



WORLD HEALTH ORGANIZATION

FIFTY-FIFTH WORLD HEALTH ASSEMBLY
Provisional agenda item 11

A55/DIV/5
22 April 2002

Ministerial round tables

Risks to health

OVERVIEW: MEASURING, COMMUNICATING AND REDUCING RISKS TO HEALTH

1. A focus on prevention requires a focus on the causes of disease and injury as well as their consequences. Now, more than ever, governments and policy-makers are faced with many and varied risks to health. But little emphasis has been given to assessing accurately the comparative magnitude of various risks, and often the knowledge and capacity for addressing the known major threats to health is underused. A range of cost-effective preventive and therapeutic options exists to address these risks, but too often such options are foregone at the expense of less cost-effective interventions, that may tackle smaller risks or those with major uncertainty.

2. A standardized, comparable framework is required for assessing risks and for communicating this information to the public and to decision-makers. Governments need to address uncertain hazards while still focusing on definite, major risks and making better use of cost-effective interventions. For many countries, and especially among poor populations, the potential gains are great – at least an extra decade of healthy life.

3. A risk to health may be thought of as any factor that raises the probability of an adverse health outcome. Risks to health are almost limitless. Without some quantitative approach to gauging their importance, in terms of likely impact, there is greater likelihood of policy being driven exclusively by factors such as pressure groups or the emotive weight of individual cases. A key aim of risk analysis is therefore to improve comparability between estimates of the impact of different risk factors. Also required is a comprehensive approach to the definition and study of risks, irrespective of factors such as place in the causal chain and the disciplinary methods used for analysis.

4. Criteria are required to help identify the most critical risks to health, which might include the potential global impact, covering all major causes of death and disability (likely to be among the leading causes of disease burden), strength and consistency of scientific evidence, and the potential for modification. Other factors which determine whether policies are adopted include public perceptions of the risks and benefits involved, the extent to which risks are distributed, and the degree of inequality as to outcomes. Successfully tackling risks to health involves many stakeholders from different sections of society, a combination of scientific and political processes, many qualitative and quantitative judgements, and opportunities for open communication and dialogue.

5. Often, the greatest burden of health risks is borne by vulnerable groups: poor people, those with little formal education, and those with low-status occupations. Readdressing this imbalance is a key focus of WHO, other international organizations and governments, starting with an assessment of how much more prevalent risks are among the poor.

6. During the past decades the field of risk analysis has grown rapidly, focusing on identification, quantification, and characterization of threats to human health and the environment. However, analysis of risk is a political as well as a scientific undertaking, and public perception of risk also plays a role in the analysis, bringing issues of values, process, power, and trust into the picture. The role and contribution of risk assessment, communication, risk management, cost-effectiveness, and policy development are key topics for debate.

QUANTIFYING SELECTED RISKS TO HEALTH

7. Estimates of the leading risks to health among a selected set of risk factors are given in Annex 1. These estimates have been calculated in collaboration with a worldwide network of experts in risk assessment. Globally, protein-energy malnutrition was estimated to be the leading cause of disease in 2000, which occurred essentially in developing regions. Such malnutrition and associated micronutrient deficiencies accounted for up to one-third of the burden of disease in the African Region. Unsafe sex was the next highest risk, with much of this disease burden concentrated in the African Region. Four risk factors (high blood pressure, tobacco use, alcohol consumption, and unsafe water, sanitation, or hygiene) were ranked next, followed by high cholesterol and indoor air pollution. The estimated leading causes of disease in countries by broad income category are set out in the table below.

Country income	Leading causes of disease
Low	Protein-energy malnutrition Unsafe sex
Middle	Protein-energy malnutrition High blood pressure Tobacco use Alcohol consumption
High	High blood pressure Tobacco use Alcohol consumption High cholesterol level

8. Risk assessment estimates the burden of disease due to different risk factors, each of which may be altered by many different strategies. Such assessment can provide an overall picture of the relative roles of different risks to human health, which can in turn help set agendas for research and policy. Furthermore, it provides insight into the *potential* for health benefits by addressing these risks.

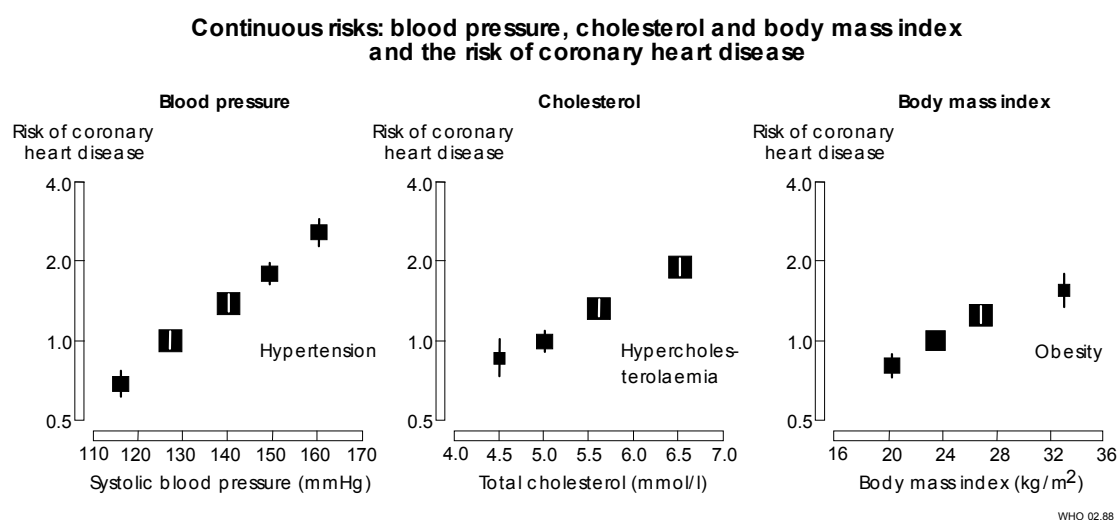
COST-EFFECTIVENESS ANALYSIS

9. Cost-effectiveness analysis is one tool decision-makers can use to assess which interventions provide the highest “value for money”. There are many options to be considered when making choices

among potential interventions. The ideal intervention would target a risk factor causing a significant burden of disease, and has proven cost-effectiveness at a population level. Although there are candidates for ideal interventions, such as vitamin A supplementation and other child or maternal interventions, the choices are frequently less clear cut. Deciding the trade-off between treatment and prevention is a particular challenge. This situation is exemplified by the current pressure to provide highly active antiretroviral treatment to HIV/AIDS patients while maintaining resources for voluntary counselling and testing and promotion of safe sexual behaviour. The cost-effectiveness of these two interventions diverges significantly.

10. Another choice faced by policy-makers is whether they should target high-risk individuals or adopt a population approach in reducing exposure to risk. Is it more cost-effective to provide secondary prevention to hypertensive, hypercholesterolaemic, obese smokers who have suffered their first cardiovascular event, and are at high risk of another, or to launch population-based programmes on lifestyle change which may take a long time to produce results? Major shifts in the distribution of the population exposed to a risk factor are certainly possible, as has been demonstrated by the programme to prevent cardiovascular disease in North Karelia, Finland. Where they can be measured, risks continue to decline for major risk factors down to the lowest observable levels (see figure below).

Figure



11. Cost-effectiveness analysis is most useful in making policy for the most common and widely distributed risks that are also well understood scientifically, and have effective reduction strategies and low levels of uncertainty. Such analysis will probably identify three groups of interventions: cost-effective and cheap; cost-effective but not cheap; and not cost-effective and not a priority. As levels of uncertainty rise, either in the assessment of risk or in evidence for the reduction strategy, cost-effectiveness analyses will become less useful for taking risk-management decisions.

12. Lastly, comparison between the impact on the future health of populations of interventions and of risk factors is vital. But it is also important to determine the role of other interventions in contributing to such socially desirable goals as reduction of health inequalities, and responsiveness to the legitimate expectations of the population.

RISK PERCEPTION AND COMMUNICATION

13. Research begun in the 1980s and 1990s revealed the importance of different perceptions of the same risk, particularly between scientists and the general public, such as for risks from nuclear power or motor vehicles. It has become widely accepted that perceptions of both groups are important, and that successful risk-management policies need consensus. The importance of other qualities for risks, such as whether they were observable or unseen, voluntary or involuntary exposures, associated with high levels of dread or fear, and the possibility of intergenerational effects, were all found to be important in explaining public concerns. Research also revealed that small and common risks were often tolerated, while uncommon but dramatic risks could cause great controversy. However, where benefits from a technology were seen as substantial and the risk of adverse effects as very low, the case, for example of many vaccines, medical procedures and therapeutic drugs, there has usually been wide professional and public acceptance of the risks involved.

14. The importance of risk communication is now being widely recognized, particularly between governments and their scientific advisers on the one hand, and the public and special interest groups on the other. The way in which risks are described and “framed”, who are the scientific spokespersons, how dialogue and negotiations take place, and whether uncertainties are adequately communicated, all have a substantial influence over the final policies chosen to modify and control health risks. A climate of mutual trust between all parties is crucial for implementation of sound risk-control policies. However, where policies for risk control and regulation have impinged on the interests of corporate businesses (such as the alcohol and tobacco industries), there have often been well-organized attempts to create scientific and public controversy in order to undermine political and public consensus.

15. Policies for risk management must take into account the local context, particularly culture and society, and political and economic realities. However, so far there has been little research on health risks in low- and middle-income countries and between different societies. There is a real need for more epidemiological data on risks to health and associated information on risk perception and communication. For instance, the effect of poverty and behaviour on vulnerability of different populations to HIV/AIDS and the way individuals handle risks related to its transmission remain poorly understood.

FROM RISK MANAGEMENT TO HEALTH POLICY

16. Risk-management policies vary according to whether the health risks can be grouped into those that are scientifically well understood and common (such as high blood pressure, tobacco use, lack of access to clean water), those less well understood (dietary vegetable intake, obesity) or less common (zinc deficiency, absorption of lead), and those not yet well understood (climate change). Levels of scientific uncertainty probably vary in a similar way.

17. In order to maximize the health gains from strategies for risk management, decision-makers need to adopt approaches that give priority to tackling background environmental (e.g. climate change) and distal (e.g. sanitation) risks, as well as more proximal risks. Strategies also need to promote prevention both by reducing exposure to risk throughout the population and by targeting high-risk individuals in well-defined population subgroups.

18. The management of rare or highly uncertain risks is often the most controversial. Factors inhibiting action include inadequate scientific knowledge, widely differing risk perceptions, conflicts between public and private priorities, insufficient evidence for risk reduction and management, and

weak political decision-making. Policies for a population-wide reduction of exposure are unlikely to be adopted. Depending on levels of scientific, political and public concern and controversy, various policy options for risk management would be to wait and see; to seek actively to reduce levels of uncertainty through further scientific research; to await outcome of further scientific communications and public dialogue; or to adopt a cautionary approach, particularly if risks are involuntary.

19. The precautionary principle may be invoked in cases where potentially serious risks are widely believed to be a real possibility, and potential but unknown outcomes could also be very damaging, where there are fundamental disagreements over risk perceptions, and where scientific evidence on the hazard, risk probability or scale of consequences is missing or weak. This principle is best invoked in serious situations where decision-making has become impossible because of high levels of uncertainty and controversy.

20. Governments have an important role to play in reducing the exposure of their population to hazards, especially risks that are unseen and involuntary. People also need to understand how their governments make such risk-management decisions. Lessons have been learnt on the most effective ways to communicate information about risks to the public, including the need to present all the known facts and uncertainties, and ensure that communicators are well qualified and recognized, but independent, experts. It is important to develop a culture of trust between officials, experts, the public and media.

21. The need to develop trust has implications for more open government and for regulatory agencies independent of political pressure. Full information on risks needs to be in the public domain, and the activities of scientific advisers need to be accessible and open to the public. The mass media also need to be free to investigate and publish their findings.

SUGGESTED DISCUSSION POINTS

- What are the major risks to health in your country and how confident are you about their relative magnitude?
- Are monitoring and surveillance systems adequate to ascertain whether exposure levels are increasing, and in which population subgroups?
- What are the impediments to implementing population-wide interventions for major risks in order to lower exposure levels for the entire population?
- What government institutions need to be strengthened in order more effectively to reduce major health risks in your country?
- What measures might be taken to increase resources for prevention?
- What strategies are there to manage highly uncertain risks in your country?
- How can the communication of risks be made more effective in your country? Is there a role for closer collaboration with the media?

ANNEX 1
MAJOR SELECTED CAUSES OF DISEASE, 2000

	Country groupings with high child and high or very high adult mortality levels ^a	Country groupings with low child and low adult mortality levels ^a	Country groupings with very low or low child mortality levels ^a
Total population (000s)	2 295 264	2 396 789	1 353 119
Estimated proportion of burden due to each risk factor (Disability-adjusted life years (DALYs) lost) <div> <div>%</div> <div>>5</div> <div>1-5</div> <div><1</div> </div>	<div> <div>Protein energy malnutrition</div> <div>Unsafe sex</div> </div> <div> <div>Alcohol consumption</div> <div>High blood pressure</div> <div>High cholesterol</div> <div>Indoor smoke from solid fuels</div> <div>Iron deficiency</div> <div>Tobacco use</div> <div>Unsafe water, sanitation and hygiene</div> <div>Zinc deficiency</div> </div> <div> <div>Childhood sexual abuse</div> <div>High body mass index</div> <div>Lead absorption</div> <div>Non-breastfeeding</div> <div>Physical inactivity</div> <div>Selected occupational risks</div> <div>Unsafe medical injections</div> <div>Unwanted pregnancy</div> <div>Vitamin A deficiency</div> </div>	<div> <div>Alcohol consumption</div> <div>High blood pressure</div> <div>Protein energy malnutrition</div> <div>Tobacco use</div> </div> <div> <div>High body mass index</div> <div>High cholesterol</div> <div>Indoor smoke from solid fuels</div> <div>Iron deficiency</div> <div>Physical inactivity</div> <div>Unsafe water, sanitation and hygiene</div> </div> <div> <div>Childhood sexual abuse</div> <div>Lead absorption</div> <div>Non-breastfeeding</div> <div>Selected occupational risks</div> <div>Unsafe medical injections</div> <div>Unwanted pregnancy</div> <div>Vitamin A deficiency</div> <div>Zinc deficiency</div> </div>	<div> <div>Alcohol consumption</div> <div>High blood pressure</div> <div>High cholesterol</div> <div>Tobacco use</div> </div> <div> <div>High body mass index</div> <div>Physical inactivity</div> </div> <div> <div>Childhood sexual abuse</div> <div>Indoor smoke from solid fuels</div> <div>Iron deficiency</div> <div>Lead absorption</div> <div>Non-breastfeeding</div> <div>Protein energy malnutrition</div> <div>Selected occupational risks</div> <div>Unsafe medical injections</div> <div>Unsafe sex</div> <div>Unsafe water, sanitation and hygiene</div> <div>Unwanted pregnancy</div> <div>Zinc deficiency</div> </div>
Disease burden (000s DALYs lost)	845 628	411 268	215 496

^a See Annex 2.

Note: Some causes act jointly, and can be addressed by related interventions, for example, those related to malnutrition and vitamin deficiency.

ANNEX 2

COMPOSITION OF COUNTRY GROUPINGS ACCORDING TO MORTALITY STRATA

For analytical purposes, the 191 Member States of WHO have been divided into five mortality strata on the basis of their level of child (5q0) and adult (male) mortality (45q15): A = very low child, very low adult mortality; B = low child, low adult mortality; C = low child, high adult mortality; D = high child, high adult mortality; E = high child, very high adult mortality.

The matrix defined by WHO's six regions and the five mortality strata yields 14 country groupings, since not every mortality stratum is represented in every region.

WHO region	Stratum	WHO Member States
Africa	D	Algeria, Angola, Benin, Burkina Faso, Cameroon, Cape Verde, Chad, Comoros, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Madagascar, Mali, Mauritania, Mauritius, Niger, Nigeria, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Togo
	E	Botswana, Burundi, Central African Republic, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Eritrea, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Namibia, Rwanda, South Africa, Swaziland, Uganda, United Republic of Tanzania, Zambia, Zimbabwe
The Americas	A	Canada, Cuba, United States of America
	B	Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Brazil, Chile, Colombia, Costa Rica, Dominica, Dominican Republic, El Salvador, Grenada, Guyana, Honduras, Jamaica, Mexico, Panama, Paraguay, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela
	D	Bolivia, Ecuador, Guatemala, Haiti, Nicaragua, Peru
South-East Asia	B	Indonesia, Sri Lanka, Thailand
	D	Bangladesh, Bhutan, Democratic People's Republic of Korea, India, Maldives, Myanmar, Nepal
Europe	A	Andorra, Austria, Belgium, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Luxembourg, Malta, Monaco, Netherlands, Norway, Portugal, San Marino, Slovenia, Spain, Sweden, Switzerland, United Kingdom of Great Britain and Northern Ireland
	B	Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Bulgaria, Georgia, Kyrgyzstan, Poland, Romania, Slovakia, Tajikistan, The former Yugoslav Republic of Macedonia, Turkey, Turkmenistan, Uzbekistan, Yugoslavia
	C	Belarus, Estonia, Hungary, Kazakhstan, Latvia, Lithuania, Republic of Moldova, Russian Federation, Ukraine
Eastern Mediterranean	B	Bahrain, Cyprus, Iran (Islamic Republic of), Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia, United Arab Emirates
	D	Afghanistan, Djibouti, Egypt, Iraq, Morocco, Pakistan, Somalia, Sudan, Yemen
Western Pacific	A	Australia, Brunei Darussalam, Japan, New Zealand, Singapore
	B	Cambodia, China, Cook Islands, Fiji, Kiribati, Lao People's Democratic Republic, Malaysia, Marshall Islands, Micronesia (Federated States of), Mongolia, Nauru, Niue, Palau, Papua New Guinea, Philippines, Republic of Korea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu, Viet Nam