Strengthening public health capacities and services in Europe: a framework for action

This Framework for Action is submitted to the Regional Committee for guidance as part of the process of developing a European action plan to strengthen public health capacities and services in all Member States. That action plan will accompany the new European health policy, Health 2020; both will be submitted to the Regional Committee at its sixty-first session for discussion and at its sixty-second session for approval. This Framework for Action was developed through a process of external and internal consultation initiated by the Regional Director, and it was finalized taking account of feedback received from the European High-level Policy Forum at its meeting in Andorra and the Standing Committee of the Regional Committee at its two sessions in March and May 2011.

This paper outlines some of the major challenges facing health policies and systems in the WHO European Region, including consideration of public health services and infrastructures, as well as of the public health aspects of health care services. In view of the differences in the ways that European health systems and public health services are organized, operated and governed, the paper proposes a clear statement concerning public health and health systems, including definitions, boundaries and concepts. The paper puts forward a set of ten horizontal "essential public health operations" (EPHOs), describing the core public health services within each of them, and proposes that they should become the unifying and guiding basis for any European health authority to set up, monitor and evaluate policies, strategies and actions for reform and improvement of public health. It then highlights a framework of eight major "avenues" that the WHO Regional Office for Europe intends to follow in order to strengthen public health capacities and services and to secure delivery of the ten EPHOs in an equitable way across the whole Region. The paper concludes by proposing specific actions and measures to move towards attainment of the objectives set.

An annex gives further details of the proposed EHPOs, which were drawn up by the Regional Office's Public Health Services Expert Group and have been piloted by 17 Member States since 2007.

A draft resolution is attached, for consideration by the Regional Committee.

Contents

Mandate

1.   At its sixtieth session in Moscow in September 2010, the WHO Regional Committee for Europe adopted resolution EUR/RC60/R5 on "Addressing key public health and health policy challenges in Europe: moving forwards in the quest for better health in the WHO European Region" *(1)*. In doing so, the Regional Committee endorsed the WHO Regional Director for Europe's proposal to formulate a new European policy for health, known as Health 2020.

2.   The resolution sought to strengthen public health capacity and services and to review the effectiveness of available public health instruments for addressing key public health and health policy challenges in Europe. It also requested that the Regional Director renew the focus on public health capacity, function and services, and to make a real commitment to and investment in disease prevention and health promotion.

3.   The present Framework for Action for strengthening public health capacities and services in Europe accompanies Health 2020 and is being submitted to the Regional Committee in preliminary form at its sixty-first session (RC61) in September 2011 and in a consolidated form to RC62 in September 2012. The background to this Framework was described in a concept note submitted to the Eighteenth Standing Committee of the Regional Committee (SCRC) at its second session in November 2010 *(2)*.

4.   The Framework represents a unique opportunity for Member States to review their existing public health capacities and services and to define country-specific policies to strengthen them; this process will form the basis for developing a much stronger public health function in Europe. The Regional Office will encourage and assist all Member States in the Region to make strengthening public health services a high priority.

Scope and purpose

5.   The monitoring and evaluation of public health capacities and services can inform policy-making, resource allocation and strategic development for promoting health. However, a common understanding of what constitutes public health and public health services is lacking; skills and infrastructure across the European Region are patchy; and in many Member States the capacity to meet contemporary public health challenges remains limited. In some countries, public health development has been held back by lack of political commitment.

6.   A key element in bolstering public health is to integrate its principles and services more systematically into all parts of society through strengthening of health systems, increased whole-of-government and intersectoral approaches, and Health in All Policies *(3)*.

7.   Public health leaders *(4)* must initiate and inform health policy debate at political, professional and public levels, in order to advocate for policies and action to improve health. This will draw on a comprehensive assessment of health needs and capacity for health gain across society. It will require analysing broader strategies for health, creating innovative networks for action across many different actors, and acting as catalysts for change.

8.   If public health is to be at the centre of health improvement, then its operations, capacities and services must be strengthened: investing in public health services is an investment in the long-term health and well-being of the population as a whole, which is both of intrinsic value and a contributing factor to economic productivity and wealth creation.

9.   Strengthening public health requires a clear definition of public health and of its roles, boundaries and interrelationships with other sectors. It is also important that essential public health operations (EPHOs) (Annex 2) are agreed and used as a basis for measuring performance and for influencing the spectrum of policy-making.

10.   The purpose of this Framework is to put public health firmly on the political agenda of ministries of health, and other sectors as necessary, promote the integration of EPHOs and foster effective public health leadership.

Challenges

11.   Major challenges facing the European Region arise from health inequalities both within and between countries; demographic changes, including an ageing population and migration; and the predominance of noncommunicable diseases. Determinants of health and health inequalities are multiple and interrelated, spanning political, social and economic circumstances, environmental factors, behaviour, and the capacity and efficiency of health systems. There is an ethical imperative to act on inequalities in the distribution of power, influence, goods and services, as well as in living and working conditions and access to good quality services.

12.   These challenges are occurring in an extremely dynamic social and political context and are exacerbated by the current economic crisis, in which the most vulnerable must be protected *(5,6)*. Public health services are vital for meeting these challenges, but investment has been insufficient *(7,8,9,10)*.

13.   Gaps in immunization coverage have led to recent outbreaks of poliomyelitis and measles in the European Region. This highlights the urgency of strengthening core public health capacity and services and of ensuring the financial resources to respond to future outbreaks *(11)*.

14.   Disease prevention and health promotion are particularly important elements of public health, but a combination of previous lack of investment in prevention and recent reforms and changes, including the decentralization and privatization of health care services, has meant that some countries lack the relevant infrastructure and services. Developing primary health care provides a key route for the effective delivery of preventive services.

15.   The share of health expenditure allocated to public health programmes remains relatively small. Available data, which comes mainly from western European countries, show that on average 2.9% of health spending is allocated to public health *(12)*. However, many of the determinants of health are amenable to cost-effective interventions across health and other sectors.

16.   A framework for action to protect and promote population health inevitably reaches far beyond effective delivery of the public health function in any single state. It involves states working together to address problems arising from globalization, the impact of global finance, and the challenges associated with global communication strategies. Public health goes beyond the boundaries of the health sector, encompassing a wide range of stakeholders throughout society.

Guiding principles: definitions of public health, health systems, primary care and governance

17.   The parameters of a framework for action are shaped by concepts of public health, by the interrelationships between public health and health systems, and by approaches to public health governance. There should be clarity and consistency across the European Region in relation to key concepts such as equity, transparency, accountability, governance and stewardship.

Definition of public health

18.   Definitions are varied: they may be framed by the public health function and activities related to a public health workforce; they may be normative or descriptive; and they may incorporate wider social and economic factors that influence population health and health inequalities. From a pragmatic perspective, a general definition is required that may be used as a basis for describing in more detail the core activities of the public health function, but which is also sufficiently flexible to allow for debate on broader interpretations of what is involved in improving the health of the population in a given context and at a particular time.

19.   The definition of public health originally put forward by Winslow in 1920 *(13)*, and adapted by Acheson in 1988 *(14)*, has been widely accepted and is proposed for adoption here (see Annex 1 for further details):

> Public health is the science and art of preventing disease, prolonging life and promoting health through the organized efforts of society.

20.   This definition recognizes that public health combines both knowledge and organized action based on best available evidence. It does not limit debate over the boundaries of public health activity, the role of health systems and of ministries of health in health improvement, or the responsibility of public health in addressing current and emerging threats to health and equity.

Definition of a health system

21.   It is proposed that the definition of a health system, adopted in the Tallinn Charter in 2008 *(15)* is retained.

> Within the political and institutional framework of each country, a health system is the ensemble of all public and private organizations, institutions and resources mandated to improve or restore health. Health systems encompass both personal and population services, as well as activities to influence the policies and actions of other sectors to address the social, environmental and economic determinants of health.

22.   As defined by Acheson, public health is a function of the whole of society, to be achieved through society's "organized efforts". While the public may identify health systems with health care systems, a health system can be conceptualized as a key channel for the organized efforts of society in terms of public health and health improvement. The governance function orchestrates and aligns the numerous efforts from the different sectors of society in order to maximize health gain (see Annex 1).

23.   The health system (led by the Ministry of Health) is central to public health leadership and services. Thus, public health is also about health systems, and reciprocally, health systems can only be effective if they include a strong public health services component.

24.　　Primary health care is a fundamental part of the health care system, which should work hand in hand with public health services in pursuit of health gain. The Declaration of Alma-Ata (1978) *(16)* defines primary health care as

> … essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally acceptable to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination. It forms an integral part both of the country's health system, of which it is the central function and main focus, and of the overall social and economic development of the community. It is the first level of contact of individuals, the family and community with the national health system, bringing health care as close as possible to where people live and work, and constitutes the first element of a continuing health care process.
>
> Primary health care addresses the main health problems in the community, providing promotive, preventive, curative and rehabilitative services accordingly.

25.　　Primary health care is one of the main routes for integrating public health and preventive services into the health care system and for linking with the wider health system.

26.　　Barriers between traditional health care services and public health activities should be broken down, primary and secondary prevention functions in both primary and specialized health care clarified, and information systems for appropriate health surveillance improved.

Public health governance

27.　　Commitment to human rights, social equity and social justice are key principles of governance and of public health governance. New approaches to health governance are required to ensure a better understanding of the complex interplay between the various determinants of health, in particular the role of economic and social factors and ways in which resources and influence are distributed across society.

28.　　A key role is fostering intersectoral and "joined up" approaches, assessing the impact on health and on health inequalities of a range of policies outside the health sector, as reflected in Health in All Policies, and ensuring effective governance arrangements and resources for core preventive activities.

29.　　Many of the most pressing policy challenges affecting public health involve addressing complex problems such as climate change, obesity and health inequalities. These problems, which are known as "wicked problems", go beyond any one organization's capacity to understand or address. There is often disagreement about the causes of such problems, and a lack of certainty about the best way to tackle them *(17)*. Wicked problems are described more fully in Annex 3.

30.　　As part of the development of Health 2020, the WHO Regional Office for Europe commissioned a study on governance for health in the 21st century.

Framework for Action

31.　　A framework for action should be "fit for the purpose" of meeting current health challenges, it should reflect the determinants of health, and it should encourage the capacity and flexibility to respond to emerging hazards, while ensuring that core public health activities are maintained and resourced. It should incorporate and build on the ten EPHOs, while recognizing the wider strategic context that influences priorities and implementation strategies. Health needs

assessments should be independent and may take the form of a local public health report that is available to the public. Such assessments should be conducted on a regular basis.

32.   The following actions arise from these guiding principles.

- National governments must embrace their key governance role in relation to the health of the population.

- National governments must support the leading role of ministers of health, working in partnership with other sectors, through legislation and regulation.

- Intersectoral action should be supported at national, regional and local levels, in order to promote concerted action on the wider determinants of health and complex problems. Legal provisions should be adapted in this regard, to ensure that national and subnational regulations are based on current European principles and global experience.

- Ministers of health should constantly reassess and update a framework for action, while maintaining a focus on the importance of living and working conditions, education, effective disease prevention, and the needs of disadvantaged or socially excluded groups.

- Ministries of health should ensure that health strategies and policy priorities are based on an assessment of current health needs, inequalities in health and equitable access to preventive services, using the opportunities provided by Health 2020.

Implementing essential public health operations

33.   Ten EPHOs (Annex 2) have been developed across the WHO European Region, providing a detailed checklist of essential public health activities and a resource for evaluating public health services and capacity, encompassing a whole-of-government approach. EPHOs are constantly evolving and need to be regularly updated to reflect ongoing evaluation, new challenges and communication technologies, including social media. Priorities for action in the shorter term will vary according to country-specific health challenges and the resources available to states to discharge their public health function.

34.   A web-based self-assessment tool has been developed for gauging capacity and practice in relation to carrying out EPHOs. To date, it has been tested in 17 eastern European countries with positive feedback on its relevance for identifying strengths and weaknesses, as well as for defining strategic actions for improvement. The tool is to be tested in western Europe, as well as in countries with decentralized public health structures and responsibilities, in order to get comprehensive feedback on its relevance across the European Region.

35.   An added value of the tool is in bringing different public health stakeholders together to reach consensus, as well as in promoting progress by allowing continuous assessment.

Actions

- Member States should use EPHOs as a resource for assessing infrastructure, performance and capacity related to core public health activities. This will demonstrate where gaps exist between the specific public health challenges of Member States and the infrastructure and capacity required to address them.

- Based on EPHO assessment, Member States should develop and implement strategies, action plans and appropriate programmes to further improve the quality and delivery of the essential public health operations and services at all levels.

- National and subnational governments should ensure that adequate resources are targeted to delivering EPHOs, including identification of emerging health hazards.

Strengthening regulatory frameworks for protecting and improving health

36.   Regulatory frameworks to protect public health include legislation (international, regional and national), other policy instruments (including international agreements and standards) and arrangements for monitoring, audit and performance management. A recent overview of international policy tools for public health in the European Region *(18)* describes a wide range of available instruments (conventions, regulations, recommendations and standards), reflects variation between countries' deployment of specific instruments, and notes changes in national regulatory frameworks arising from a growth in pluralism and democratization.

37.   The use of legally binding arrangements to protect population health is widespread. More recently, there has been cost-effective action to reduce alcohol consumption through taxation and advertising bans; legislation to reduce trans fats and salt content in food; tobacco control measures related to advertising, taxation and smoke-free environments; and road safety measures.

38.   While there is some uncertainty regarding the effectiveness of performance management arrangements, there is evidence that simple process targets can lead to unintended consequences and gaming. A broader approach is needed, based on measurement of performance against both process and health outcomes, tied to a dynamic system of local accountability. WHO advocates national frameworks that translate shared values of equity and solidarity and foster transparency.

Actions

- National governments must have in place an implementation plan for legally binding international treaties, conventions and regulations, as well as for resolutions and standards related to protecting population health. National progress and compliance with international agreements and standards should be reflected in self-assessment of the relevant EPHOs, which should make explicit the relevant regulations and standards.

- Ministries of health should review, in the light of best practice, their national regulatory frameworks related to licensing, accreditation and quality control of public health services, including laboratory facilities.

- An implementation plan for national health strategies should be established, including performance assessment measures for the delivery of core public health functions, standards and targets.

- Ministries of health should secure consistency in strategy and direction across different levels of organization, using systems for monitoring performance and ensuring accountability.

- Standards for the delivery of public health services should be made explicit and their quality ensured and continuously improved through regular scrutiny, inspection or assessment arrangements and accreditation.

Improving health outcomes through health protection

39.   Assessment of the health needs of populations is the cornerstone of any public health strategy. It guides core public health activities in relation to health protection, health promotion and disease prevention, as well as the development of national health strategies. Such assessments can be conducted jointly across agencies and in partnership with local communities.

40.   Health protection requires systems that enable rapid detection of, response to and communication about health threats. Control of communicable diseases remains a core activity for the public health function, requiring vigilance with regard to existing diseases, rapid response to new strains, and maintenance of an infrastructure for identification, control and treatment. There should be an equivalent rapid reporting system for environmental hazards.

41.   Capacity needs to be in place to activate tried and tested emergency plans and mobilize emergency response teams in the event of public health emergencies, regardless of their nature or cause. There should also be capacity for public health surveillance and follow-up activities in the aftermath of disasters.

Actions

- National governments should improve public health-related data collection, integration, analysis and interpretation across sectors in order to support health needs assessments and the rapid identification of emerging risks and hazards.

- Health needs assessments should be conducted on a regular basis to identify the population's health status and health needs; inequalities in health; changing patterns of disease; and implications for service provision.

- Ministries of health should establish appropriate reporting mechanisms for disease outbreaks with better coordination across public health, veterinary, occupational and food safety agencies.

- Health information systems reporting on vital statistics and routine information need to be established or strengthened.

- National governments should regularly review their capacity and resources to implement the International Health Regulations.

- National governments should put in place and regularly test emergency response plans.

Improving health outcomes through disease prevention

42.   Primary prevention refers to activities to prevent the appearance of a disease, while secondary prevention refers to early detection in order to improve the chances of positive health outcomes.

43.   Although it is clear that primary prevention of disease is also effected by means of health protection and promotion (fostering healthy lifestyles, protecting the environment, guaranteeing occupational and food safety, etc.), this concept can be practically understood as including clinical preventive services such as immunization and vaccination; the provision of information on behavioural and medical health risks, as well as consultation and measures to decrease them at the personal and community level; the maintenance of systems and procedures for involving primary health care and specialized care in programmes on disease prevention; the production and purchasing of childhood and adult vaccines; the storage of stocks of vaccines where appropriate; and the production and purchasing of nutritional and food supplementation.

44.   Vaccination programmes are widely established with clear guidelines and processes but additional action may be required to ensure coverage of target populations. These actions may also include broader participation from other ministries, such as the ministry of education, in order to foster greater health literacy and enhance the effectiveness of public health communication.

45.   On the other hand, secondary prevention comprises activities such as evidence-based screening programmes for early detection of diseases; maternal and child health programmes,

including screening and prevention of congenital malformations; the production and purchasing of chemo-prophylactic agents; the production and purchasing of screening tests for the early detection of diseases, and capacity in relation to meeting actual or potential needs.

46.   Evidence-based screening programmes may be established to identify and treat disease in its early stages. Their applicability and operation should be assessed according to agreed criteria related to: the magnitude of the problem; the extent of disparities between populations and geographical areas; the identification of a target population; the availability of laboratory facilities; and the capacity to treat detected cases quickly. A good system of primary health care with a registered population facilitates the optimal organization and delivery of population-based screening programmes, which should be vigorously promoted.

47.   Opportunistic case-finding can be carried out by health professionals, drawing on a range of evidence-based interventions related to reducing risk factors such as smoking, alcohol consumption and poor diet.

48.   Preventive services are largely aimed at individuals but require computerized "call and recall" systems for selected populations and an organized system of delivery that is accessible by those populations. Such services may also involve targeted action to reach groups who are at risk but may not be able to access preventive services. There should be no financial or other barriers to accessing preventive services.

Actions

- Ministries of finance and health should allocate adequate resources to vaccination programmes, including the purchase and storage of vaccines and the maintenance of effective call and recall systems.

- Ministries of health should implement and regularly update evidence -based screening programmes in the light of best practice.

- Ministries of health should assess existing systems for involving primary care and specialized care in disease prevention and should identify appropriate measures for scaling up preventive health care services, taking into account the needs of vulnerable population groups

- Targeted programmes to reach populations at risk should be developed and evaluated.

- Maternal and child health services should be accessible and reasons for low or late enrolment investigated.

Improving health outcomes through health promotion

49.   Health promotion builds on broad definitions of health and well-being. The Ottawa Charter *(19)* sets out five main strategies for health promotion: building healthy public policy; creating supportive environments; strengthening community action; developing personal skills; and reorienting health services. These key strategies can be applied across a range of topic areas (identified in EPHO 6).

50.   Recognition of the influence of political, social, and cultural contexts on life chances and on behaviour at each stage of the life course has led to an emphasis on different settings and contexts for health promotion activities; policies for making healthy choices easier; and partnerships and intersectoral collaboration to address the social and economic determinants of health. This approach is fundamental to addressing inequalities in health and is being addressed by the European Social Determinants and Health Divide Review.

51.   The importance of community resilience, the quality of social networks and increased participation in decision-making for health and well-being is increasingly recognized. It has been argued that effective local delivery to overcome challenging health inequalities requires local participatory decision-making *(20)*. This builds on a long-standing appreciation of relationships between community development and health promotion, as reflected in the Declaration of Alma Ata.

52.   A public health ethos needs to be promoted in different settings and organizations, both within and beyond the health system. Despite the Declaration of Alma-Ata, primary care practitioners may lack the time or the incentives to focus on disease prevention. Access to preventive services in primary care is variable and may not meet the needs of vulnerable or stigmatized groups.

53.   Health promotion should not increase health inequalities through interventions that are inappropriate, culturally insensitive or fail to reach those most in need.

Actions

- National governments should promote and create conditions for intersectoral dialogue and cooperation between partners, in order to develop joint approaches to factors influencing health, well-being and healthy lifestyles.

- Formal and informal governance mechanisms should be established to support ministries of health in leading intersectoral policy responses to health challenges.

- National governments should secure the involvement of communities in decision-making so that the potential of community assets is realized.

- The appropriateness of health promotion activities for targeted groups and those with the greatest health needs should be critically assessed.

- The importance of prevention for a sustainable health care system and for the wider economy must be recognized across the political spectrum: long-term sustained action is required, rather than many sporadic initiatives.

Assuring a competent public health workforce

54.   A competent and multidisciplinary public health workforce is a prerequisite for a modern, effective public health function. Given the complex challenges facing public health, both existing and anticipated, a wide range of existing and new skills and expertise is called for *(21)*. Many countries have moved from a medically dominated public health workforce to a multidisciplinary one.

55.   In many health systems, the public health function is fragmented and sections of the workforce can feel isolated. There are often continuing problems of underresourcing, skill shortages, insufficient capacity, poor morale and low pay.

56.   The issues facing the public health function in the key areas of health protection and improvement and of health service development demand a range of diverse skills, with practitioners coming from the areas of epidemiology, intelligence, information systems, health promotion, environmental health, management and leadership, and elsewhere.

57.   Key areas of public health practice, including strategic leadership and collaborative working, are reflected in the EPHOs and constitute the principal areas requiring attention, to ensure that the appropriate skills are present in order to address new challenges and requirements.

58. To deliver on these key areas of practice, a competency framework is required, comprising core competencies in defined fields. Core competencies might include: surveillance, monitoring and evaluation, assessing the evidence, policy and strategy, leadership and collaborative working. Defined fields might include: health protection; health improvement; public health intelligence; and the quality of health services. The purpose of such a competency framework is to ensure that adequate training is provided and to help develop the workforce in terms of career progression and staff recruitment and retention. Quality assurance and solid accreditation mechanisms should be promoted.

59. New skills are also required. Making the business case for investment in order to improve health and tackle health inequalities is becoming a key priority for public health leaders. Moreover, the particular type of leadership required needs to be attuned to contexts where there is considerable uncertainty and ambiguity, and where there is often imperfect evidence and an absence of agreement about both the precise nature of the problem and the solutions to it. Much of the authority of public health leaders in future will come not from their position in the health system but rather from their ability to win over and convince others through influence rather than control.

Actions

- National governments should ensure the development of a multidisciplinary public health workforce.

- Ministries of health should conduct a public health skills audit in order to identify gaps.

- Efforts should be made to ensure that key skills for health form the essential competency framework for the public health workforce.

- Ministers of health, in collaboration with ministers of finance (as appropriate), should develop financial mechanisms to scale up prevention and to encourage health practitioners, particularly at the primary health care level, to deliver health services to prevent disease and promote health.

- Public health training should be strengthened through research, monitoring and evaluation and the dissemination of evidence with partners, including the Association of Schools of Public Health in the European Region (ASPHER) for continuing education and the European Public Health Association (EUPHA) for maintaining professional standards and research.

- Ministries of health should cooperate with ministries of education and medical universities and advocate for more attention to be focused on challenges to population health and for the relevant public health competencies to be included in medical training curricula.

- Investment should be made in innovative and creative leadership programmes informed by systems thinking, complexity science and the principles of transformational change.

Developing research and knowledge for policy and practice

60. Member States will have very different research priorities depending on the public health challenges being faced, on the needs identified, and the resources available to tackle them. There is, however, increasing recognition of the importance of understanding how research and knowledge are produced and used (or not used) in practice.

61. Few problems affecting population health lend themselves to the type of "gold standard" research that is usually characterized by randomized controlled trials (RCTs). In the hierarchy of evidence, methods and designs that may be more appropriate to understand and address

"wicked" complex problems come low down and are often held in disdain or dismissed by those of a positivist scientific persuasion.

62.   New approaches are being pioneered in an effort to strengthen the evidence base for public health interventions, using methods that are appropriate for complex public health problems and can provide practical guidance to policy-makers on which interventions might work in the long term and be most cost-effective. Recent work, done mainly in Canada, shows that, in order to produce sound research that is likely to be implemented, the approach to conceptualizing and conducting research must be radically different *(22,23)*. It requires a negotiated relationship between the researcher and the user of research and one that involves the co-production or co-creation of knowledge. In such circumstances, knowledge exchange occurs through building relationships and networks created in local contexts.

Actions

- National governments should create conditions for traditional approaches to evidence-based public health interventions to be supplemented where appropriate by a commitment to evidence-informed practice, adopting innovative knowledge exchange and co-production approaches.

- Evidence-informed action to improve population health demands the deployment of a mix of methods and disciplines in order to comprehend complex contexts and "wicked" problems.

- The key assumptions and uncertainties in scientific assessments need to be made explicit and openly deliberated with key stakeholders.

- Ministries of health should support and put in place knowledge sharing and management skills and processes.

- Public health practitioners should be encouraged to join a community of practice.

- Ministries of health should identify priority areas for research through close collaboration between practitioners, academics and policy-makers.

Organizational structures for public health services

63.   The organization and provision of public health services occurs at three levels (national, subnational and local), with complex horizontal and vertical links. In addition, there are important contextual factors that determine how public health services are organized in Member States. Networks are also important, so that links can be established with agencies and services that are not part of the formal public health structure. Examples might include nongovernmental organizations, voluntary or tertiary sector organizations, public health associations and policy think tanks.

64.   All three levels may be present in some health systems when it comes to the organizational structures of public health services. The intermediate level between national and local is often the most complicated and subject to change. At the national level, the public health function is located within a ministry or central department (usually the one responsible for health), although many elements will be scattered across other ministries and departments. Some functions will be located in agencies that are independent of, or distanced from, central government and which may also have a subnational structure. At the local level, a variety of agencies may be involved in delivering public health, although one of them assumes overall responsibility for delivery. This can be a health service organization or a local authority.

65.   Regardless of the precise organizational system in place at any particular time, clarity and consistency of purpose are always required at every level. Some aspects of the public health

function may be conducted more appropriately at particular levels, to achieve economies of scale, for example, or where scarce expertise prohibits local solutions or delivery arrangements.

66.   There are many models for organizing the public health function at national and subnational levels, and it may be an area that would benefit from an evidence base in order to demonstrate which models or arrangements are more effective than others.

Actions

- Ministries of health should put in place appropriate organizational structures to discharge the various public health functions.

- Those structures must enable the public health functions, EPHOs and services to be delivered in a cost-effective and timely manner.

- The structures should be a combination of national, regional and local arrangements, depending on the size of the health system in question and the nature of the health tasks being delivered.

- Ministries of health should take measures to encourage learning from international experience in order to maximize the use of effective practices.

The way forward: WHO's role and next steps

67.   The WHO Regional Office for Europe aims to support Member States in their strategies to strengthen public health capacity and services in the light of this Framework for Action.

68.   This will be achieved through the development of a European action plan for strengthening public health capacities and services, to be presented to the Regional Committee at its sixty-second session in 2012. The articulation of this initiative will be achieved through a participatory process involving Member States, the European Union and other partners and will be supported by the Organization's Global Policy Group, to ensure that WHO works hand-in-hand with its Member States, supporting them in their strategic developments to improve health outcomes and strengthen their public health services.

69.   The European Action Plan will include several key elements. First, public health services will be strengthened by reviewing the effectiveness of existing tools in order to ensure their coherence and relevance to new challenges. Standards and indicators for delivering and monitoring core public health services will be developed, and web-based assessment procedures will be implemented. The Regional Office will use this internet tool to assess public health capacities in Member States, reporting back to them with conclusions and recommendations. In addition, Member States will also have the opportunity to use the tool to carry out a self-assessment.

70.   Public health training will also be strengthened through collaboration with the ASPHER for continuing education and EUPHA for maintaining professional standards and research. The potential for developing a European school of public health will be explored.

71.   Supporting the development of international, regional, multinational, national and subnational networks of public health leaders is a further key area for action and could include establishing a high-level forum for policy development. This would form part of an ongoing dialogue to ensure that public health services continue to address the key challenges to the health of the population.

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Annex 1. Public health and health systems: definitions and boundaries

A core definition of public health has proved elusive.[2] After considerable internal and external consultation, the definition of public health originally put forward by Winslow in 1920[3] and adapted by Acheson in 1988[4] has been widely accepted and is proposed for adoption:

> Public health is the science and art of preventing disease, prolonging life and promoting health through the organized efforts of society.

This definition has important characteristics.

- It is intentionally generic and does not specify particular societal preoccupations with public health outcomes, which might change over time.

- It refers to public health as both a science and an art, essentially and always a combination of knowledge and action. Public health must have an evidence base, but action must be taken on the basis of current knowledge.

- The core purposes of public health are to prevent disease, prolong life and promote health.

- Public health is an organized societal function.

Several important and implicit aspects of this definition should be highlighted and explicitly communicated when necessary:

- health protection, including food and water safety, environmental protection and workplace safety;

- outcomes such as "wellness" or quality of life;

- individual responsibility and choice;

- future orientation;

- political empowerment, equity and human rights in relation to health, and

- the importance of health systems for public health improvement, including health ministries' key responsibility for public health, rather than simply being managers of the health care system.

The health system can be conceptualized as a key channel for the "organized efforts of society" in terms of public health and health improvement (see Fig. 1 below).

The figure shows the health system as the turquoise circle in each "platform", which represents institutions and organizations with a health mandate, the resources dedicated to health, and the services delivered to promote, protect and restore health. Public health is part of the health system, but it also includes the aspects shown in green, including society and the overall environment. All of these factors working together will determine the level of health in a population.

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[2] Verweij M, Dawson A. The meaning of "public" in public health. In: Dawson A, Verweij M (eds). *Ethics prevention and public health*. Oxford: Oxford University Press, 2007:Chapter 2.

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The solid and vertical arrows represent the organized efforts of society. Some of those efforts are channelled through the health system, while others are channelled through institutions, resources and services of other sectors of the society. The vertical dashed arrows represent isolated and individual efforts.
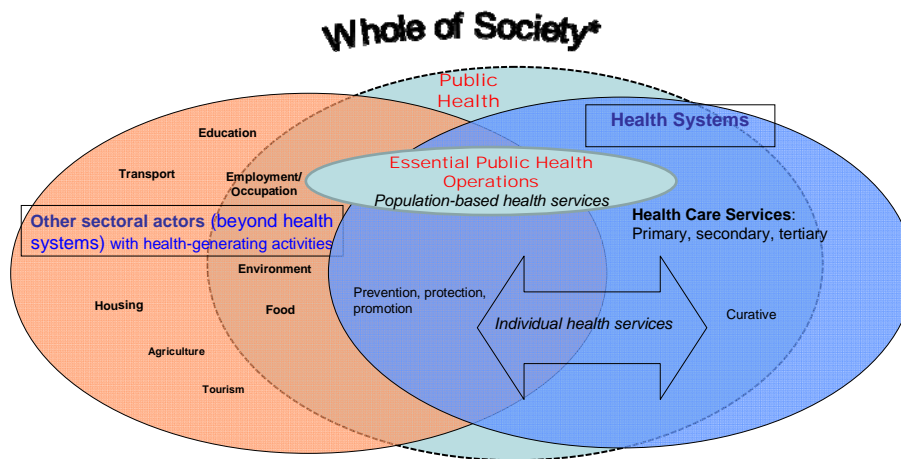
The governance function orchestrates and aligns the numerous efforts from the different sectors of society in order to maximize health gain. Public health is represented as a broad societal function, including organizations, resources and services from the health system and also from other sectors of society, constrained only by the boundaries of society's "organized efforts".

Fig. 1 Conceptual framework of the boundaries of the health system and public health
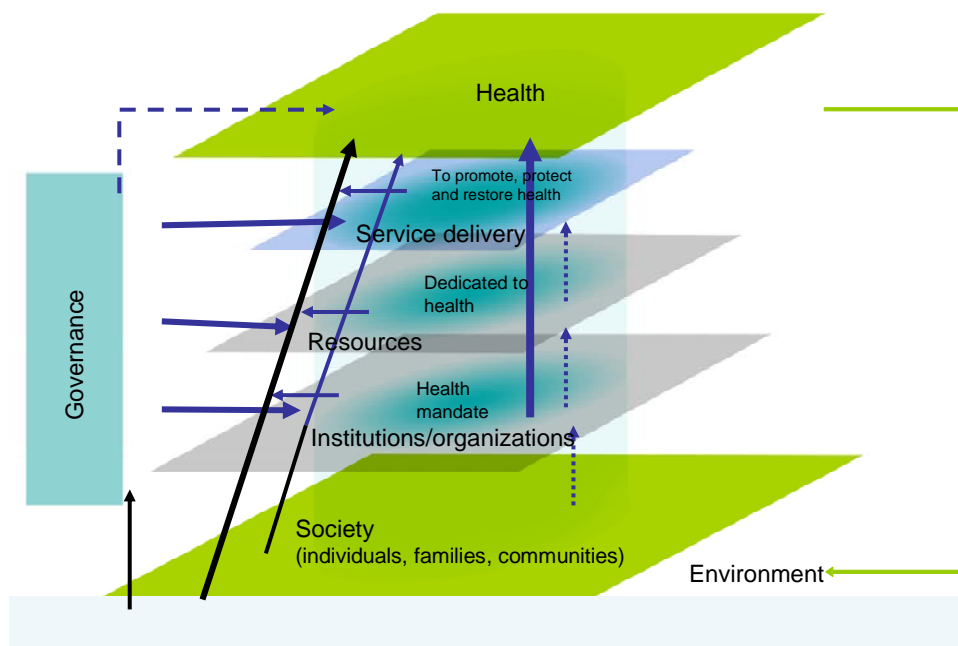
The health of populations is generated by society as a whole and is influenced by a broad range of policy areas, as well as by the activities of the health system. Fig. 2 below illustrates how public health services span the health-generating activities of both the "non–health" system and the health system, playing an important role in each.

Fig. 2: Boundaries of public health competencies and responsibilities

Whole of Society*

- **Public Health**
- **Health Systems**
- Education
- Transport
- Employment/Occupation
- **Other sectoral actors (beyond health systems)** with health-generating activities
- Environment
- Housing
- Food
- Agriculture
- Tourism
- **Essential Public Health Operations**
  Population-based health services
- **Health Care Services**: Primary, secondary, tertiary
- Prevention, protection, promotion
- *Individual health services*
- Curative

* Link to Health 2020, governance, and the whole-of-government and whole-of-society approach

The wide range of policies that influence health underlines the importance of committed intersectoral action as part of the stewardship role.

Annex 2: Definitions of Essential Public Health Operations (EPHOs) and Services in Europe[5]

EPHO 1: Surveillance of diseases and assessment of the population's health

Definition of operation: Establishment and operation of surveillance systems to monitor the incidence and prevalence of diseases and of health information systems to measure morbidity and population health indexes. Other elements of this operation comprise community health diagnosis, data trend analysis, identification of gaps and inequalities in the health status of specific populations, identification of needs, and planning of data-oriented interventions.

1.1   Surveillance in the area of civil registration[6] (births, deaths)

1.2   Surveillance system and disease registries in the areas of communicable diseases, noncommunicable diseases and foodborne diseases

1.3   Ongoing surveys of health status and health behaviour, including health and nutrition surveys to address issues such as obesity and dietary intake

1.4   Surveillance system and disease registries in the area of maternal and child Health

1.5   Surveillance system and disease registries in the area of environmental health

1.6   Surveillance system and disease registries in the area of social and mental health

1.7   Surveillance system and disease registries in the areas of occupational health and injury surveillance

1.8   Data integration and analysis (including community health diagnosis) in order to identify population needs and risk groups and monitor progress towards health-related objectives (in areas 1.1–1.7)

1.9   Publication of data in multiple formats for diverse audiences (in areas 1.1–1.7)

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[5] The full version of these definitions, including detailed specifications, is contained in Annex 1 to document EUR/RC61/Inf.Doc./1. The term "operations" was chosen to dispel a certain amount of confusion that had been voiced owing to the repetition of the word "function" in the context both of the previously iterated Essential Public Health Functions and of the four health systems framework functions (i.e. governance, resource generation, financing and service delivery). The underlying aim was to facilitate understanding among policy-makers of the difference between the descriptive framework functions and the prescriptive EPHO. The word "operation" also underlines the action-oriented nature of these core services. The process of developing the proposed definitions of public health and of the ten EPHO has been informed by and has taken into account the concepts, experience and publications of high-level public health institutions, agencies and the other WHO regions.

[6] The civil registration system refers to governmental machinery set up in the country, state, province or any other territorial subdivision of the country for the purpose of recording of vital events related to the civil status of the population on a continuous basis, as provided by the laws and regulations of the country, state, province, etc. (Source Publication: Handbook of Vital Statistics Systems and Methods, Volume 1: Legal, Organisational and Technical Aspects, United Nations Studies in Methods, Glossary, Series F, No. 35, United Nations, New York 1991).

EPHO 2: Identification of priority health problems and health hazards in the community

Definition of operation: Monitoring, identifying and predicting priorities in biological, chemical and physical health risks in the workplace and the environment; risk assessment procedures and tools to measure environmental health risks; release of accessible information and issuance of public warnings; planning and activation of interventions aimed at minimizing health risks.

A. Control of communicable disease

2.A.1 System and procedures for the detection and control of communicable disease outbreaks

2.A.2 System and procedures for outbreak investigation and cause identification

2.A.3 System and procedures for controlling zoonotic and vector-borne diseases

2.A.4 System and procedures for the surveillance of nosocomial infections

2.A.5 System and procedures for the surveillance of antibiotic resistance

B. Control of environmental health hazards

2.B.1 System with capacities, facilities and procedures for assessing actual or expected health impact due to environmental factors

2.B.2 Arrangements and procedures for identifying possible hazardous exposures

2.B.3 System and procedures for occupational health assessment and control

2.B.4 System and procedures for assessment of air quality and robustness of clean air standards

2.B.5 System and procedures for assessment of water quality and robustness of clean water standards

2.B.6 System and procedures for identification of chemical and physical health hazards through analysis of surveillance data or epidemiological research

2.B.7 System and procedures for food safety risk assessment

2.B.8 System and procedures for risk assessment regarding consumer goods, cosmetics and toys

2.B.9 Arrangements and procedures for monitoring progress towards implementation of the International Health Regulations (IHR)

C. Laboratory support for investigation of health threats

2.C.1 Readily accessible laboratories capable of supporting research into public health problems, hazards and emergencies

2.C.2 Readily accessible laboratories capable of meeting routine diagnostic and surveillance needs

2.C.3 Ability to confirm that laboratories comply with regulations and standards through credentialing and licensing agencies

2.C.4 Ability to address the handling of laboratory samples through guidelines or protocols

2.C.5 Adequacy of the public health laboratory system and its capability to conduct rapid screening and high-volume testing for routine diagnostic and surveillance needs

2.C.6 Capacity to produce timely and accurate laboratory results for diagnosis and research of public health threats

EPHO 3: Preparedness and planning for public health emergencies

Definition of operation: Preparedness for management of emergency events, including formulation of suitable action plans; development of systems for data collection and prevention and control of morbidity; and application of an integrative and cooperative approach with various authorities involved in management.

3.1   Ability to define and describe public health disasters and emergencies that might trigger implementation of an emergency response plan

3.2   Development of a plan that defines organizational responsibilities, establishes communication and information networks, and clearly outlines alert and evacuation protocols

3.3   Periodic assessment of the capacity for rapid response, including testing of the emergency plan through tabletop exercises and large-scale drills

3.4   Development of written epidemiological case investigation protocols for immediate investigation

3.5   Assessment of the effectiveness of evaluation of past incidents and identification of opportunities for improvement

3.6   Maintenance of written protocols to implement a programme of source and contact tracing for communicable diseases or toxic exposures

3.7   Maintenance of a roster of personnel with the technical expertise to respond to all natural and man-made emergencies

3.8   Implementation of the International Health Regulations (IHR) in the area of emergency planning

EPHO 4: Health protection operations (environmental, occupational, food safety and others)

Definition of operation: Risk assessments and actions needed for environmental, occupational and food safety. Public health authorities supervise enforcement and control of activities with health implications.

This operation includes the institutional capacity to develop regulatory and enforcement mechanisms to protect public health and monitor compliance with accepted norms, as well as the capacity to generate new laws and regulations aimed at improving public health and promoting healthy environments.

4.1   Technical capacity for risk assessment in the area of occupational health

4.2   Technical capacity for risk assessment in the area of health-related behaviour

4.3   Technical capacity for risk assessment in the area of health care Facilities and programmes

4.4   Inspection, monitoring and enforcement of laws and regulations by public health authorities

4.5   Cooperation between the ministry of health and other ministries for law enforcement in issues related to public health.

EPHO 5: Disease prevention

Definition of operation: Disease prevention is aimed at both communicable and noncommunicable diseases and has specific actions largely delivered to the individual. The term is sometimes used to complement health promotion and health protection operations. Although there is a frequent overlap between the content and strategies, disease prevention is defined separately.

Primary prevention services include vaccination of children, adults and the elderly, as well as vaccination or post-exposure prophylaxis for people exposed to a communicable disease. Primary prevention activities also include the provision of information on behavioural and medical health risks, as well as consultation and measures to decrease them at the personal and community level; the maintenance of systems and procedures for involving primary health care and specialized care in disease prevention programmes; the production and purchasing of childhood and adult vaccines; the storage of stocks of vaccines where appropriate; and the production and purchasing of nutrition and food supplements

Secondary prevention includes activities such as evidence-based screening programmes for early detection of diseases; maternal and child health programmes, including screening and prevention of congenital malformations; the production and purchasing of chemoprophylactic agents; the production and purchasing of screening tests for the early detection of diseases, and capacity to meet current or potential needs.

Disease prevention in this context is considered to be action that usually emanates from the health sector, dealing with individuals and populations identified as exhibiting identifiable risk factors, often associated with different risk behaviours.

A.   Primary prevention

5.A.1 Vaccination programmes for the following groups
   i)   Children
   ii)   Adults
   iii) The elderly
   iv)   Vaccination or post-exposure prophylaxis of people exposed to a communicable disease

5.A.2 Provision of information on behavioural and medical health risks

5.A.3 Systems and procedures for involving primary health care and specialized care in disease prevention programmes.

5.A.4 Adequacy of production and purchasing capacity for childhood and adult vaccines, as well as for iron, vitamins and food supplements

B.   Secondary prevention

5.B.1 Evidence-based screening programmes for early detection of diseases, including screening and prevention of congenital malformations

5.B.2 Adequacy of production and purchasing capacity for screening tests

EPHO 6: Health promotion

Definition of operation: Health promotion is the process of enabling people to increase control over their health and its determinants and thereby improve it. It addresses determinants of both communicable and noncommunicable diseases and includes the following activities:

- The promotion of changes in lifestyle, practices and environmental conditions to facilitate the development of a "culture of health" among individuals and the community

- Educational and social communication activities aimed at promoting healthy conditions, lifestyles, behaviour and environments

- Reorientation of health services to develop care models that encourage health promotion

- Intersectoral partnerships for more effective health promotion activities

- Assessment of the impact of public policies on health

- Risk communication

The means of achieving this include conducting health promotion activities for the community at large or for populations at increased risk of negative health outcomes, in areas such as sexual health, mental health, health behaviour related to HIV, drug abuse control, tobacco control, alcohol control, physical activity, obesity prevention, nutrition, food safety, work-related health hazards, injury prevention, occupational and environmental health.

The broader role of health promotion includes advising policy-makers on health risks, health status and health needs, as well as designing strategies for different settings. It also includes taking account of the determinants of health, in particular the social or socioeconomic determinants that cause ill health.

A.   Health promotion activities for the community at large or for populations at increased risk of negative health outcomes.

6.A.1   Activities and services directed at healthy diet and nutrition, physical activity and obesity prevention and control

6.A.2   Activities and services directed at tobacco control

6.A.3   Activities and services directed at alcohol control

6.A.4   Activities and services directed at prevention and control of drug abuse

6.A.5   Prevention of infectious diseases (e.g. HIV, tuberculosis) related to health behaviours

6.A.6   Activities and services directed at sexual and reproductive health

6.A.7   Prevention and control of occupational and work-related health hazards, including workplace health promotion

6.A.8   Activities and services directed at environmental health

6.A.9   Mental health activities and services

6.A.10 Dental hygiene education and oral health activities and services

B.   Capacity for intersectoral action

6.B.1 Policies, strategies and interventions aimed at making healthy choices easy

6.B.2 Structures, mechanisms and processes to enable intersectoral action

6.B.3 Intersectoral activities, including the leadership role of the ministry of health in ensuring a "Health in all policies" approach regarding the following ministries
   i)   Ministry of education
   ii)   Ministries of transport and the environment
   iii) Ministry of industry
   iv)   Ministry of labour
   v)   Other relevant ministries

EPHO 7: Assuring a competent public health and personal health care workforce

Definition of operation: Investment in and development of a public health workforce is an essential prerequisite for adequate delivery and implementation of public health services and activities. Human resources constitute the most important resource in delivering public health services. This operation includes the education, training, development and evaluation of the public health workforce, to efficiently address priority public health problems and to adequately evaluate public health activities.

Training does not stop at the university level. There is a need for continuous in-service training in economics, bioethics, management of human resources and leadership, in order to implement and improve the quality of public health services and to address new challenges in public health.

The licensing procedures of public health professionals establish the requirements of the future workforce concerning relevant public health training and experience.

A.   Human resources planning

7.A.1 Planning of human resources for public health

7.A.2 Effectiveness of human resources planning

7.A.3 Current provision of human resources for public health

B.   Public health workforce standards

7.B.1 Mechanisms for maintaining public health workforce standards

7.B.2 Mechanisms for evaluating the public health workforce, including continuous quality improvement, continuing education and training programmes

7.B.3 Systems for improving teamwork abilities and communication skills

7.B.4 System for supporting capacity development of intersectoral teams and professionals from across policy areas

C.   Education and accreditation

7.C.1 Structure of training in public health management

7.C.2 Undergraduate programmes in health professions (medicine, veterinary medicine, nursing, pharmacy, dentistry) relevant to public health

7.C.3 Adequacy of schools of public health

7.C.4 Master of Public Health programmes

7.C.5 Master of Health Services Administration and/or Policy, Leadership, or Management

7.C.6 Other relevant academic programmes related to health protection, promotion or disease prevention (specify)

7.C.7 Quality control and accreditation programmes

EPHO 8: Core governance, financing and quality assurance for public health

Definition of operation: Policy development is a process that informs decision-making on issues related to public health. It is a strategic planning process that involves all the internal and external stakeholders and defines the vision, mission, measurable health goals and public health activities at national, regional and local levels. Moreover, in the past decade, it has become more important to assess the repercussions of international health developments on national health status.

Financing is concerned with the mobilization, accumulation and allocation of money to meet the population's health needs, individually and collectively. The purpose of health financing is to make funding available, as well as to set the right financial incentives for providers, so as to ensure that all individuals have access to effective public health and personal health care.

Quality assurance deals with developing standards for ensuring the quality of personal and community health services regarding disease prevention and health promotion, and evaluation of the services based on these standards. Evaluations should identify weaknesses in governance and operation, resource provision and service delivery. The conclusions of evaluations should feed back into policy and management, organization, and the provision of resources to improve service delivery.

A.   Health policy planning and implementation

8.A.1 Process of strategic planning in relation to public health services

8.A.2 Policy planning process at regional and local levels

8.A.3 Appropriateness and effectiveness of public health policy (health impact assessment)

8.A.4 System or programme for monitoring the implementation of policy and programmes in public health or related areas

8.A.5 Short-, medium- and long-term strategies to comply with a European Union community health services system

8.A.6 Appropriateness and effectiveness of how the repercussions of international health developments are taken into account in public health planning (e.g. preparing for avian and pandemic influenza, West Nile fever and severe acute respiratory syndrome (SARS))

8.A.7 Role of public health operations within the ministry of health

8.A.8 Appropriateness/effectiveness of any mechanisms or processes through which poverty, inequalities and the social determinants of health are taken into account in decision-making.

8.A.9 Comprehensiveness and effectiveness of public health and other health-related policy decisions, through a multidisciplinary and multisectoral approach

B. Evaluation of quality and effectiveness of personal and community health services

8.B.1 Processes and mechanisms to define needs for personal and population health services from a public health perspective

8.B.2 Processes and mechanisms to identify the health service needs of populations that may encounter barriers to receiving health services

8.B.3 Comprehensiveness and effectiveness of procedures and practices designed to evaluate the delivery of personal and community public health services

8.B.4 Processes and mechanisms for conducting an analysis of participation in preventive services

8.B.5 Assessment and analysis regarding the integration of services in a coherent community health services system

8.B.6 Adequacy of evaluation of the human resources structure and financial support to community health services

8.B.7 Implementation, control and quality assurance actions on health systems that supply personal and community health services

8.B.8 Health technology assessment centres or programmes

C. Financing of public health services

8.C.1 Alignment of financing mechanisms for public health services (including personal services with broad effects beyond the person receiving the intervention) with desired service delivery strategies

8.C.2 Decisions on public financing for services, taking into consideration the extent to which their benefits are distributed in the population

EPHO 9: Core communication for public health

Definition of operation: Communication for public health is aimed at improving the health literacy and status of individuals and populations. It is the art and technique of informing, influencing, and motivating individuals, institutions and public audiences about important health issues and determinants. Communication must also enhance capacities to access, understand and use information to reduce risk, prevent disease, promote health, navigate and utilize health services, advocate for health policies and enhance the well-being, quality of life and health of individuals within the community.

Health communication encompasses several areas including health journalism, entertainment, education, interpersonal communication, media advocacy, organizational communication, risk and crisis communication, social communication and social marketing. It can take many forms from mass, multi-media and interactive (including mobile and internet) communications to traditional and culture-specific communication, encompassing different channels such as interpersonal communication, mass, organizational and small group media, radio, television, newspapers, blogs, message boards, podcasts, and video-sharing, mobile phone messaging and online forums.

Public health communication offers the public a way to counter the active promotion of hazardous products and lifestyles (e.g. tobacco). It is a two-way information exchange activity which requires listening, intelligence-gathering and learning about how people perceive and

frame messages on health, so that information can be transmitted in more accessible and persuasive formats. Public health communication is also about transparency, so that the public can be aware of what is being said and done in their name.

9.1 Strategic and systematic nature of public health communication developed, with an understanding of the perceptions and needs of different audiences

9.2 Dissemination to different audiences in formats and through channels that are accessible, understandable and usable

9.3 Advocacy for the development and implementation of healthy policies and environments across all government sectors (health in all policies)

9.4 Public health communication training and capacity development

9.5 Public health communication evaluation

EPHO 10: Health-related research

Definition of operation: Research is fundamental to informing policy development and service delivery. This operation includes:

- research to enlarge the knowledge base that supports evidence-based policy-making at all levels;

- development of new research methods, innovative technologies and solutions in public health;

- establishment of partnerships with research centres and academic institutions to conduct timely studies that support decision-making at all levels of public health.

10.1 Country's capacity to initiate or participate in epidemiological and public health research

10.2 Adequacy of available resources (e.g. databases, information technology, human resources) to promote research

10.3 Planning for the dissemination of research findings to public health colleagues (e.g. publication in journals, websites)

10.4 Country's evaluation of the development, implementation, and impact of public health (and public health service) research efforts

10.5 Fostering innovation among staff

10.6 Ministry of health's research into and monitoring of best practices

10.7 Active use of research evidence in designing and supporting policy in the field of public health

10.8 Capacity for the collection, analysis and dissemination of health information

10.9 Capacity to carry out research on the social determinants of health (and their influence on health) in order to shape and target policy

10.10 Mechanisms for ensuring that policies, priorities and decision-making are consistent with evidence of the effectiveness of their impact on the broader determinants of health

Annex 3: "Wicked problems" and systems thinking

"Wicked problems" share many characteristics (see below). It is beyond the capacity of any one organization to understand or respond to these problems. There is often disagreement about the causes of these problems, and a lack of certainty about the best way to tackle them.[7] They are also often characterized by chronic policy failure. A good example here is the failure of successive governments in many countries to reduce health inequalities, despite political commitment and numerous efforts to do so.

Most of the contemporary challenges facing public health fall into the category of "wicked problems". Obesity is a much discussed example (see box). But there are many other examples, such as the causal factors in smoking prevalence and tobacco consumption.

Wicked problems share a number of characteristics:

- They are difficult to define clearly.

- They have many interdependencies and are often multicausal.

- Attempts to address them often have unforeseen or unintended consequences.

- They are often not stable.

- They usually have no clear solutions, so they are not merely complicated but complex.

- They are socially complex.

- They hardly ever sit conveniently within the responsibility of any one organization.

- They involve changing behaviour.

- Some are characterized by chronic policy failure.

Tackling wicked problems with any prospect of success demands the adoption of "systems thinking". Systems thinking foresees dimensions of public health action that vary according to the health issue being addressed, and the active involvement of relevant organizations and communities. The strength of public health could then be gauged by the extent to which relevant groups work effectively together on specific issues, that is, by its flexibility and relevance, rather than by a static, comprehensive or generic list of various groups and organizations with an impact on health.

Systems thinking involves much more than a reaction to present events; as such, it is in keeping with an approach to public health that focuses on future challenges and which seeks to promote a deeper understanding of the links, relationships, interactions and behaviours among the various components of the system. Systems thinking also places high value on understanding context. Addressing wicked problems by adopting a systems approach has profound implications for the public health workforce and the skills and expertise needed for capacity-building.

Tackling wicked problems by adopting a systems approach requires the exchange of knowledge. This derives from the realization that merely producing evidence or knowledge in the expectation that it will be adopted and acted on is simplistic and naïve. A lesson from the evidence-based medicine movement is that the acquisition and application of knowledge are themselves complex, context-based activities. Even where evidence exists, ensuring its adoption

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[7] Rittel HWJ, Webber MM. Dilemmas in a general theory of planning. *Policy Sciences*, 1973, 4(2):155–69.

in policy and practice poses significant challenges.[8,9,10] Knowledge exchange works towards evidence-informed policy and policy-informed research. Getting knowledge into practice requires new ways of coproducing and cocreating knowledge, with researchers and practitioners working closely together throughout the research process. Knowledge brokerage is an activity intended to result in the adoption of research findings and to spread and share learning from the application of knowledge. Knowledge exchange processes can occur at the individual, systemic or collective levels, and knowledge use at each of these levels depends on various processes, including coalition-building, advocacy and persuasion.

Public health practitioners should familiarize themselves with these developments and tools.

Box: "Wicked problems": the example of obesity

The causes of obesity are extremely complex, encompassing biology and behaviour but located within a cultural, environmental and social framework. Although personal responsibility plays a crucial part in obesity, human biology is being overwhelmed by the impact of the "obesogenic environment" in which we live. Key features of this environment are energy-dense and for the most part relatively cheap food, motorized transport, and sedentary lifestyles.

Successfully tackling obesity is a long-term, large-scale commitment involving multiple interventions at all levels of society – personal, family, community and national. There is no single or "quick fix" solution to the obesity challenge – hence its definition as a wicked problem. Simply increasing the number of small-scale interventions will not be sufficient to tackle the problem. Effective action on a large enough scale requires action at a population level. Interventions are likely to include surgery in extreme cases but for the most part they will involve a range of other measures, including spatial planning measures to create urban environments that encourage exercise and healthier lifestyles, regulation of the sugar and fat content in food, controlling the advertising of "junk" food to children, and providing more time in the school curriculum for physical exercise.

The principles for tackling obesity include:

- a system-wide approach, redefining a country's health as a societal and economic issue;
- attaching higher priority to the prevention of health problems;
- engaging stakeholders inside and outside government;
- ensuring that long-term and sustained interventions are in place; and
- investing in ongoing evaluation and focusing on continuous improvement.

As the United Kingdom Foresight report concluded,[11] the obesity epidemic affecting countries demands a societal approach similar to climate change. It requires partnership between government, science, business and civil society. There is a need for long-term, sustained interventions, coupled with ongoing evaluation and a focus on continuous improvement.

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[8] Lavis JN et al. Evidence-informed health policy: Case descriptions of organisations that support the use of research evidence. *Implementation Science*, 2008, 3:56.

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Annex 4: The roadmap for the Public Health Action Framework