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HEALTH SYSTEMS AND POLICY ANALYSIS

POLICY BRIEF

How can European health systems support investment in and the implementation of population health strategies?

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This policy brief, written for the WHO European Ministerial Conference on Health Systems, 25–27 June 2008, Tallinn, Estonia, is one of the first in what will be a new series to meet the needs of policy-makers and health system managers.

The aim is to develop key messages to support evidence-informed policy-making, and the editors will continue to strengthen the series by working with authors to improve the consideration given to policy options and implementation.

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Key messages

Policy issue and associated policy challenges

- Population health is influenced by a variety of factors, many of which require action outside the health system.
- The health and socioeconomic costs of the key contributors to poor health in Europe are substantial. Many of these health problems are avoidable.
- There is a growing body of information not only on the effectiveness but also on the cost-effectiveness of population health interventions.
- Policy measures to help promote investment in effective interventions need to focus on improving both the quality and use of evidence across multiple sectors.

Policy options

- One option to strengthen the evidence base might be to expand the remit of existing regulatory bodies that assess the cost-effectiveness of health care technologies.
- A second option in parts of Europe where capacity for evaluation is limited might be to adapt existing information to the local context to make the case for investment.
- Various institutional arrangements, including the possibility of a stand-alone ministry for population health, might help to facilitate coordination and secure funding for action; other related options include joint budgets or monetary transfers between sectors.

Facilitating implementation

- When new assessments are conducted, these might begin by focusing on interventions likely to be highly effective, cost-effective and noncontroversial. This can help new institutions to establish their presence and credibility.
- Improving communication between researchers and policy-makers across sectors can help facilitate change; knowledge brokers might provide a link between different groups.
- Increasing awareness of the health, non-health and economic effects of interventions can help to reduce resistance to action outside the health sector. Health impact assessment may have a role to play in this process.
- Mechanisms to monitor the implementation process across sectors might

also help facilitate change; setting explicit measurable targets on population health objectives might provide further incentives for stakeholders across sectors to take action.

Executive summary

Poor health in Europe has substantial health and socioeconomic costs. Much of this burden might be avoided by implementing effective population health strategies, both within and outside the health system. A broad approach to promoting population health requires a combination of upstream and downstream measures. Upstream measures may include measures that, among other goals, can help promote health, such as fiscal redistribution, improving the quality of housing and using incentives to encourage students to stay in school. Downstream measures include health promotion and primary disease prevention action, often targeting individual behaviour and lifestyle.

To support investment in population health strategies, health systems must be able to identify not only what works and at what cost but also in what context. Mechanisms to allow such information to be fed into the policy deliberation process and also to facilitate the implementation of agreed population health strategies are then required.

Generating and using existing evidence on the effectiveness and cost-effectiveness of population health strategies

Using systematic reviews

Systematic reviewing, which seeks to systematically identify and appraise effectiveness (and other evidence) on a given topic, can be particularly useful in assessing whether interventions are effective. Collating and, where feasible, statistically pooling information from studies reduce the probability that one unrepresentative study would bias the results of any effectiveness analysis. Information from existing high-quality reviews can also provide rapid information on the evidence (and evidence gaps) on a particular topic. This may avoid duplicating time-consuming and costly reviews.

Using economic evaluation

Economic evaluation can also strengthen the case for investing in population health interventions. Widely used in the health care, environmental and transport sectors, economic evaluation compares the costs and effects of alternative courses of action.

Evidence on the cost-effectiveness of population health interventions, while modest compared with health care evaluation, has grown rapidly, particularly for screening and vaccinations. Examples of complex cost-effective interventions in specific settings and contexts include targeted exercise programmes for older people, measures for controlling tobacco, drugs and alcohol (including taxation), early-year interventions targeting children and their

parents and traffic-calming and transport safety measures. Many interventions are funded and delivered outside the health system.

Policy options moving forward: strengthening the evidence base

How can countries better use effectiveness and economic evaluation in their deliberations on population health strategies? Institutional and regulatory arrangements might include independent agencies to assess evidence; in-house government agencies; and support for knowledge clearing houses.

Establishing and/or expanding the remit of health technology assessment agencies

One option might be to expand the remit of existing health technology assessment agencies. In England, the National Institute for Health and Clinical Excellence now collates evidence on the effectiveness and cost-effectiveness of public health interventions. Evaluation includes mental and physical well-being interventions delivered in the workplace and school-based alcohol education strategies. It uses a highly formalized process taking up to one year to complete, which includes opportunities for stakeholder input and formal links to the policy-making process. It adopts a broader economic perspective than that used for health care interventions, recognizing effects outside the health care system.

Adapting results from existing economic evaluation

Another approach, especially when resources are limited, may be to adapt information on existing cost-effectiveness studies, such as using the WHO-CHOICE (Choosing Interventions that are Cost Effective) programme. This allows a range of interventions, including those for prevention, treatment and rehabilitation, to be compared in isolation or in combination to determine an optimal mix of resources within a health care system. The results are presented in such a way as to determine the probability of an intervention being cost-effective in low-, medium- and high-resource situations. They can be adapted, using local information, to specific country contexts.

Reforming institutional arrangements

Institutional structures and governance arrangements can also influence the success of the implementation of population health interventions. One possibility, given that funding for population health within health care budgets can be severely limited, would be to establish a dedicated ministry. Very few attempts have been made to set up such institutions. One rare example is the Ministry of Health Promotion in Ontario, Canada, established in June 2005. It is still too early to judge how effective this model will be; the challenge of

coordinating activities with the health ministry might also mean that public health becomes more marginalized from mainstream health care policy.

Other alternatives include establishing specific governance structures for population health within a health ministry, including a ministerial post, partnership arrangement to encourage intersectoral cooperation at both the national and local levels and flexible funding structures, including mandatory or voluntary joint budgets.

Identifying alternative ways of bringing about change

What mechanisms might be available to ensure that population health is on the agenda of policy-makers in all sectors and at all levels, directing them to be aware of the health consequences of their decisions and to accept their responsibilities for health? How can governments provide incentives to administrative bodies to implement national policy on population health?

Giving priority to the low-hanging fruit

In building the evidence base on population health interventions within a country, initially picking low-hanging fruit – interventions likely to be highly effective, cost-effective and noncontroversial – may be prudent. Several health technology assessment agencies have adopted this policy when they are becoming established. This can help organizations to establish their presence and credibility.

Improving the communication between researchers and policy-makers

Researchers and policy-makers often do not speak in a common language and may distrust each other. Knowledge brokers, individuals who understand scientific evidence but are comfortable working in a policy-making environment, may help overcome this problem. They can help translate academic reports into brief messages relevant to policy-makers and help ensure that policy-makers commission feasible research. With appropriate training, staff from international agencies, such as WHO, could potentially act as knowledge brokers.

Improving the awareness of health effects among policy-makers across sectors

Awareness of the health effects of policies developed and implemented outside the health sector may be limited. One way of improving awareness may be through the formalized use of health impact assessment. This has been used in several countries, but the extent to which it has facilitated change remains unclear.

Targets, monitoring and evaluation

Investing in systems to monitor and evaluate implementation and measuring the longer-term effects on population health outcomes can also be helpful. Joint targets across government departments might be set and progress towards achievement monitored. Negative publicity arising from failing to achieve targets may act as a powerful incentive for action.

Policy brief

The case for investing in health promotion and disease prevention strategies in Europe

Developing a systematic approach to investing in population health strategies across Europe in its most simple form raises three key issues. First, it requires assessing key health problems, including their broad socioeconomic consequences. Second, are effective interventions available to reduce poor health? How might they compare to alternative potential uses of scarce resources? What effects will they have on different segments of the population? Are they suitable for a specific country context? Finally, how can evidence be used as part of a policy-making process and for facilitating implementation?

The nature of health problems in Europe

Health has been improving across much of the WHO European Region, with average life expectancy at birth reaching 74.5 years by 2005. This, however, masks significant variation, with life expectancy ranging from just 65.4 years in the Russian Federation to 81.6 in Iceland. In general, health status is poorer in many countries in the central and eastern part of the Region. In 2005, life expectancy in the 15 countries that were European Union (EU) members before May 2004 was 79.7 versus 74.0 in the 12 countries joining the EU later and just 67.0 for countries in the Commonwealth of Independent States (1).

Noncommunicable diseases account for 77% of the total disease burden, with external injuries and poisoning contributing a further 14% and communicable diseases 9% (Table 1) (2). For men and women, respectively, poor health is dominated by cardiovascular diseases (men 22.95%, women 22.82%), neuropsychiatric conditions (men 17.15%, women 22.53%) and cancer (men 11.25%, women 11.63%). Unintentional injuries are also substantial, accounting for 12.95% of the disease burden for men.

Although the European Region as a whole has many problems in common, different parts of the region have different needs. Compared with the more affluent Eur-A countries, the Eur-B and Eur-C countries have much higher rates of injury and communicable disease. Population health strategies may focus on different issues in these contexts: such concerns as self-inflicted injuries and cirrhosis of the liver may be higher priorities.

What are the economic effects of poor health in Europe?

In addition to the profound effect of poor health on individuals and their families, evidence from such studies (albeit largely from western Europe and estimated using a variety of methods) suggests that the attributable

Table 1. Burden of disease in the percentage of disability-adjusted life-years (DALYs) by cause, sex and mortality stratum in the WHO European Region, 2002

	Eur-A			Eur-B			Eur-C			European Region		
	M	F	Both sexes	M	F	Both sexes	M	F	Both sexes	M	F	Both sexes
Total communicable, maternal, perinatal and nutritional conditions	4.40	5.53	4.93	15.34	17.72	16.44	9.24	7.86	8.68	9.14	9.59	9.34
Infectious and parasitic diseases	1.76	1.68	1.72	5.53	5.28	5.41	5.54	2.95	4.49	4.30	3.09	3.77
Respiratory infections	1.32	1.35	1.33	4.05	4.03	4.04	1.79	1.02	1.48	2.18	1.93	2.07
Perinatal conditions	1.00	0.93	0.97	4.42	3.99	4.22	1.04	1.13	1.08	1.85	1.80	1.83
Nutritional deficiencies	0.32	0.89	0.59	1.34	2.29	1.78	0.88	1.66	1.20	0.81	1.54	1.13
Total noncommunicable diseases	85.10	89.5	87.18	69.55	76.57	72.29	62.85	81.24	70.29	71.72	83.05	76.73
Neuropsychiatric conditions	24.18	29.20	26.55	16.41	21.40	18.71	12.25	16.72	14.06	17.15	22.53	19.52
Cardiovascular diseases	18.31	15.71	17.09	22.19	21.10	21.69	26.88	31.08	28.58	22.95	22.82	22.90

Malignant neoplasms	17.19	15.78	16.53	9.02	8.38	8.72	8.02	9.80	8.74	11.25	11.63	11.42
Respiratory diseases	6.65	6.51	6.59	4.15	4.05	4.10	2.87	3.00	2.93	4.41	4.56	4.48
Sense organ diseases	4.29	5.30	4.77	3.48	5.07	4.21	2.58	4.99	3.56	3.35	5.13	4.14
Digestive diseases	4.92	4.38	4.67	5.30	4.73	5.04	4.93	5.25	5.06	5.02	4.80	4.92
Musculoskeletal diseases	3.20	5.42	4.25	3.10	5.09	4.01	1.94	4.95	3.16	2.63	5.16	3.75
Diabetes mellitus	2.00	2.29	2.14	1.31	1.72	1.50	0.56	1.30	0.86	1.21	1.77	1.46
Total injuries	10.50	4.97	7.89	15.1	5.70	10.77	27.91	10.91	21.03	19.14	7.36	13.93
Unintentional injuries	7.67	3.88	5.88	11.52	4.51	8.29	17.74	7.66	13.66	12.95	5.45	9.63
Intentional injuries	2.83	1.09	2.01	3.59	1.19	2.48	10.17	3.25	7.37	6.19	1.92	4.30

Source: *Global burden of disease estimates (2)*.

Eur-A: 27 countries in the WHO European Region with very low mortality among both children and adults.

Eur-B: 17 countries in the WHO European Region with low mortality among both children and adults.

Eur-C: 9 countries in the WHO European Region with low mortality among children and high mortality among adults.

socioeconomic effects of poor health are substantial. The most important cause of poor health, cardiovascular diseases, was estimated to cost more than €168 billion annually in the 25 countries that were EU members in 2005 (EU-25), with health care systems paying more than 60% of the costs (3). Assessments of the economic effects of common risk factors for cardiovascular diseases and other health problems have estimated that illness related to obesity accounts for between 1.5% and 4.6% of total health care expenditure in France (4), 4.6% in the United Kingdom (5) and 1.9% in Sweden (6).

Depression is a major problem in Europe. The costs of unipolar depression in the EU-25 countries are estimated at €118 billion annually, with 64% of costs falling outside the health care system due to high rates of absenteeism and premature retirement from the labour force (7). This estimate may be conservative; studies in the United States of America have estimated that the costs of presenteeism (reduced performance at work) due to depression may be five times greater than the costs of absenteeism (8).

Alcohol disorders, another key cause of poor health in Europe, have been conservatively estimated to cost European economies about 1% of gross domestic product (9). Across the EU-25 countries, even taking account of alcohol's preventive effects, they are estimated to cause 115 000 deaths annually at a cost of €125 billion. Similar to depression, many of these costs fall outside the health care system and are due to lost productivity, crime and violence (10).

Turning to unintentional and intentional injuries, the costs of road traffic accidents are estimated to be about 2% of gross domestic product in Europe. They are the leading cause of hospitalization and death for people younger than 50 years in the EU, costing €180 billion annually (11). Although data are sparse, these costs may be even higher in the eastern part of the European Region because of the higher accident rate. The same might also be said of self-inflicted intentional injuries. Data from western Europe suggest that each completed suicide costs society about €2 million (12).

What are the implications for European policy-makers?

Given these socioeconomic effects, a key question for European policy-makers is the extent to which health systems should help facilitate investment in policies and strategies intended to help reduce the demands for health care through effective health promotion and disease prevention activities.

Good evidence indicates that preventive measures delivered within health care systems, such as vaccinations or statins to tackle cardiovascular diseases, might substantially reduce avoidable mortality (13–15). Nevertheless, it has long been recognized that any strategy to promote population health needs to take a broad perspective involving action within and outside the health system (16).

In addition to biological and genetic characteristics, the socioeconomic environment in which individuals live can substantially affect the risk of premature mortality and avoidable morbidity (17).

A broad approach to promoting population health could involve a combination of upstream and downstream measures. Upstream measures may include measures that, among other goals, can help promote health, such as fiscal redistribution, improving housing and using incentives to encourage students to stay in school. Downstream measures include health promotion and primary disease prevention action, often targeting individual behaviour and lifestyle. Strategies might, for example, include interventions such as diet and lifestyle advice programmes, implementing policies to control tobacco and alcohol, monitoring water and air quality, vaccination campaigns and, for accidents and injury, legislative, regulatory and other safety measures.

Finding the right balance and facilitating change

So what should the balance be between population health interventions and health care treatment? Addressing this question in an evidence-informed manner requires information on both effectiveness and cost-effectiveness. Funding for evaluating population health interventions is limited compared with treatment, where licensing and reimbursement mechanisms often ensure evaluation. Nevertheless, the evidence base to support action, albeit limited, is growing rapidly (18). Moreover, Suhrcke et al. (19) have shown that better health may well entail significant broader economic benefits in Europe. How can the existing evidence base be strengthened and adapted to differing contexts and linked to the policy-making process?

Another issue to consider is what institutional mechanism and funding arrangements might best support evidence-informed investment both within and outside the health system. Funds appropriated for health promotion and public health appear to be modest relative to their potential to alleviate poor health, ranging from less than 1% of health care expenditure in Italy and Denmark to almost 6% in Canada (20). In part, this may reflect the limited protection and low funding priority for population health activities. One challenge is to ensure that funds intended for investment in effective population health interventions do not get diverted to other uses. Another challenge is to overcome financial silos: institutional and attitudinal barriers that limit investment in external sectors.

What steps might be taken to help facilitate implementation? Key to this may be improving the lines of communication between those producing evidence on what works and at what cost and other stakeholders: not only policy-makers in health and other sectors such as finance but also other groups such as

service delivery professionals, the private sector and the general public. This might involve thinking about how to tailor messages to different audiences. Disseminating success stories and using incentives such as targets on population health may also be useful.

Policy options: generating and using existing evidence on the effectiveness and cost-effectiveness of population health strategies

Using systematic reviews

Some have argued that investment in population health strategies is limited because of the limited evidence base: randomized controlled trials cannot always be used to measure effects. We cannot discuss in detail different ways of generating evidence, but ideally many types of evidence, both quantitative and qualitative, can inform the policy-making process.

Experimental studies can help to reduce the chance of bias in specific studies, but the controlled conditions in which these studies are conducted may mean that the results are not easily generalized. Qualitative research, for instance, can help to identify which population health promotion interventions are acceptable to target population groups.

Systematic reviewing, which seeks to systematically identify and appraise effectiveness (and other evidence) on a given topic, can be particularly useful in assessing whether interventions are effective. Collating and, where feasible, statistically pooling information from several studies reduces the probability that one unrepresentative study would bias the results of any effectiveness analysis. Information from existing high-quality reviews can provide policy-makers with a rapid source of evidence (and evidence gaps) for a particular topic. This may reduce the need for time-consuming and costly additional reviews and, where required, limit the scope of any new review, for example, to the time period after existing reviews.

High-quality reviews are available from several sources, most notably the Cochrane (health) and Campbell (education, social welfare and crime) Collaborations, the United States Preventive Services Task Force sponsored by the United States Agency for Healthcare Research and Quality, and the Task Force on Community Preventive Services sponsored by the United States Centers for Disease Control and Prevention (21). The Cochrane Public Health Collaborative Group is being established. Unlike existing Cochrane reviews, which focus mainly on interventions targeted at individuals, this group will focus on “systematic reviews of interventions and programmes, which seek to address upstream determinants of health, targeted to whole populations or particular target groups” (22).

Policy-makers could specify that information on the findings of existing reviews be assessed before agreeing to fund any evidence synthesis. If new studies are required, well-accepted guidelines on design are available to help commissioners (23). Policy-makers might then focus their attention on considering whether interventions identified through review need to be adapted to be implemented in their specific country contexts.

Making use of economic evaluation

Another reason for the modest investment in public health and health-promoting interventions to date may be the lack of information on the cost-effectiveness of interventions (24). Although these potential health (and non-health) benefits may be substantial, economic evaluation can still strengthen the case for investing in population health interventions.

Any decision to invest in population health interventions needs to consider the human and infrastructure costs associated with delivery. For instance, is preventing health problems rather than simply treating the smaller group of individuals who become ill really more cost-effective? Are there also potential gains from reducing or delaying the need for consuming future health care resources and from reducing the external costs to economies resulting from absenteeism and health-related early retirement from the labour force? What additional non-health-related benefits, such as improving community cohesion and educational performance and reducing crime, might be realized (25)?

Systematically using economic evaluation can be one aid to setting priorities both within and outside health systems. Widely used in the health care, environmental and transport sectors, economic evaluation can be considered “the comparative analysis of alternative course of action in terms of both their costs and consequences” (26–28). It acknowledges that scarcity is an endemic feature of all societies and implies that investment in one specific public project will mean a lost opportunity to use these resources for another purpose. Even in the absence of long-term effectiveness data, economic evaluation can use modelling techniques to assess the long-term costs and effects and/or identify the level of effectiveness a strategy would have to achieve to be considered cost-effective.

If a new intervention is both less costly and more effective than the existing situation, then the decision is usually straightforward – invest in the new intervention. If an intervention is both more effective and more costly, then policy-makers must make a value judgement as to whether it is worthwhile. The resources and infrastructure available influence this: what may be deemed cost-effective in Ireland or France may not be in Tajikistan or Georgia.

Economic evaluation should not be used in isolation. Policy-makers need to

consider other factors. Investment in the most cost-effective intervention might conflict with other policy goals, such as reducing inequality in health or non-health outcomes between social groups. Other inputs into deliberation might include the need to ensure fair access to services and support, the effects on the local economy of a population health measure, such as the effects of banning smoking on pubs and restaurants, or local political concerns.

Approaches to economic evaluation

Although existing methods of economic evaluation of population health interventions are helpful in strengthening the case for investment, applying them presents practical and methodological challenges (29,30). Guidelines from health technology assessment bodies tend to recommend the use of cost-utility analysis, where outcomes are measured in utility: that is, an individual's preference for a specific level of health status or a specific health outcome, such as the quality-adjusted life-year. This approach allows comparisons on investment decisions within the health system but does not capture the potential substantial non-health effects of population health interventions.

Alternative approaches are available, but all have limitations. In England, public health guidance developed by the National Institute for Health and Clinical Excellence allows the use of cost-consequences analysis as an addendum to cost-utility analysis. This approach can present a range of natural health and non-health outcomes, such as heart attacks avoided or a reduction in crime rates. It is then up to policy-makers to assess which outcome (if any) may be most important.

Although useful, this approach cannot easily deal with situations in which health outcomes might only be modest but non-health effects elsewhere might be more positive. For example, providing breakfast at school free of charge may only lead to a modest improvement in nutritional intake but may generate additional effects on social and educational development (31,32).

Cost-benefit analysis may be a solution. Widely used in transport and environmental appraisal, it measures both costs and benefits in monetary terms, allowing investment in health to be compared with investment in other sectors such as education. The value of non-health as well as health gains can therefore be measured using the same terms, greatly aiding decision-making. A positive net benefit would merit investment.

The challenges of eliciting accurate monetary values for outcomes and negative public perceptions of valuing health in monetary terms have limited the use of cost-benefit analysis. Public health guidance from the National Institute for Health and Clinical Excellence, however, enables a broader perspective on costs than the conventional consideration of costs to the health and social care

system. It can, for instance, examine the effects of workplace health promotion programmes on absenteeism and productivity levels.

What is known about the economic case for investment in population health strategies?

Although the results of economic evaluation need to be interpreted carefully, is the evidence base actually limited as has been claimed? Although it is modest compared with that for health care interventions, it has grown rapidly. Several sources of information can now provide relevant information on cost-effectiveness. These include traditional economic evaluation databases, such as the freely available National Health Service (NHS) Economic Evaluation Database in the United Kingdom and WHO-CHOICE.

The literature has been reviewed several times (33,34). One review (18) identified more than 1700 evaluations, most in the past 10 years. More than 60% were vaccination and screening interventions that could largely be delivered within health care systems. This may reflect the relative ease in quantifying resource use, cost and short-term outcomes in terms of true positive cases detected or successful immunization conducted. In the longer term, modelling has also been used to assess their lifetime benefits. Although vaccinations tend to be cost-effective in broad terms, many evaluations are still conservative, not taking account of the benefits of herd immunity or the value of reduced anxiety from having a lower risk of contracting a disease (35). This is particularly important given the increase in the cost of new-generation vaccines compared with traditional low-cost vaccines.

More complex interventions have been evaluated less frequently. Examples of cost-effective interventions in specific settings and contexts include targeted physical activity programmes for older people, measures to control tobacco, drugs and alcohol and financial incentives and educational measures to promote nutritional change. One review of measures for cardiovascular diseases (36) indicated a substantive body of evidence on clinical preventive measures, primarily lipid-lowering drugs, but much less in the way of more upstream health-promoting interventions. Another review on promoting mental well-being and preventing mental health problems found the most compelling evidence to lie with early-year interventions targeting children and their parents, some measures aimed at primary prevention of depression and suicide prevention strategies (37).

A consistent theme in all of these evaluations is that many interventions are funded and delivered outside the health system. This is particularly true for interventions to reduce accidents and injuries, many of which are highly cost-effective. For example, in New Zealand, which has many road traffic crashes, enforcement measures delivered by the police and transport sector-funded

advertising campaigns against drink-driving, speeding and mandatory use of seat-belts all appear to be highly cost-effective in reducing the number and severity of crashes (38).

Assessments of workplace-based health promotion programmes, particularly in the United States, where many employers pay for the health care costs of their employees, are also common (39). Schemes shown to be cost-effective include physical exercise programmes, lifestyle advice, workplace health screening programmes and enhanced care management for people identified as having depression or stress problems (40).

Policy options moving forward: strengthening the evidence base and examining institutional arrangements

These reviews indicate that an economic case can be made for investment in many population health interventions across settings. Investing additional resources may improve the quality of life much more than many health care interventions. Moreover, there are often substantial benefits outside the health sector. The rapid expansion of the evidence base in recent years and the growing interest of policy-makers reflect the importance of the economic case for public health, including health promotion. How can countries use more economic evaluation in their deliberations on population health strategies? Institutional and regulatory arrangements might include independent agencies to assess evidence, in-house government agencies and support for knowledge clearing houses.

Establishing and/or expanding the remit of health technology assessment agencies

One of these potential options might be to expand the remit of existing institutional mechanisms to assess the costs and effectiveness of health technologies. So far these have focused on drugs, medical technologies and surgical techniques. This situation is beginning to change, most evident being the experience of the National Institute for Health and Clinical Excellence in England¹(41).

Operating as an independent authority, the National Institute for Health and Clinical Excellence originally focused solely on interventions within the health care system but, since 2005, has expanded its remit to collate evidence on the effectiveness and cost-effectiveness, including optimum delivery methods, of public health interventions. This includes interventions delivered and funded

¹ Although the remit of the National Institute for Health and Clinical Excellence for health technologies covers England and Wales, public health guidance only applies to England.

outside the health system; evaluations include assessments of mental and physical well-being interventions delivered in the workplace and school-based alcohol education strategies.

A highly formalized process taking 9–12 months has been developed with two types of public health-related guidance issued (Box 1). Public health intervention guidance focuses on local clearly circumscribed actions that aim to reduce the risk of developing a disease or condition or help in promoting or maintaining a healthy lifestyle. Interventions are normally led by public health professionals and target specific populations, communities or individuals, such as advice on exercise given in primary care settings. A second type of guidance relates to public health programmes. These are often a multi-agency and multifaceted package of policies, services and interventions. They involve a suite of activities that may be topic-, setting- or population-based and may involve changes to organizational infrastructure. Topics covered include smoking cessation in the workplace and community engagement and community development to promote health.

Box 1. Independent assessment agency: the role of the National Institute for Health and Clinical Excellence in public health

The National Institute for Health and Clinical Excellence produces guidance on promoting health and preventing ill health for people working in the NHS, local authorities and the wider public and voluntary sector. Guidance covers specific interventions and broader programmes and may be reviewed and updated (usually after three years).

Stakeholder views and experiences are actively sought throughout the development process to ensure that recommendations in guidance are realistic and appropriate. Recommendations may be made at the population, community, organizational, group, family or individual level. They can cover both downstream issues (such as lifestyles) and upstream issues concerned with the wider determinants of health (such as housing and the environment).

Reviews of evidence on effectiveness and cost-effectiveness are commissioned and assessed according to well-defined criteria and then graded. Various types of evidence, both qualitative and quantitative, are considered.

For interventions, an expert Public Health Interventions Advisory Committee considers evidence; draft recommendations are then made; field testing is undertaken and guidance developed including amended recommendations; and the guidance is then published on the National Institute for Health and Clinical Excellence web site.

For programme development guidance, a committee meets five or six times over nine months to review effectiveness and economic evidence. Draft recommendations are then subject to stakeholder consultation and field-tested with barriers and facilitators to implementation identified. Recommendations are then amended, and the guidance is finally published on the web site.

Limitations remain in this process. Although a broader economic perspective is used, evidence from economic evaluation that uses cost–benefit analysis may still not be incorporated into economic models built as part of the evaluation.

Even the recommendations of the National Institute for Health and Clinical Excellence are not always implemented despite the clear links to the policy-making process. It is too early to judge the impact of this public health programme, but some insight can be obtained from the experience of the health technology and clinical practice guidelines of the National Institute for Health and Clinical Excellence. Even though such guidance is mandatory for the NHS, only about half of NHS local commissioners were adhering to this (42).

For public health assessment, many of the recommendations are aimed at stakeholders outside the health system who have no obligation to follow the guidance. Although such stakeholders are involved in the consultation process, further ongoing communication to help facilitate implementation is required.

A final limitation is that the system developed by the National Institute for Health and Clinical Excellence is not feasible in all European settings. Not only does it require an annual budget (for all activities) of £35 million per year to commission reviews, but it also relies on the goodwill of unpaid technical experts and other stakeholders to provide input to the appraisal process. The United Kingdom is fortunate to have significant capacity to undertake systematic reviews, develop models of cost-effectiveness and set up technical oversight committees. Where such capacity is limited, alternative institutional models may be required.

Adapting results from existing evidence on economic evaluation: the case of WHO-CHOICE

One alternative may be to try and adapt the results of specific evaluations from the National Institute for Health and Clinical Excellence and health technology assessment bodies to other countries and settings. However, such generalizations are not always easy, particularly for public health interventions and given that the resources and institutional capacity within countries vary tremendously. Although tools and guidance are nevertheless being developed for this purpose, none has focused on the highly context-specific nature of many health-promoting interventions (43).

A pragmatic approach may be to adapt the information on cost-effectiveness reported as part of the WHO-CHOICE programme. This has the advantage, compared with more narrow evaluations conducted by the National Institute for Health and Clinical Excellence and other health technology assessment bodies, of adopting a sectoral approach to economic evaluation: “that all alternative uses of resources are evaluated in a single exercise, with an explicit resource

constraint" (44). This allows a range of interventions, including those for disease prevention, treatment and rehabilitation, to be compared in isolation or in combination to determine an optimal mix of resources within a health care system. They are compared with both the situation in which nothing is currently done and with current practice. The results presented project the probability of an intervention being cost-effective in low-, medium- or high-resource situations and can be adapted to consider scaling up existing resources.

WHO-CHOICE has built a database of information on the cost-effectiveness of interventions for several years to tackle some of the leading aspects of the global burden of disease. This has been combined with a model designed to estimate the effects of a disease and/or interventions on different populations. Further, the resource data needed to implement interventions are collected using a standardized tool. The results are presented for WHO subregions, but they can be adapted to specific country contexts, such as interventions for alcohol- and tobacco-related problems in Estonia (Box 2).

Box 2. Using generalized cost-effectiveness analysis to assess the case for investing in alcohol and tobacco control policies in Estonia

The objective of the analysis was to assess the population-level costs, effects and cost-effectiveness of various alcohol and tobacco control strategies in Estonia. Local data on health behaviour and the prevalence of health risks were taken from a major postal survey in Estonia, mortality data were obtained from Statistics Estonia and morbidity data from a review of scientific literature.

Local data on the costs of delivering interventions were calculated. Interventions for alcohol included excise taxes; reduced access to retail outlets; a comprehensive advertising ban; roadside breath-testing; and brief interventions involving counselling by a primary care doctor. Interventions for tobacco included excise taxes; a comprehensive advertising ban; controls on smoking in public indoor locations; and nicotine replacement therapy.

A local group of experts discussed and contextualized interventions to Estonia's situation.

The annual costs of implementing legislative and fiscal measures were much lower than brief therapy and nicotine replacement therapy. Increased excise taxes were most cost-effective: €49 and €14 per DALY averted for alcohol and tobacco consumption respectively. The incremental costs per DALY averted by advertising bans were €85 and €19, respectively. The incremental costs per DALY averted of a comprehensive combination of interventions for alcohol and tobacco control were €457 and €238, respectively.

Data from the WHO Commission on Macroeconomics and Health suggest that all interventions with cost per DALY averted of less than EEK 90 454 (€5780) are cost-effective in Estonia.

Source: Lai et al. (45).

Reforming institutional arrangements to help facilitate the implementation of cost-effective population health strategies

Successful implementation of population health interventions can also be influenced by the institutional structures and governance arrangements in countries. Questions that might be considered include the extent to which the health system should be responsible for directly providing population health services or how might it collaborate with other sectors to support investment in such areas as transport, employment and education.

Dedicated ministry for population health

Since funding for health promotion and public health within health care budgets can be severely limited, one policy option to guarantee funding would be to establish a dedicated ministry entirely distinct from the health ministry. There have been very few attempts to set up such an institution. One rare example is the Ministry of Health Promotion in Ontario, Canada, created in June 2005 (Box 3). This is entirely separate from the provincial Ministry of Health, although this retains responsibility for many more medically oriented public health functions such as vaccination.

It is still too early to judge how effective this model will be in facilitating investment in effective population health strategies, including success in developing partnerships and collaborating across sectors. Whether it can also help to direct funds to more upstream population-wide measures to tackle some of the socioeconomic risk factors for poor health is also difficult to judge,

Box 3. The Ministry of Health Promotion in Ontario, Canada

The remit of the Ministry of Health Promotion is to develop comprehensive strategies that include chronic disease prevention, physical activity, participation in sports, injury prevention and mental wellness in an integrated approach to overall good health. It recognizes that complex factors such as education, housing, employment and the environment all influence health and that a partnership approach involving these and other stakeholders, both in the public and private sectors, is required. Total expenditure by the Ministry in 2007/2008 was estimated to be CAN\$ 380 million (€235 million) or almost CAN\$ 30 (€18.50) per capita.

Key priorities include: implementing a province-wide smoke-free strategy; promoting well-being by encouraging participation in sport and physical activities; coordinating initiatives to prevent illness and injury; and improved health outcomes by supporting the public health system (46). As part of this final priority, the Ministry finances 75% of four mandatory health programmes (25% municipal co-financing): chronic disease prevention; children's health; reproductive health; and injury prevention (including substance abuse prevention).

as the initial priority areas of the Ministry of Health Promotion appear to focus largely on interventions to influence individual behaviour.

One risk may be the challenge of coordinating activities with the Ministry of Health; public health might become more marginalized from mainstream health care policy. Arguing for increased allocation of funds may also be more difficult; earmarking might set the funding below the level that might optimally benefit population health. Careful assessment of population health needs might help ensure that funding is commensurate with population health priorities.

Alternative institutional structures

One more modest alternative may be to ensure that a health ministry has specific governance structures for population health. This might include a junior ministerial post for public health, such as in Ireland and Sweden, and Scotland has a Minister for Health and Wellbeing.

Another option might be a cross-department mechanism to coordinate activities, perhaps coordinated by the finance ministry or the office of the prime minister or president. In Denmark, for example, the Ministry of the Interior and Health and 10 other ministries were involved in developing the national public health policy for 2002–2010 (47,48).

Partnership arrangements between sectors can also be facilitated at the local area level. Many interventions or policies may be intrinsically area based (such as ensuring equitable access to good quality education, housing and public transport). Area-based partnerships may be attractive because they allow for local involvement and ownership, which in turn can help facilitate cooperation and implementation. Examples of cooperation across sectors can be found in several countries, such as between local primary care trusts and local municipal authorities in England.

Promoting flexible funding

Another key challenge is overcoming budgetary barriers in making the case for investment in population health interventions. Allocative efficiency, how available resources are distributed to best meet the health needs of the population, will be affected if coordination and collaboration are poor or moving funds between the health and non-health sectors is difficult. Many population health interventions that generate substantial health gains are delivered outside the health sector. For instance, increasingly robust evidence indicates that interventions targeting children both in the first years of life and at school can be highly effective in reducing the risk of poor physical and mental health in later life (37). In some countries, one challenge may be to persuade the education ministry to invest in school-based health promotion interventions that appear to solely benefit the health sector.

How might public policy-makers overcome these barriers? Mechanisms that promote flexible funding may help create incentives for sectors to implement population health strategies. One approach may be using mandatory or voluntary joint budgets between health and non-health sectors for some services, such as school-based health promotion services. Evaluation of experience with pooled budgets for population health-specific services remains limited, but examples of joint budgeting in other areas can be identified (Box 4).

Box 4. Joint budgeting across sectors in Sweden

In Sweden, experiments in pooling funds between health, social services and sickness insurance budgets have been developing since the mid-1990s. These arrangements were set up in response to the growing problem of long-term absence from the labour market because of workplace-induced health problems. They recognized that several service providers would need to provide the mix of services to get individuals back into employment and that these individuals risked falling through the cracks between different services and budget holders (49).

Under the 1994 SOCSAM scheme, which involved collaboration with social services, up to 5% of the budgets for social services and sickness insurance could be pooled with a matching contribution from health services to help reintegrate individuals into employment. A national evaluation suggested that this joint budgeting arrangement helped to improve interdisciplinary coordination and collaboration. It also allowed co-location of personnel from different sectors and joint political steering of the initiative, which in turn helped overcome the reluctance of sectors to invest in initiatives when the impact is likely to be felt elsewhere (50). Following evaluation, permanent legislation came into force in 2004.

An alternative to joint budgeting might be a mechanism for the intersectoral transfer of funds to compensate a sector that does not directly benefit from the intervention but would be responsible for delivery. Using this approach as long as there is an overall net benefit, whether in the health or non-health sectors, monetary compensation could be used to facilitate investment (51). To date, such an approach has not been used in practice; the success of any mechanism in determining the level of financial compensation required remains to be seen.

Determining the health and non-health benefits of interventions might also be helpful. Where information can be conveyed illustrating benefits to both health and other sectors, compensation may not be needed. For example, a reduction in child obesity might be linked to a demonstrable improvement in classroom concentration or educational attainment from a school-based health intervention. Emphasizing these multiple benefits might help persuade other funders to invest in preventive measures to help minimize future avoidable costs

they might have to bear. For instance, some European private health insurance companies now fund employee assistance programmes to promote workplace health (52).

Identifying alternative ways of bringing about change

Another key issue is the implementation process. What mechanisms are available to ensure that population health is indeed “on the agenda of policy-makers in all sectors and at all levels, directing them to be aware of the health consequences of their decisions and to accept their responsibilities for health” (16)? How can governments provide incentives to administrative bodies to implement national policy on population health?

Giving priority to the low-hanging fruit

Beginning by picking low-hanging fruit may be prudent in building up the evidence base on population health interventions. This means interventions likely to be highly effective, cost-effective and noncontroversial. Several health technology assessment agencies adopted this policy when they were becoming established. This can help organizations to establish their presence and credibility. They can begin to build up relationships with a range of stakeholders while providing strong evidence on topics on which agreement is broad that action would be beneficial. The National Institute for Health and Clinical Excellence, when producing its first guidance on public health interventions, chose to look at smoking-cessation interventions for which the evidence and the case for intervention were strong.

Improving communication between researchers and policy-makers

Another issue is how to improve communication between researchers and policy-makers (53). This is not simply a matter of ensuring that the latest evidence reaches policy-makers. Passively disseminating guidelines and information on population health interventions is insufficient to facilitate change. It requires multiple and ongoing exchange between different stakeholders. Moreover, messages need to be actionable and tailored in language accessible to different target audiences. Change can take time; rarely will knowledge lead to immediate change. Typically, stakeholders gradually become more aware and amenable to new ideas.

Unfortunately, researchers and policy-makers often do not speak a common language. Moreover, these two communities may have a mutual sense of distrust (54). One way to overcome this problem may be through involving knowledge brokers: individuals who understand scientific evidence but are comfortable working in a policy-making environment (55). They can help to

translate academic reports into brief messages relevant to policy and help to ensure that policy-makers commission feasible research. Evaluation remains limited (56), although examples of policy change can be identified, again illustrating that the pace of change can be slow due to the need for iterative dialogue (57).

With appropriate training, staff from international agencies, such as WHO, could potentially act as effective knowledge brokers. For instance, the European Observatory on Health Systems and Policies might also play a role, providing a vehicle to bring senior policy-makers and researchers together to debate issues through a process of policy dialogue and to provide advice and support on implementation at the local level. Other international networks, perhaps including the European Network for Health Technology Assessment if sustained, might in future expand their remit to commission, undertake and share systematic reviews of the effectiveness and cost-effectiveness of various strategies to meet the needs of countries where capacity is limited.

Targeting messages to policy-makers across a range of sectors

Awareness of the health consequences of policies developed and implemented outside the health sector may be limited. Surveys of civil servants in Canada and New Zealand indicate a desire for practical information on effective population health interventions (58,59). The civil servants lacked knowledge despite the publication of major policy documents on the socioeconomic determinants of ill health and promoting population health.

Civil servants working in finance were much less likely to be swayed by the health effects of policies than by their economic effects. Conversely, civil servants in health and other sectors did not appreciate the importance of examining the economic effects of policies. Highlighting macroeconomic benefits can provide potential opportunities to support investment across sectors in population health strategies.

Another way of improving awareness may be formalizing the use of health impact assessment of policy interventions across sectors. For instance, civil servants might be required to consider the health effects of a new airport runway, traffic-calming measures or economic regeneration. Equally, policy-makers developing population health policies might prudently assess the key non-health effects of these policies.

Health impact assessment has been used in several high-income European countries, mainly at the local level. Nevertheless, the extent to which it has facilitated policy change remains unclear. One review of the effectiveness of health impact assessment (60) suggests that a barrier to success may be that health impact assessment proponents lack understanding of non-health sector

issues, and a key factor for success may be ensuring good links with decision-makers, institutionalizing the health impact assessment process with decision-making organizations, given the absence of a commonly agreed standard for health impact assessment.

Targets, monitoring and evaluation

Investing in systems to monitor and evaluate implementation and measuring the longer-term impact on population health outcomes can also be helpful. The explicit use of benchmarks or targets related to population health is one approach. Joint targets across government departments might be set and progress towards achievement monitored. Negative publicity from failing to achieve targets may serve as a powerful incentive for action.

In England, for instance, the Ministry of Finance conducted a cross-cutting review on inequality in health involving 18 government departments and agencies. This led to a national programme for action that included 12 headline indicators and 82 commitments across departments to tackle inequality in health and promote good health (61) (Box 5).

Evaluation of the impact of targets remains limited. They are only likely to make a difference if they are concrete enough to be measured and realistic enough to

Box 5. Interdepartmental headline indicators to tackle inequality in health in England

Death rates from the big killers – cancer and heart disease
 Rate of conception among people younger than 18 years
 Road crash casualty rates in disadvantaged communities
 Numbers of primary care professionals
 Uptake of influenza vaccination
 Smoking among people performing manual work and among pregnant women
 Educational attainment
 Consumption of fruit and vegetables
 Proportion in non-decent housing
 Physical education and school sport
 Children in poverty
 Homeless families living in temporary accommodation

be achieved within a specific time frame (62). The use of targets in Europe thus far appears to have been aspirational or to stimulate debate rather than to ensure implementation of population health policy (48).

In Sweden, when 11 public health objectives focusing on the determinants of health were published in 2003, they were not explicit enough to be measured; moreover, no time frame was set for achieving them (63). The need for intersectoral action might have made it politically difficult to achieve consensus on more specific targets. Thirty-eight detailed indicators subsequently developed by the Swedish National Institute of Public Health, the body charged with monitoring progress towards achieving the objectives, may help address this issue.

Summary

The health and socioeconomic costs of the disease burden in Europe are substantial. Much of this burden might be avoided by implementing effective population health strategies. Moreover, a growing body of information suggests that many of these interventions would be considered highly cost-effective in many jurisdictions. Nevertheless, investment in population health strategies appears modest.

Health promotion strategies should include upstream actions that target risk factors for poor health; most of these actions are likely to be funded and delivered outside the health care system. It is important to make better use of existing systematic reviews of evidence and to invest resources to build on this, in particular by looking at how to improve what is known about the effects of upstream interventions. Economic evaluation, comparing the health and non-health gains of interventions with the resources needed to deliver them, can help strengthen the case for investment.

One way of strengthening the evidence base may be to expand the remit of existing bodies carrying out health technology assessment. This approach will not be feasible in all settings and highly depends on local research capacity. Alternative approaches may include working with international partners to adapt the results of existing evaluations to specific country contexts.

Various governance arrangements might help to ensure that resources are allocated to population health and that actions are coordinated across sectors. Options include a stand-alone ministry for population health, interdepartmental working bodies and mechanisms to allow partnership working and joint budgeting.

Investing in measures to strengthen the evidence base on effective and cost-effective measures for population health alone is unlikely to lead to change.

Measures to improve effective implementation include improved communication between researchers and policy-makers and awareness-raising measures on the health effects of all policies. Tools such as health impact assessment might have a role to play. Mechanisms to monitor implementation across sectors might help to facilitate change; explicit measurable targets across sectors on population health objectives would provide additional incentives for action.

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