patients and health professionals. The former were provided with information which focused on solutions rather than risks, e.g. advice on how to manage and minimize cravings. The latter were involved in role-play exercises to improve their ability to help pregnant smokers quit.

Results: A tenfold increase in the number of smokers recruited to the programme, reflecting a much higher recruitment rate than neighbouring services with different interventions. The programme suggests the potential for the success of other initiatives which directly involve patients and health care professionals, along with educational programmes that deliver reinforcing messages.

Breathing Space, Scotland (6)

Aims: To shift local attitudes towards smoking in a low-income local community within an urban setting (Wester Hailes, Edinburgh).

Methods: Local community development principles and practices. Empowerment of local community through partnerships with key stakeholders, including nongovernmental organizations, local government and other community groups.

Results: The programme failed to have any impact on attitudes to, and rates of, smoking. This was because of a failure in leadership by the partner organizations, inequalities of power between partners, strong differences of opinion on targeting, disputes about ownership of the programme, and inadequate resources and capacity from the outset. The initiative suggests that even small-scale initiatives may not be flexible enough to overcome insufficient planning and a lack of clear delineation of responsibilities based on clear and shared targets from the outset.

Community Action for Health, Kyrgyzstan (7)

Aims: To enable village communities to develop and pursue their own programmes towards improving overall health.

Methods: Application of a needs assessment tool in respect of what villagers felt they needed to enjoy healthy lives, and training of individuals to use the tool. Included participatory research with villagers to develop a ranking of health issues of most burden to the village. Design of appropriate measures and instruments, and the establishment of enabling infrastructures – village health committees – to implement them.

Results: Evaluation shows positive outcomes in addressing diet (micronutrient deficiencies), alcohol consumption, sanitation and hygiene. The action suggests that participatory needs assessment and training in the means to tackle behaviours, which are to a large extent dictated by the environment, can be effective where there is recognition and a shared view of the problem, and interest in changing behaviour.

Project HEAL (Healthy Eating, Active Lifestyles), United States (8)

Aims: A community education programme in a socially deprived area (among African-Americans in East Harlem, New York) aimed at encouraging self-help weight loss and diminishing the burden of obesity and diabetes.

Methods: Piloted through a local church, and based on assessment of pre- and post-course weights (one year course duration), as well as self-reported behaviours and quality of life.

Results: Resulted in considerable weight loss and sustained behaviour change among participants: 26 obese adult men lost 4.4 lbs at 10 weeks, 8.4 lbs at 22 weeks, and 9.8 lbs at 12 months. Project HEAL suggests that appropriately targeted and implemented programmes (in this case, peer-led and small-scale) for communities who are most often at risk or affected by obesity and diabetes in developed countries, may be successful in instigating community-led behaviour change.

13. The theoretical underpinnings of what we know and what works in practice summarized above invariably lead the discussion towards three essential considerations:

- (i) what are the key determinants of the three “conjectures” (the causal, intervention and implementation hypotheses) that make an efficacious programme effective under different conditions;
- (ii) what are the contextual determinants that can affect the degree of effectiveness of a given programme under different circumstances; and
- (iii) what does a given service provider need to do to ensure that programme effectiveness and sustainability are achieved or maintained under a given set of socioeconomic and environmental circumstances.

14. Based on the extensive literature review summarized in Annex 1, the rest of this section provides an overview of the determinants of the three effectiveness criteria, whereas the following section will review the roles and responsibilities of a programme provider, ministry of health or any other state or nongovernmental agency in ensuring programme effectiveness, replicability, equity and sustainability.

Targeting

- Interventions and programmes are most likely to succeed if they are based on a clear understanding of targeted behaviours and, by extension, of those who display such behaviours and the environmental context in which they are situated.
- The behavioural issue(s) targeted for intervention must be clearly defined at the outset, so that antecedents, determinants and supporting mechanisms can be defined, suggesting points for intervention and strategies for initial and sustainable change.
- The target population’s readiness to change at both individual and collective levels is important. There is accumulating evidence across behaviours such as smoking, nutrition and physical activity that tailoring (or matching) programmes and interventions to better suit the characteristics of the target audience is a predictor of more positive outcomes.
- Some behaviours are more amenable to influence than others, with evidence from systematic reviews of effective programmes indicating that there is greater success in the areas of injury prevention, prevention of HIV/AIDS, tobacco control, nutrition and healthy weight interventions, and physical activity promotion.
- Some groups or populations are seemingly less able to alter behaviour than others (lower socioeconomic groups often also suffer from clusters of risk factors). On the other hand, these groups are more likely to display a pattern of unhealthy lifestyles (binge drinking and smoking, promiscuity, etc.) that make them well circumscribed for targeted multi-pronged interventions.
- “Insight” into the intended target group is important. Public health programmes should develop an understanding of people’s attitudes and motivations, as well as of the barriers to change, whether these are perceived or real, to aid the design of interventions. Techniques that can assist in this include using focus groups, conducting interviews and surveys of knowledge, beliefs and attitudes, testing messages and services on a representative sample of the target group, and increasing the participation of target groups in service design and delivery.
- Most studies address only single health behaviours or are focused on individual-level approaches, whereas in many cases risk factors are clustered (e.g. smoking, poor diet and insufficient physical exercise are often part of a ‘package’ of unhealthy behaviours pursued by overweight individuals or chronic disease patients).

Coverage

- Ideally, for any programme to be (cost-) effective, it has to reach the totality of the targeted population, and only the targeted population. Most programmes have a certain number of “false positives” (i.e. people who were not targeted but are still covered) and “false negatives” (those who were supposed to be targeted but have been omitted), and this affects their (cost-) effectiveness. For instance, if a tobacco control programme that targets young adolescents passes “spot” messages on television when they are at school, or during the evening news, it is unlikely to be (cost-) effective because of the high false positive and negative rates. This is especially true if the intended behavioural change is not quitting smoking but, rather, preventing young people from taking up the habit. Hence the need to clearly define the intended effect and the target audience.
- The concept of coverage varies depending on the remit of the programme, i.e. whether it is aimed at the individual, a setting, segments of the population or the general population as a whole. While not much effort may be needed to ensure full coverage in a school or work setting, special measures may have to be taken to ensure full coverage in geographically distant areas, or when dealing with socioeconomically disadvantaged or ethnically distinct groups. In such cases, cultural and linguistic barriers would need to be taken into consideration when preparing the promotional message, designing the product, setting the price, or indeed defining the targeted population (the four Ps).
- Interventions delivered through other types of media (print, telephone or the internet) have been shown to be effective in achieving short-term behaviour change. Increasing evidence indicates that they may also be effective in the longer term. The internet is an increasingly important medium; promising examples include tailored web-based smoking cessation programmes offered when purchasing nicotine replacement therapy (9) and adding behavioural smoking cessation materials to brief telephone-based counselling (with print materials tailored to interim progress being effective for relapse prevention) (10).
- It is important to be sensitive to local context. For instance, using behaviour change approaches in isolation from the provision of sufficient infrastructure support or integration within a wider framework may have negative impacts in other areas, e.g. by reinforcing social, socioeconomic or even gender roles and stereotypes.

Provider compliance

- Planning, i.e. properly estimating and deploying the number, quality and skills mix of programme staff, is crucial for proper implementation.
- While vertical or single interventions may have their own dedicated staff and therefore built-in financial and other incentives, many often come as additional workload on top of the routine work of overworked and underpaid health workers, therefore compromising their full compliance with programme imperatives. While supervision, monitoring and formative evaluation may allow for early detection of noncompliance, well-designed and planned interventions include appropriate incentives for sustained compliance, in order to achieve long-term effectiveness and sustainability.
- Proper training and supervision should not be underestimated as key factors affecting provider compliance, nor should the importance of leadership in motivating health professionals.

Compliance of beneficiaries

- Proper information and increased awareness and knowledge are necessary but seldom sufficient to bring about changes in attitudes and intentions, particularly sustained behaviour change, whether the latter involves periodic visits to a health professional, regular use of antihypertensive medicine, quitting smoking, wearing seat belts, taking up physical exercise or changing dietary habits.

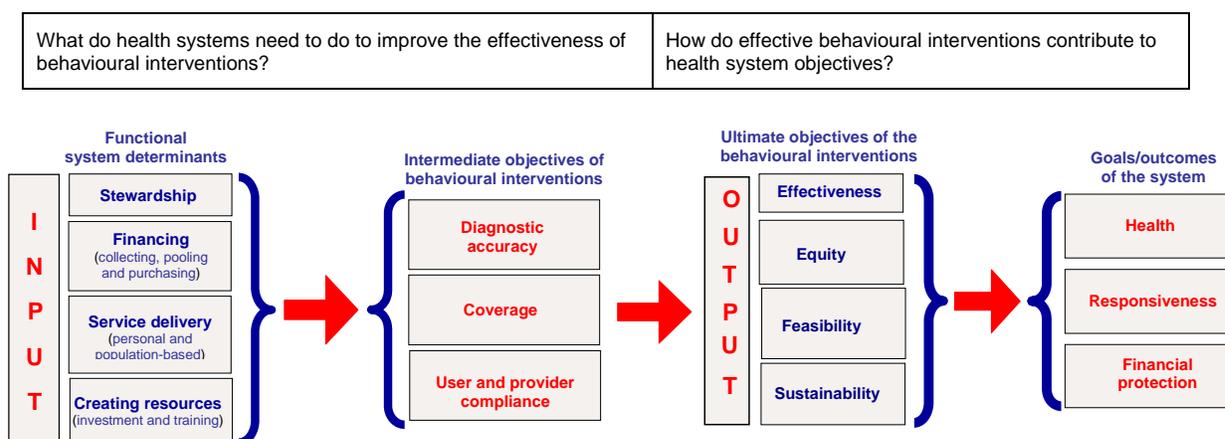
- Social support and networks play an important role in promoting and maintaining behaviour change. The integration of peer and family support strategies into individual risk modification programmes increases the success of the latter.
- There is a need to render the causal and intervention hypotheses explicit and to collect information on all the factors in the causal pathway, in order to document where compliance is less than predicted, how it varies over time and to which cues it is most responsive. Inadequate compliance may, for instance, be a matter of peer pressure, or cognitive dissonance, or undervaluation of health consequences that can appear 20 years later, or simply a lack of dialogue with the service provider or lack of understanding of the message because of cultural, linguistic and other social barriers.

15. Annex 2 documents the most common factors influencing behaviour change, along with their implications for the design of the corresponding intervention. A systematic review of the theories related to behaviour change in the context of public health is available from the United Kingdom National Institute for Health and Clinical Excellence (11), while a review of evidence concerning the prevention of chronic disease has been issued by the British Columbia (Canada) Ministry of Health Services (12).

Addressing behaviour change through the health system

16. While the goals of any health system are to improve the level and distribution of health, increase responsiveness to people’s expectations, and protect individuals and the population from undue financial burden as a result of ill health through proper execution of the functions of stewardship, resource generation, service delivery and financing, one could equally conceptualize these functions as determinants of the intermediate objectives of behavioural interventions, namely targeting, full coverage and ensuring user and provider compliance (see Fig. 1). Indeed, many of the challenges that behaviour change strategies and interventions face (e.g. limited feasibility and effectiveness, compromised replicability, uncertain sustainability) result from the less than optimal execution of the health system functions. Applying the WHO framework (13,14), the question then becomes “What do health systems need to do to bring about behaviour change?” Or, more specifically, (i) what does the ministry of health, as steward of the health system, need to do; (ii) what human and physical resources need to be deployed; (iii) which services need to be produced in which quantity, quality and mix; and (iv) what are the proper amount of funding and the necessary financial incentives in order to improve “diagnostic accuracy”, increase coverage and ensure user and provider compliance?

Fig. 1 Addressing behaviour change through health systems



17. Behaviour change often requires an intersectoral approach, in which the health system has neither the mandate nor the resources to be the key player because the actions for health will be taken by sectors whose primary purpose is not to produce health – for example, the education system or local authorities.

This links behaviour change mostly to the ministry of health's stewardship function, as outlined in the working paper for the fifty-eighth session of the Regional Committee on stewardship of health systems (document EUR/RC58/9). The ministry of health and the health system at large should do their best to promote "healthy public policy" and influence health determinants (intersectoral targets and benchmarking, regulatory interventions, etc.), and should be held accountable for taking such actions.²

18. The growing acceptance of legislation designating smoke-free public places, with penalties to enforce breaches of such regulations, testifies to the fact that (i) government has a legitimate role to play in using legislative instruments to promote health where the mandate is clear, the solution is effective and the public has sufficient information to be able fully to grasp the issue, and (ii) the impact of public health interventions is enhanced when supported by robust legislation. Responsibility for taking actions to bring about behaviour change in health is often divided between different levels of government and public health agencies. Coordination of the contributing (public) actors is a critical responsibility of the health system steward, yet building alliances with other key stakeholders such as private industry is also indispensable. In the United Kingdom, for instance, there are examples of voluntary agreements between the food industry and the government, such as on the reformulation of processed foods to reduce their fat, salt and sugar content, and schemes to provide consumers with more information about the levels of nutrients in products. Box 2 describes examples of intersectoral collaboration with industry in WHO European Member States.

Box 2: Lobbying for government action on health and building cross-government and public-private partnerships to promote behaviour change

- The Obesity Social Marketing Strategy in the United Kingdom involved many retail organizations who contributed valuable insight into behaviours of key groups of consumers/target groups.
- In the Netherlands, a "Fat watch" campaign, run in partnership with supermarkets and other private sector allies, brought favourable changes in the consumption of saturated fats.
- In Slovenia, partnerships with the ministries of agriculture, education and regional development led to synergies of sectoral policies and investments with regard to a healthy food supply, the development of a healthy school meal policy, and targeting of the lifestyle needs of risk groups.

Organizations close to target groups can act as "main message givers;" in the United Kingdom, for example, tobacco campaigns were fronted by a charity, to avoid them being perceived simply as orders to "stop smoking".

19. As highlighted in the previous section, a combination of policy instruments, e.g. legislation, regulation, and even individual financial incentives (positive or negative), is often necessary to attain policy objectives, and this calls for a balanced approach to each health system function (stewardship, financing, service delivery and resource generation). The health system can also play a leading role in generating knowledge about behaviour change strategies, both in theory and in practice. As explained, the evidence of what works in terms of behaviour change strategies is limited and often anecdotal; however, it seems that increasing numbers of success factors are being identified in policy-making. There is an obvious need to evaluate the relative impact of the different policy instruments used and to monitor their impact over time. Work on addressing clusters of behaviours, rather than single strands and on understanding the behaviour of the most vulnerable and socially deprived members of society would also seem to be priority areas for investigation.

² Good health stewardship should be exercised in all interventions with a significant potential impact on health, regardless of their primary purpose; the steward would be responsible for (i) understanding all the factors that influence health (i.e. full understanding of the determinants); (ii) for those factors that emanate from outside the health system, understanding which factors are amenable to change; and (iii) understanding who has the mandate with respect to a particular factor, so that the steward can then take action to influence the amenable factors by directing its efforts towards those with the mandate.

20. The assumptions implicit to the area of health behaviour mentioned in the first section (that individuals should take greater responsibility for their health and health care; that individuals should adopt healthier behaviours to avoid ill health in later life; and that healthier behaviour will reduce future health costs and benefit not only individuals but also society as a whole) all have implications for the governance of behaviour change strategies. Intervention by the state in individual choices depends on a number of national or local contextual factors, which vary from one country to another. The degree of acceptance of increasingly far-reaching interventions is a sensitive matter for governments. One critical question for behaviour change strategies in the area of public health is therefore how targeted population groups are involved in the decisions that are taken and in the associated development, implementation, monitoring and evaluation of strategies.

21. Evidence from other sectors such as the environment and business indicates that the use of comprehensive strategies (concurrent or sequential packaging of multiple interventions or programmes to work together in synergistic or mutually reinforcing ways) is more effective than implementing individual strategies in isolation. Such integrated approaches may include regulation, education (including mass media campaigns, the internet and telecommunications), personal goal-setting and behaviour monitoring, motivational techniques and social support, individual or group counselling, brief interventions by general practitioners and health professionals, partnerships, community capacity building, environmental change, use of signs/cues at points of health decision-making and population-based coordinated programmes. Importantly, they all require a “manager” to coordinate activities, to help develop appropriate mechanisms and to ensure evaluation. Annexes 3 and 4 lay out the minimum “building blocks” needed to plan and deliver a comprehensive behaviour change intervention and the various approaches and tools used at different levels. Finally, Box 3 below provides an example of a successful comprehensive approach.

Box 3: A comprehensive approach to tobacco control in Australia (15)

Behaviour changes: approaches and tools used

Australia has what are perhaps the world’s most advanced comprehensive tobacco control policies and programmes, comprising:

- among the most expensive cigarettes in the world, second only to Hong Kong
- among the world’s most prominent health warnings on cigarette packets
- a total ban on all advertising and promotion of cigarettes
- national campaigns for tobacco control that are emulated internationally
- “Quitline” services that provide advice and support to smokers trying to quit smoking
- extensive advocacy, via news media, for tobacco control
- legislation prohibiting smoking in large buildings, public transport and restaurants
- widespread adoption of smoke-free homes
- litigation by smokers and passive smokers against tobacco companies, that has attracted widespread media attention.

Results

Between 1973 and 1984, the incidence rate of lung cancer in men rose by an average of 1.3% per year, but since then it has decreased by 1.9% per year. In women, the rate increased by 3.9% per year between 1973 and 1993 but thereafter has remained stable, again reflecting the historical trend in smoking rates for women. Lung cancer remains the leading cause of cancer death in Australia. Death rates from coronary heart disease fell by 59% in men and 55% in women between 1980 and 2000, in large part because of changes in risk factors such as smoking.

In New South Wales, calls to the state “Quitline” doubled in the period 2005–2006, to a total of 58 000 callers. The percentage of people aged 16 years and over smoking “daily” or “occasionally” dropped from 20.1% in 2005 to 17.7% in 2006; this 2.4% drop represented a relative decrease of 12%, which is unprecedented in Australia.

Concluding remarks

22. While various models developed over the past four decades have been useful in predicting and explaining behaviour change to a certain degree, they have been much less helpful when used as the theoretical basis for population-based behavioural interventions where the primary outcome of interest has been an improvement in health, rather than a certain change in underlying behaviour. On the other hand, there is a lot of evidence derived from hands-on experience that, if used as generic guidelines, could be very helpful in improving the overall effectiveness, equity, replicability and sustainability of behavioural interventions. Some of these guidelines are set out below.

- Strong leadership, ownership of and commitment to programme objectives, and resoluteness during implementation are crucial.
- Multi-pronged interventions covering legislation, regulation, public education, counselling, etc., are more likely to be effective than single-target interventions.
- Multi-level interventions including policies, programmatic and organizational changes and a built-in intelligence scheme are more successful than stand-alone initiatives.
- Timing, or a “window of opportunity”, is crucial in securing buy-in by programme leaders, service providers, stakeholders and, above all, potential beneficiaries.
- Without adequate financing, most programmes are likely to fail regardless of how solid the underlying theory is.
- It is imperative to make a thorough assessment of the (dis)incentives and cues for action, in order to influence the behaviour of service providers and beneficiaries.

23. Assumption of leadership by the ministry of health, as part of its stewardship role in health, is particularly crucial in intersectoral interventions. It is naïve to believe that ministries of finance would by themselves come up with a new excise tax aimed at reducing cigarette consumption, and thus potential internal revenues; that ministries of education would change primary school curricula to introduce healthy nutrition, potentially at the expense of what would be perceived as a more important subject matter (e.g. history, mathematics); that ministries of transport would make the installation and use of airbags mandatory; or that ministries of energy would regulate the quality of gas at the expense of a price increase, to reduce indoor air pollution. Accordingly, effective stewardship by the ministry of health requires:

- (i) a thorough analysis of the extent of the problem and its health and socioeconomic consequences, e.g. the expected number of deaths attributable to smoking by 2020, and the health care and social welfare costs (the causal hypothesis);
- (ii) a convincing scenario according to which the proposed behavioural intervention could, when adapted to the country context, bring about the expected changes in terms of reduced morbidity, mortality and costs, on the basis of various assumptions and sensitivity analyses (the intervention hypothesis); and
- (iii) evidence that either the ministry of health, if it is the main programme implementer, or the State, through its various ministries and institutions, has the wherewithal and capacity to implement the programme through a mix of policies, institutional and organizational arrangements (e.g. interministerial steering committee, task forces, etc.), proper planning and adequate financing, involvement of civil society organizations and the private sector, training of staff and establishment of proper incentive schemes (the implementation hypothesis).

24. Finally, most behavioural interventions may need to be piloted on a small scale and over a very limited time frame before they are scaled up to the broader community, provincial, regional or national levels. A built-in monitoring and evaluation scheme, with continuous data collection and analysis for both formative (ongoing) and summative (ex post) evaluation, is essential, as are the prior definition of anticipated primary and secondary outcomes and the establishment of benchmarks for proper assessment of programme effectiveness.

Annex 1

A review of behavioural interventions; examples of effective application

Two types of examples are included: (a) those that have been subject to external evaluation, where impact has been formally assessed; and (b) those that illustrate tools and approaches in practice and are potentially promising in terms of impact but which have not been formally evaluated or assessed.

Education: Educational approaches to behaviour change have the goal of increasing people’s knowledge, skills and capacity, as well as influencing their attitudes and to change levels of confidence, and sustaining that change over time.

Title of intervention, country and source	Health issue	Behaviour change goal	Level and target group	Tools used	Outcomes
<p><i>Healthy Choices for Kids</i> (Brighton, England)</p> <p>Reference: 16</p>	<p>Obesity</p>	<p>To change children’s attitudes and behaviours with regard to healthy living; to increase parents’ awareness of the causes of obesity; and to encourage lifelong participation in healthy activities.</p>	<p>Community Children aged 8–11 years</p>	<ul style="list-style-type: none"> • Focus groups and questionnaires for insight into existing knowledge, skills, etc.; • A high-profile launch targeted at schools; • One-day workshops in schools and community venues on healthy lifestyle choices; • Healthy challenge featuring a ‘passport’, with prizes for children who completed all tasks and a linked website; • Half-term “fun day” including prizes, sports and free recipe book, etc.; • A local public relations campaign. 	<p>Children</p> <ul style="list-style-type: none"> • retained knowledge • introduced new food and exercise into their lives <p>Substantial increase in numbers accessing related website.</p>
<p><i>Sunderland: Smoking in pregnancy</i> (Sunderland, England)</p> <p>Reference: 16</p>	<p>Smoking</p>	<p>To reduce the number of women smoking during pregnancy.</p>	<p>Community and individual Pregnant (and non-pregnant) women smokers from deprived backgrounds</p>	<ul style="list-style-type: none"> • Role play work to help health professionals improve their services in dealing with this target group, including empathy and effective approaches; • Information materials for women focusing on solutions e.g. how to deal with cravings. 	<ul style="list-style-type: none"> • 10-fold increase in smokers recruited to the programme during the intervention; • Increase in recruitment of pregnant smokers after training of professionals and higher rates than neighbouring services with different interventions.

Title of intervention, country and source	Health issue	Behaviour change goal	Level and target group	Tools used	Outcomes
<p><i>Goodbye Tobacco</i> (Aarhus County, Denmark)</p> <p>Reference: 17</p>	Smoking	To reduce the number of smokers in target groups that are not normally recruited in stop smoking campaigns.	Community and individual Those not normally responsive to stop smoking campaigns, including men, unskilled workers, those on welfare benefits, etc.	<ul style="list-style-type: none"> • Evaluation of previous activities to identify actions required, e.g. no opportunities for young people aged 16–24 years to tackle this issue; • New IT-based instrument to help practitioners discuss and register smoking habits; • Stop smoking courses offered directly to employees’ workplace representatives and specific education for instructors in prevention for different occupational groups and workplace cultures; • Low-intensity individual courses targeting young people 16–24 years. 	<p>Internal mid-term evaluation (2005)</p> <ul style="list-style-type: none"> • Reduction in inequality in recruitment and participation in stop smoking campaign; • Increased participation of 63% from 2003 evaluation of men and unskilled workers; • Primary increase in participation in intervention at workplace and hospitals.
<p>Increasing condom usage (Rio de Janeiro, Brazil)</p> <p>Reference: 18</p>	HIV/AIDS and STIs	To increase the personal health skills and knowledge of young men to handle an unwanted pregnancy, solve a conflict with a girl without violence and remember to use a condom under all circumstances.	Community and individual Men in low-income suburbs of Rio de Janeiro	<ul style="list-style-type: none"> • Manuals, videos and training for health professionals, peer promoters and educators; • Community youth workshops – using role play and discussion; • Design of new branded condom – made available at non-traditional points of sale; • Promotion of condoms and health education messages by two high-profile rap artists. 	<ul style="list-style-type: none"> • Regular condom use with long-term partners increased by 25%; • Significant reduction of 20%+ in reported symptoms of sexually transmitted infections.
<p>Preventing child traffic injuries in Norway and Sweden</p> <p>References: 4 and 19</p>	Injury prevention	To prevent child traffic injuries.	Community (Norway) Population (Sweden)	<p><i>Norway</i></p> <ul style="list-style-type: none"> • Dissemination of information about traffic injuries using reports every quarter to all households in a region in Norway, with a focus on “personalized” information about the effects of traffic injuries and specific locations. <p><i>Sweden</i></p> <ul style="list-style-type: none"> • Application of good practice model for injury prevention from WHO: collaboration, partnership and community capacity-building to promote injury-reducing behaviours such as wearing of bicycle helmets. 	<p><i>Norway</i></p> <ul style="list-style-type: none"> • 56% of respondents reported having acquired information or good advice about traffic safety from the reports. • From the first 2 years to the last 2 years of the 10-year programme, there was a 59% reduction in traffic injury rates among children in the region. Overall rates for all ages decreased by 37%. <p><i>Sweden</i></p> <ul style="list-style-type: none"> • Total relative risk for child injury reduced by a quarter and relative risk of moderately severe injury nearly halved.

Control: Control approaches to behaviour change have the goal of protecting health and minimizing the effects of health-damaging policies, services, goods and situations.

Title of intervention, country and source	Health issue	Behaviour change goal	Level and target group	Tools used	Outcomes
<p><i>Skatt på alkohol</i> – Tax on alcohol beverages (Sweden)</p> <p>Reference: 17</p>	Alcohol	To reduce health gaps by means of taxes on alcoholic beverages.	Population All age groups	<ul style="list-style-type: none"> • Legislation – existing “Owner’s Directive” that sets a state monopoly in alcohol retailing (Systembolaget) and restricts the availability of alcohol through control of company store locations, control of opening hours and rules on selling alcohol e.g. alcohol cannot be sold to persons under 20 years; • Taxes –Systembolaget is financed both through taxes and through their own sales; • Certification (through the “IQ initiative”) of companies, organizations, etc. that run good practice programmes focused on reducing unhealthy alcohol consumption or preventing alcohol-related problems. 	<p>External evaluation exists (published articles cited);</p> <p>Overall – worked well until Sweden became a member of the EU. Alcohol consumption in Sweden is still lower than in most other EU countries.</p>
<p><i>Free</i> (Norway) Source: Norwegian Ministry of Health</p>	Smoking	To reduce tobacco use in all groups in the population.	Population and community Whole population, plus specific groups including young people, school settings, pregnant women and parents of small children	<ul style="list-style-type: none"> • Taxes on tobacco products • Legislation restricting tobacco promotion • Enforcement of the age limit for sales, etc. 	<p>External evaluation of schools programme e.g. Free.</p>
<p><i>Reduction of social inequalities in child accidental injuries through environmental measures</i> (Sweden) Reference: 17</p>	Injury prevention	To modify the environment to reduce accidental injuries to children.	Population and community Target group: children with low socioeconomic status	<ul style="list-style-type: none"> • Environmental measures e.g. building laws requiring all new homes to have certain safety equipment such as window bars that prevent children from opening the window and falling. 	<p>External evaluation – interventions linked with legislation have been running for at least 25 years.</p>

Design: Design approaches to behaviour change have the goal of using, adapting or creating physical environment, services and facilities in ways that encourage the adoption and maintenance of healthy behaviours.

Title of intervention, country and source	Health issue	Behaviour change goal	Level and target group	Tools used	Outcomes
<p><i>Physical activity and meals at school</i> (Norway)</p> <p>Source: Norwegian Ministry of Health</p>	<p>Physical activity and nutrition</p>	<p>To improve the design of models for improving physical activity and nutrition behaviours among schoolchildren.</p>	<p>Community School-age children</p>	<ul style="list-style-type: none"> • Piloting of models for increased insight into what works; • Change school social environment and timetable to enable the introduction of fruit/healthy meals during school breaks and increased physical activity. 	<p>External evaluation by HEMIL Centre, Bergen:</p> <ul style="list-style-type: none"> • Students in 70% of primary schools and 50% of junior high schools show more concentration in the classroom after the introduction of increased fruit/healthy meals plus physical activity; • Social environment improved; • 1 in 3 schools report less victimization; • Process – twice the number of pupils in participating schools have been offered fruit and vegetables than in other schools; • 50% of schools in the project have 30 minutes physical activity each day.
<p><i>Community Action for Health</i> (Kyrgyzstan)</p> <p>References: 20 and 21</p>	<p>Overall health improvement</p>	<p>To enable village communities to act on their own to improve their health.</p>	<p>Community and individual Villages in remote/rural regions</p>	<ul style="list-style-type: none"> • Needs assessment tool for villages to answer question ‘What do you need to stay healthy, to live a healthy life?’; • Training for health workers and peers/leaders in villages to use the tool; • Participatory action research – analysis with groups of 10 people from neighbouring households – prioritization, ranking, etc. of diseases/health issues of most burden to the village; • Community development and participation – in the design of actions for improving the situation and in setting up structures (e.g. village health committees) to take action. 	<ul style="list-style-type: none"> • 119 village health committees in one oblast covering 109 of 111 villages with a population of about 160 000 people; • Evaluation demonstrated outcomes in addressing micro-nutrient deficiencies, alcohol consumption, sanitation and hygiene.

Title of intervention, country and source	Health issue	Behaviour change goal	Level and target group	Tools used	Outcomes
<p><i>Local residents get active</i> (Kent, England)</p> <p>Reference: 16</p>	<p>Physical activity</p>	<p>To improve the empowerment of housing estate residents by involving them in the design and development of services that they could implement.</p>	<p>Community Housing estate residents</p>	<ul style="list-style-type: none"> • Steering Committee with residents, youth leaders etc.; • Stakeholder workshops – insights into the barriers to physical activity and the incentives required to integrate activity into daily living; • Community development and participation in design of the solution – creating self-organized groups of people with a shared interest in undertaking exercise together. 	<ul style="list-style-type: none"> • Improvements in well-being – increased sleep and greater physical flexibility; • Improved health intelligence for local health authorities to understand health status in this community; • Costs savings – cheaper to provide a trainer for groups than health service for some individuals.
<p><i>Business in the Community: Team approach to tackling young people's health</i> (England)</p> <p>Reference: 16</p>	<p>Overall health improvement</p>	<p>To improve the health prospects of young people.</p>	<p>Community Young people, including hard-to-reach groups, e.g. minority ethnic populations, deprived neighbourhoods</p>	<ul style="list-style-type: none"> • Community activities by professional sports clubs; • Corporate social responsibility; • Upskilling of community advocates to run local projects designed to counter health and societal problems; • Settings. <p>The Clubs that Count initiative uses the power of sporting brands to reach audiences who are normally unreceptive to health messages. As well as advising and supporting clubs in their community activities, it also measures how well they are implementing their corporate social responsibility, identifies gaps in delivery and gives advice on how they can improve.</p> <p>Clubs that Count now has over 50 partners. These are tackling a wide range of health issues in innovative ways. Manchester City, for example, recently launched an initiative called Something Good in the Neighbourhood, which aims to counter health and societal problems by upskilling community advocates to run local projects.</p>	<p>Annual reports</p> <ul style="list-style-type: none"> • Sports clubs are highly effective for promotion of healthy lifestyles, particularly where the audience is hard to reach.

Title of intervention, country and source	Health issue	Behaviour change goal	Level and target group	Tools used	Outcomes
<p><i>Breathing Space: a community-based antismoking programme</i> (Scotland)</p> <p>Reference: 22</p>	Smoking	To shift attitudes towards smoking in a low-income local community (Wester Hailes, Edinburgh).	Community	<ul style="list-style-type: none"> • Local community development principles and practices; • Empowerment of the local community through involvement of partnerships. 	<p>Failed to have any impact on attitudes to smoking and smoking rates because of:</p> <ul style="list-style-type: none"> – failure of leadership in the partner organizations – inequalities of power between organizations – (stark) differences of opinion on targeting – disputes about ownership of the programme – inadequate resources and capacity.

Support: Support approaches to behaviour change have the goal of providing practical assistance and tailored services, so as to create incentives and give positive reinforcement to behaviour change. The examples reviewed below illustrate the use of support approaches most often combined with other approaches (for example, education and design).

Title of intervention, country and source	Health issue	Behaviour change goal	Level and target group	Tools used	Outcomes
<i>Tackling health inequalities in the Roma community of Pomurje region</i> (Pomurje, Slovenia)	Overall health improvement	To tackle health inequalities by means of health promotion, including assessment of health issues, raising awareness about healthy lifestyles and developing effective, culturally appropriate approaches for health promotion in the Roma community.	Community and individual Hard-to-reach and vulnerable groups	<ul style="list-style-type: none"> • Community engagement and development, e.g. selection and motivation of local coordinator in Roma community – peer network; • Survey on lifestyle of Roma community and dissemination and use of survey findings to support culturally appropriate approaches to health promotion in the community, such as open-air healthy cooking workshops, cooking with families, fruit and vegetable workshops, partnership building; • Community activities to support health promotion and healthy lifestyles – media activities, workshop, themed edition of newspaper. 	Outcomes to be identified.
<i>Cessation advice for smokers</i> (International) References: 23–26	Smoking	To provide individual/direct counselling to support and help people who are trying to quit smoking.	Individual	<ul style="list-style-type: none"> • Telephone counselling for smoking cessation – pro-active. • Counselling by trained therapist separate from medical care and providing one or more face-to-face counselling sessions of more than 10 minutes – most approaches included further telephone contact for support. • Cessation advice and support by health workers, e.g. nurses, and in health settings such as hospitals, at health checks or as part of prevention activities. 	<ul style="list-style-type: none"> • Evidence of a “dose” response – 3 or more calls increases the odds of quitting compared to minimal intervention such as standard self-help materials, brief advice or pharmacotherapy alone. • Individual counselling can help smokers quit, but there was not enough evidence about whether more intensive counselling was better – individual counselling was more effective than control. • 20 studies comparing a nursing intervention to a control or to usual care found the intervention to significantly increase the odds of quitting.

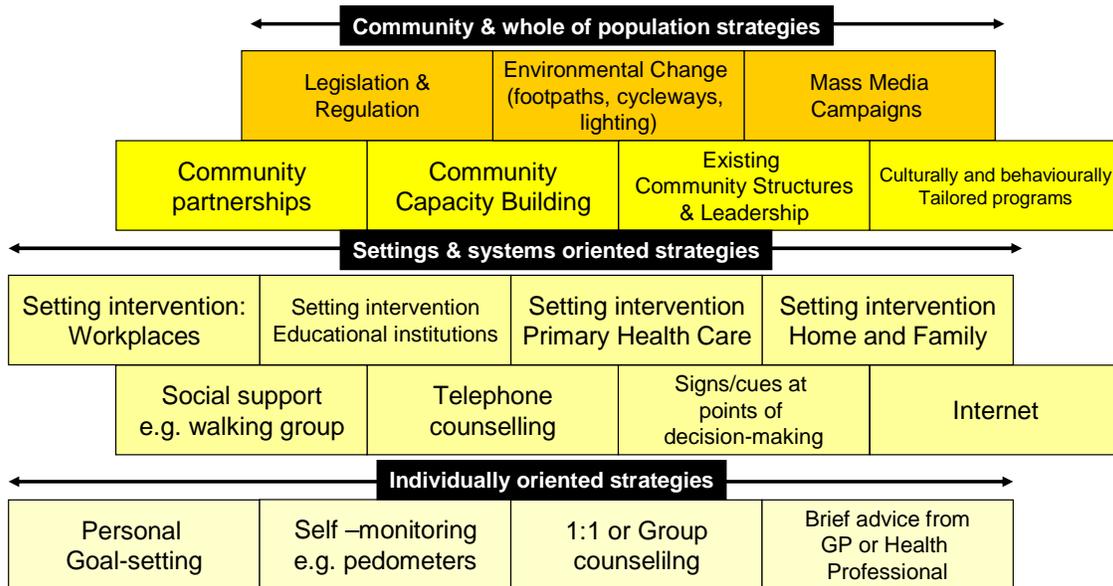
Annex 2

**Common factors influencing behaviour change
and their implications for intervention design**

<i>Factors</i>	<i>Design implication</i>
A desire for change must be present in the audience	There is a need both to create a demand for positive change and to create the conditions to enable people to make positive choices
Participatory involvement leads to greater behavioural change effects	Interactive engagement strategies and the development of coalition approaches to change should be part of all behaviour change interventions
People are often motivated to do the “right thing” for the community as well as for themselves and their families	Programmes should encourage and incentivize socially responsible behaviour and penalize behaviours that are not socially responsible
Social relationships, social support and social norms have a strong and persistent influence on behaviour	Incorporating peer and family support strategies into individual risk change programmes increases likely success
Change is usually a process not an event	Programmes should be sustained over time and tailored to the needs of different groups
Psychological factors, beliefs and values influence how people behave	Programmes need to address values and beliefs, as well as information and knowledge acquisition
People can be “locked into” patterns of behaviour and need practical help to break them	Policy and services need to be designed to meet the specific needs of different communities, in order to help them change engrained habits
Change is more likely if an undesired behaviour is not part of an individual’s life situation coping strategy	Create incentives, offer practical support for change and give positive reinforcement. Provide alternative forms of support and reinforcement to aid behaviour change
People’s behaviour is influenced by their physical and social environments	There is a limit to a person’s capacity to change, if the environment militates against the desired change; conditions and incentives for change must therefore be created, in addition to giving messages and advice and building personal skills
People’s perception of their vulnerability to a risk and of its severity is key to understanding behaviour	There is a need to develop individual and community understanding of risk and vulnerability in relation to major threats
Perceptions of the effectiveness of the recommended behaviour change are key factors affecting decisions to act	Programmes should seek to ensure that people understand the scale of the rewards associated with positive behaviour change
The more beneficial or rewarding an experience, the more likely it is to be repeated	Reinforcing and incentivizing positive behaviour in the short term should be part of any change programme
People are loss-averse: they will put more effort into retaining what they have than into acquiring new assets	Programmes should emphasize the advantages of positive behaviours that enable a continuation of immediate benefits, rather than long-term gains
People often rely on mental short cuts and trial-and-error to make decisions, rather than on rational computation	Programmes should develop a deep understanding about what will motivate people to change and how they perceive specific issues

Annex 3

Components of a comprehensive approach to health behaviour change (27)



Annex 4

Approaches, tools and likely agents of change

Change goal and approaches	Level	Tools	Responsible agents
To educate and empower <ul style="list-style-type: none"> • Increase knowledge, skills and capacity • Influence attitudes and levels of confidence • Change and sustain change 	<ul style="list-style-type: none"> • Individual • Community • Population 	<ul style="list-style-type: none"> • Mass media • Social marketing • Giving advice • Capacity-building programmes 	<ul style="list-style-type: none"> • Health professionals • Teachers • Community leaders • Family • Media • Policy makers and planners
To control <ul style="list-style-type: none"> • Protect health • Minimize health-damaging policies, services, goods and situations 	<ul style="list-style-type: none"> • Community • Population 	<ul style="list-style-type: none"> • Legislation and regulation • Penalties and incentives • Fiscal and financial measures 	<ul style="list-style-type: none"> • Government (national and local) • Regulatory authorities • Policy makers • Nongovernmental organizations (NGOs)
To design <ul style="list-style-type: none"> • Use, adapt and/or create physical environments, services and facilities in ways that encourage the adoption and maintenance of healthy behaviours 	<ul style="list-style-type: none"> • Community • Population 	<ul style="list-style-type: none"> • Infrastructure development and modification • Community and individual services 	<ul style="list-style-type: none"> • Government (national and local) • Urban and rural planners • Architects and policy-makers • NGOs
To support <ul style="list-style-type: none"> • Provide practical assistance and tailored services • Create incentives and give positive reinforcement to aid behaviour change 	<ul style="list-style-type: none"> • Individual • Community 	<ul style="list-style-type: none"> • Indirect and direct (internet and telephone) counselling • Personal goal-setting • Behavioural monitoring 	<ul style="list-style-type: none"> • Peers • Friends and social groups • Community and health workers • Community-based organizations and NGOs • Government (national and local)

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