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Enhancing health security: the challenges in the WHO European Region and the health sector response

What happens when countries have to respond rapidly to sudden health threats? What are the most important lessons that policy-makers have drawn from the experience?

The purpose of this paper is to outline current and potential future threats to human health with potential implications for security, to take stock of lessons learnt, to propose a way forward towards enhancing health security in the WHO European Region and, more specifically:

- to propose a strategic framework for action to enhance health and security at a pan-European level;
- to elaborate and agree on a road map to tackle health and security through an analysis of health system capacities and an approach towards strengthened health systems; and
- to promote an effective and comprehensive health systems response by supporting Member States in strengthening preparedness measures for health threats with security implications.

The document is submitted for the discussion and consideration of Member States during the fifty-sixth session of the Regional Committee. The Regional Committee may wish to take a decision calling on the Regional Director to continue work along those lines in the years ahead.

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This paper builds on the following World Health Assembly and Regional Committee documents and resolutions:

2006

A59/4 and A59/5 Strengthening pandemic-influenza preparedness and response, including application of the International Health Regulations (2005)

A59/20 Emergency preparedness and response

2005

WHA58.1 Health action in relation to crises and disasters, with particular emphasis on the earthquakes and tsunamis of 26 December 2004

WHA58.3 Revision of the International Health Regulations

WHA58.4 Appropriation resolution for the financial period 2006/2007

WHA58.5 Strengthening pandemic-influenza preparedness and response

EUR/RC55/R8 Strengthening European health systems as a continuation of the WHO Regional Office for Europe's Country Strategy "Matching services to new needs"

2004

EUR/RC54/R3 Environment and health

2003

WHA56.29 Severe acute respiratory syndrome (SARS)

2002

WHA55.16 Global public health response to natural occurrence, accidental release or deliberate use of biological and chemical agents or radionuclear material that affect health

2001

WHA54.14 Global health security: epidemic alert and response

2000

EUR/RC50/Inf.Doc./4 Disaster Preparedness in the European Region – Progress Report

Introduction

1. Over the last decades, the WHO European Region has been affected by numerous events that have endangered health and security. Some of these events have created crises and public health emergencies of an international nature, others have been more localized. Newly emerging public health risks like avian influenza have sparked international concern, and health is increasingly discussed in terms of its potential implications for the national security and safety of people, and national health systems.

2. Several serious crises have affected the Region; between 1990 and 2006, 1469 events – disasters and crises – caused 95 700 deaths, and affected more than 42 million human beings. Extreme temperature events and earthquakes accounted for the highest mortality rates, whereas floods – although the most frequent events – caused a relatively lower mortality (see Tables 1 and 2).

Table 1. WHO European Region – main events – disasters and crises, in the period 1990–2006

Type of event	Number of events	Deaths	People affected
Flood	319	3 702	10 774 701
Wind storm	160	1 375	> 8 000 000
Earthquake	98	21 828	4 486 715
Drought	31		1 594 675
Extreme temperature event	105	50 082	1 376 200
Epidemics and disease outbreak	51	621	213 149
Accident	593	15 976	108 182
Landslide	48	1 891	70 513

(Source: EMDAT: The OFDA/CRED International Disaster Database, www.em-dat.net)

Table 2. Main events in the WHO European Region, by country, 1990–2006

	Wind storm	Flood	Extreme temp. event	Wild fire	Epidemic	Land-slide	Earthquake	Accident	Total events
Albania	2	7	1	0	2	0	1	2	15
Andorra									
Armenia	0	3	0	0	0	0	1	5	9
Austria	7	5	1	0	0	2	1	6	22
Azerbaijan	0	5	0	0	0	1	3	10	19
Belarus	1	3	1	0	2	0	0	2	9
Belgium	3	10	3	0	0	0	1	10	27
Bosnia and Herzegovina	2	4	0	1	1	1	0	2	11
Bulgaria	4	7	4	2	0	0	1	2	20
Croatia	1	3	2	3	0	0	1	3	13
Cyprus	2	0	2	1	1	0	1	2	9
Czech Republic	2	3	1	0	0	0	0	2	8
Denmark	4	0	0	0	0	0	0	3	7
Estonia	1	0	1	0	0	0	0	2	4
Finland	0	1	0	0	0	0	0	2	3
France	16	28	7	3	2	3	0	38	97
Georgia	1	5	0	0	0	0	3	9	18
Germany	12	10	4	0	2	0	2	24	54
Greece	2	14	2	4	0	0	12	16	50
Hungary	3	10	2	0	0	0	0	8	23
Iceland	0	0	0	0	0	2	2	0	4
Ireland	5	2	0	0	2	0	0	2	11
Israel	2	2	2	1	1	0	0	7	15
Italy	3	18	3	4	2	1	7	29	67
Kazakhstan	1	4	2	1	3	1	1	7	20
Kyrgyzstan	0	2	1	0	1	7	3	7	21
Latvia	1	0	3	0	1	0	0	0	5
Lithuania	1	1	2	0	0	0	0	1	5
Luxembourg	0	0	0	0	0	0	0	1	1
Malta	0	0	0	0	0	0	0	4	4
Monaco									
Netherlands	4	3	3	0	1	0	1	14	26
Norway	3	3	0	0	0	0	0	9	15
Poland	4	5	7	1	0	0	0	9	26
Portugal	1	6	1	5	0	0	0	6	19
Republic of Moldova	2	5	1	0	1	0	0	0	9
Romania	8	25	10	0	3	1	3	12	62
Russian Federation	18	41	16	19	10	11	15	136	266
San Marino									
Serbia and Montenegro	1	8	2	1	2	0	2	11	27
Slovakia	1	5	1	1	0	0	0	2	10
Slovenia	0	0	0	0	0	0	2	1	3
Spain	7	6	5	8	2	1	1	36	66
Sweden	2	0	1	0	2	0	0	3	8
Switzerland	6	4	2	0	1	2	0	9	24
Tajikistan	2	17	0	0	4	9	4	5	41
The former Yugoslav Republic of Macedonia									
Turkey	7	20	5	3	0	4	27	80	146
Turkmenistan	0	1	0	0	0	0	1	1	3
Ukraine	4	7	2	0	3	0	0	24	40
United Kingdom	14	15	5	0	1	0	1	26	62
Uzbekistan	0	1	0	0	1	2	1	3	8
Total	160	319	105	58	51	48	98	593	1432

(Source: EMDAT: The OFDA/CRED International Disaster Database, www.em-dat.net)

Health and security

3. There is no widely accepted and agreed definition of “health security”; as a working definition, it is suggested that the analysis should focus on health issues with potential security implications, that is, generally those health emergencies of an acute, rather than a chronic, nature that have serious public health consequences and potential cross-border implications.
4. “Crisis” is defined as an unstable situation of extreme danger or difficulty that arises when local health systems on which people depend are overwhelmed, and are unable to respond to the needs, or the increased demand.
5. The role and impact of health on security – or stability – is reflected in a new international consensus that we have a shared responsibility for collective security and to meet the challenge of prevention: “any event or process that leads to large-scale death or lessening of life chances and undermines states as the basic unit of the international system is a threat to international security” – as highlighted in the Report of the United Nations Secretary General’s High-level Panel on Threats, Challenges and Change (1).
6. The European Union (EU) is in the process of further specifying its security role, with an emphasis on crisis management. There is an ongoing broad discussion to define the dimensions of threats to EU security, and the authority of EU institutions to coordinate and react. This has been interpreted as an attempt to meet future security challenges through the concept of moving from “a European security community to a secure European community” (2).
7. Recent history has confronted some of the 52 Member States of the WHO European Region with dramatic political and socioeconomic changes, leaving health systems and people in many countries with insecure environments and insufficient resources and capacities to cope with new challenges.
8. Several recent studies have shown the extent to which the spread of diseases, like severe acute respiratory syndrome, bovine spongiform encephalopathy and avian influenza, and the consequences on health caused by other crises and emergencies can impact on security at both national and international levels.
9. The possibility of biological, chemical and radionuclear terrorist attacks, conflicts and natural disasters occurring, causing mass displacement and ill health, can contribute to instability with cross-border consequences.

Challenges

10. The combination of increasing social inequalities, the deterioration and relative collapse of health systems in parts of the European Region, the increasing interconnectedness of communicable diseases and the re-emergence of some that had almost been eliminated, the increasing frequency of extreme weather events, other natural and man-made disasters, and armed conflicts that escalate into complex emergencies, and the unprecedented level of social violence, make the European Region even more vulnerable today.
11. Extreme weather events are expected to increase in frequency and severity. Floods are the most common natural disasters in the European Region. Heat-waves have caused serious health effects, and increased water scarcity in the European Region will require an adjustment in water use in all sectors, entailing the use of a variety of environmental and health-risk assessment methods and economic tools. These threats all highlight the need for the establishment of effective early warning/early action mechanisms and systems, integrated into comprehensive preparedness strategies.

12. New global threat scenarios such as a potential influenza pandemic or the deliberate use of biological, chemical or radionuclear agents, conflicts, global environmental changes and the trade in hazardous substances pose new challenges to national health systems and governments. The realistic possibility of a global influenza pandemic with the potential to trigger a severe health and security crisis has certainly raised the awareness: with between 25% and 30% of the population potentially infected at the same time, a pandemic could cause socioeconomic consequences that would go far beyond the health sector.

13. Global environmental changes such as losses of ecosystem services and climate changes might further contribute to changes in disease patterns, triggering migration and causing economic losses for vulnerable populations.

14. Moreover, the history of the European Region has shown that it is not free from the risks of inter-state conflicts, internal conflicts and civil war. The extensive experience gained in the Region and the lessons learnt from the response to the health challenges of the complex emergencies in the Balkans underline the importance of national health systems being properly prepared to respond effectively to the health security aspects of violence-related crises. They also highlight the importance of WHO's institutional readiness to effectively support Member States and their health systems and essential services.

15. These ongoing developments and dramatic changes pose the question of whether health systems in the European Region are sufficiently prepared and equipped to cope with the new challenges.

Potential health sector response strategies

Implementing the legal framework

16. The first legally binding WHO instrument, the International Health Regulations (IHR), has been revised, and the revision was endorsed by all Member States in May 2005. The revised version, IHR (2005), constitutes a renewed legal framework for Member States and WHO to collectively address public health emergencies of international concern, of whatever nature (infectious agent, chemical, nuclear, etc.) or origin (natural, accidental, deliberate). IHR (2005) will come into force on 15 June 2007. However, at its 117th session, the WHO Executive Board adopted resolution EB117.R7 recommending to the Fifty-ninth World Health Assembly (WHA59) that it should call for early voluntary implementation of IHR (2005). The resolution adopted by WHA59 called upon Member States to comply immediately, on a voluntary basis, with the provisions of IHR (2005) considered relevant to the risk posed by avian and pandemic influenza, and requested the Director-General to collaborate with Member States in fulfilling this task.

17. World Health Assembly resolution WHA58.1 on Health action in relation to crises and disasters reinforced WHO's mandate to support Member States in preparing their health systems to cope effectively with the health aspects of crises and to strengthen the Organization's own institutional readiness.

Strengthening health systems

18. Health and security risks require complex prevention and preparedness strategies for health systems. Preparedness refers to activities and measures implemented in advance to ensure effective response to the impact of hazards, including the issuance of timely and effective early warnings and the temporary evacuation of people and property from threatened locations.

19. Health systems all over Europe are confronted with high expectations, multiple health crises and limited resources. Good governance and good management of health systems are particularly important prerequisites for effective operational crisis response, and are dependant on well functioning health

information systems, designed to facilitate operational and strategic decision-making, as well as accountability.

20. Coordination mechanisms for the health sector, command and control structures, procedures for scaling up the health response in a crisis situation, including the mobilization of extra resources and personnel, and essential pre-defined treatment protocols, among many other emergency management elements, need to be established well in advance. Functioning and tested networks of private and public facilities, with civil defence and security forces, the involvement of nongovernmental organizations and volunteers, as well as a sound communication strategy, are key points that need to be in place if health services are to be ready to save lives in times of crisis, when they are most needed. Wide dissemination of best practices and evidence-based approaches to preparing hospital and primary care emergency plans – addressing mass casualty management, triage and emergency health interventions – are essential.

21. Hospitals and primary care services play a critical role in crises and disaster situations, as do facilities providing essential services (water plants, energy supply systems, etc.). Health conditions are highly dependant on other key sectors, including security, basic infrastructure (such as power and transportation), education, governance and economic stability. The health system is particularly sensitive to security, in terms of the ability of patients to access care and the ability of health care facilities to function properly. Patients can be hindered from receiving essential health care because of security reasons. The effectiveness of health systems is also closely linked to the performance of other sectors, such as basic infrastructure, its rehabilitation and reconstruction, and the existence of viable and well established financial, judicial and education systems.

22. Mitigation measures have to be considered as essential components of health security programmes and disaster reduction strategies, and need to be promoted as crucial elements in an effective stewardship role of ministries of health. Reduction of the functional and structural vulnerability of health facilities and crucial supply lines is indispensable in ensuring business continuity. Hospitals and health care facilities must be constructed and planned in a way that allows them to remain functional in crisis situations; “Hospitals (being constructed in a way that makes them) safe from disaster” is one of the key recommendations of the Hyogo Framework for Action (3), adopted at the World Conference on Disaster Reduction held in Kobe, Japan in January 2005. The survival and recovery of a community after a major event depends to a significant extent on the ability of health facilities to function without interruption and to cope with the excess demand for health care during a crisis and in the aftermath of disasters.

23. Structured health emergency management training for health professionals should become an integral component of the curricula for health professionals, as an essential part of national health emergency plans. National plans should comprise strategies for coordinated capacity building and task definition for all institutional levels of the health system, as well as administrative and operational procedures.

24. Modern preparedness concepts tend to favour a multihazard approach, including all types of natural and man-made disasters, epidemics, system failures, and deliberate attacks with biological, chemical, radiological or nuclear substances. Ministries of health need to ensure that essential public health measures are integrated into intersectoral coordination efforts. Institutionalized disaster and health-risk reduction programmes need to lead the entire health sector, and should be well embedded in multisector, cross-cutting coordination mechanisms involving governmental and nongovernmental institutions as well as other stakeholders.

25. In times of crisis, large quantities of medical relief supplies, including essential vaccines and pharmaceuticals, are often donated as part of humanitarian assistance. Undoubtedly, many of them save lives and alleviate suffering, but some donations may unintentionally aggravate the problems of the recipient countries. The interagency *Guidelines for drug donations* (4) and the *Guidelines for safe disposal of unwanted pharmaceuticals in and after emergencies* (5), elaborated by WHO in collaboration with other partners, should be shared widely and actively promoted to donors, their implementing partners and potential recipient countries as an emergency preparedness action *before* a potential crisis

occurs. The establishment of logistic monitoring and supply tracking systems, and prearranged mechanisms for receiving humanitarian aid, including fast-track registration procedures for pandemic vaccines, can help prevent local systems being overwhelmed by external relief supplies.

26. Each country's health system is organized and managed in a unique way. The debate therefore is not limited to the mere conceptualization of the health systems framework but, rather, focuses on the critical actions that a country can initiate to achieve its health systems objectives, including an effective response to various health crises.

27. Rebuilding public health and health care delivery systems has been an important component of nation-building efforts after major conflicts. The few studies that have attempted to document and examine a comprehensive set of case studies, comparing quantitative and qualitative results, and tried to outline best practices have identified evidence for two factors that increase the likelihood of positive health outcomes: planning and coordination, and infrastructure and resources. Health can, independently, have an impact on broader political, economic and security objectives during the nation-building process in fragile states in post-conflict scenarios.

28. The response to the health challenges of the European Region has traditionally been organized predominantly along the lines of vertical technical support provided to countries, mobilizing the extensive professional expertise of vertical programmes to effectively respond to the health challenges of a particular crisis. However, this approach tends to suffer, from serious systemic shortcomings, being highly cost-intensive, and entailing the intrinsic danger of creating parallel structures and duplication.

29. To translate vertical technical success stories into sustainable long-term improvements in health security requires a gradual integration of vertical programmatic approaches into a coherent and systematic, horizontally-coordinated, framework. To effectively increase long-term crisis preparedness and build an overarching common system to respond to health threats requires a strong system infrastructure at country level. A "one-system" mechanism, that includes developing the capacity of national health systems, can provide a means to respond to known, as well as to the as yet unknown, future threats to health and security.

Information and communication

30. Risk communication is essential for public health programmes. Risk perceptions shape individual behaviour to a large extent, and social mobilization and health education can effectively promote risk reduction and increase the coping capacity of communities. Simple and easily understandable messages communicated by the media can educate the public on protective measures to reduce risks to health. Providing accurate and timely information to the public is of major importance in any public health emergency. Rumours and perceived attempts to hide crucial information can contribute to panic and jeopardize security.

31. Health crises also tend to be communication crises. Several lessons have been extracted from past experience of crisis communication in the European Region:

- the emergence of health risks and the failure of public services to effectively address those risks often occur in a climate of mistrust, suspicion, blame and retribution, created by inappropriate and conflicting information;
- the general public is understanding and perception of risk is very different from that of the health professional, and communication strategies need to take this into account;
- an organizational culture of transparency is vital to effectively address and communicate health risks;
- a clear framework for risk assessment is required to facilitate informed decision-making on appropriate risk control measures; and

- accurate and reliable communication and information-sharing are essential tools for public health decision-making.

Lessons learnt (case studies)

32. This chapter builds on recent case studies and analyses the lessons learnt from the response to various health crises in the Region. It covers the response to the environmental health crisis associated with lead contamination in the United Nations-administered province of Kosovo (Serbia), the health consequences of the heat-wave in 2003, the floods in central Europe (Bulgaria), the earthquake in Turkey, and the avian and human influenza outbreaks in Turkey and Azerbaijan.

Kosovo (Serbia): case study on lead contamination (2006)

Situation description

33. Years of operation of the TREPČA mining company in Mitrovica/ë (with a population of approximately 110 000), in the United Nations-administered province of Kosovo (Serbia), have left the surrounding environment heavily contaminated with lead,¹ resulting in significant health risks, particularly to children under the age of six. The situation has been especially serious in the camps of internally displaced people (IDPs) located in the proximity of the tailing dams in North Mitrovica/ë and Zvečan,² where 560 people of Roma, Ashkali and Egyptian (RAE) ethnicity have been living under poor sanitary conditions and with intermittent water and electricity supplies since the crisis of 1999. The proximity of these camps to the TREPČA tailings dams and smelter sites has resulted in an urgent need for the relocation of the affected communities to a less contaminated setting.

34. The decades of smelting and metallurgic activities, together with the factory's three huge tailing dams, are responsible for the environmental pollution in Mitrovica/ë. The smelter was closed down in 2000 on the orders of the United Nations Interim Administration Mission in Kosovo (UNMIK) in order to reduce the associated health risks. However, the tailing dams and smelter sites continue to spread dust and soil contaminated with lead, which remains in the soil, dust and the food-chain.

35. The Mitrovica/ë region is ethnically divided, between Serbian communities located in the northern part, under the government of Belgrade, and Albanian communities in the south, under the Kosovo Provisional Institutions of Self-Government (PISG) and UNMIK. Since the complex emergency in 1999, the province of Kosovo (Serbia), and specifically Mitrovica/ë region, has been subject to a heightened United Nations security phase.

36. The Regional Office's support to Kosovo (Serbia) in regard to the above situation started in 2002; in 2004, a WHO Health Risk Assessment identified high levels of lead exposure in the North Mitrovica/ë area and extremely high blood levels in affected communities. Consequently, a call was made for urgent public health interventions.

Health and security impact

37. There was general scepticism and resistance to the belief that large-scale human intoxication had occurred, as lead was considered to be primarily an occupational hazard. There was a general lack of

¹ TREPČA Mine in Mitrovica/ë was built in 1927. The smelter close to Zvečan commenced work in 1939.

² The RAE camps were never intended to become semi-permanent settlements in the midst of an environmental disaster area. The Office of the United Nations High Commissioner for Refugees (UNHCR) constructed the three internal displacement camps of Chesminluk, Kablare and Ztikovac for the RAE populations who fled from South Mitrovica/ë to North Mitrovica/ë during the complex emergency in 1999. UNHCR built these camps as a temporary solution, believing, at the time, that the RAE displaced would remain there for 45 to 90 days, after which they would return to South Mitrovica/ë. However, continued inter-ethnic conflict prevented their return to South Mitrovica/ë and thus the camps have remained occupied since 1999.

awareness of the potential health consequences for the community living close to the mining and metallurgic sites.

38. Results from the WHO Health Risk Assessment performed in late 2004 confirmed that the health security threat related to lead exposure was of unprecedented seriousness. In the general population in the Mitrovica/ë and Zvecan area, 25% of the children tested aged 2–3 years had elevated blood lead levels. More remarkably, it was estimated that at least 100 of the 160 RAE children living in the IDP camps qualified as medical emergencies owing to severe acute and chronic lead poisoning.

39. Absorption of lead through ingestion and inhalation, especially in the case of young children, can result in health consequences such as brain or nerve damage, impaired speech, hearing problems, mental retardation, decreased learning abilities, hyperactivity, antisocial behaviour and reduced growth. Lead exposure is also associated with high blood pressure and renal function impairment in adults.

40. Ethnic tensions remain strong in the area, and the associated difficulties in access to healthcare for minority groups are an ongoing problem. Serbian people from North Mitrovica/ë avoid secondary and tertiary care in Pristina and often go to Belgrade, a four-hour drive, causing substantial treatment delays.

41. Economic development and employment opportunities are compromised under the current situation. Tension is mounting, triggered by uncertainty regarding the final political status of Kosovo (Serbia) and the future of the Mitrovica/ë region. Movement of people out of Kosovo (Serbia) after the decision on its status is taken might result in a vacuum in professional staff in the healthcare system in North Mitrovica/ë.

42. Controversial media messages contribute to an atmosphere of mistrust in the local population, with increasing instability and threatened security. Conflicts of interest in the fields of health and politics cause complications, uncertainties and delays in the implementation of planned actions.

Action taken

43. The Regional Office identified the health security situation as a crisis and a public health emergency, based on a series of risk assessment activities and special missions by WHO experts. It recommended an immediate and voluntary relocation of the most affected inhabitants of the three RAE camps to a lead-safer environment.

44. An emergency evacuation plan for the affected RAE communities was agreed between the Special Representative of the Secretary-General, the UNMIK civil administration and the partner United Nations agencies, the PISG and local Mitrovica/ë region municipal officials. The WHO recommendation could not be implemented until the end of 2005 because of resistance from the community of RAE IDPs, and the lack of ability of local structures to identify a suitable relocation site.

45. Following the Regional Director for Europe's appeal at the fifty-fifth session of the Regional Committee in September 2005 to all Member States to support the UNMIK relocation process, a Regional Office taskforce led by the WHO country office in Serbia and Montenegro, and its sub-office in Kosovo (Serbia), and composed of experts in the fields of environmental health, nutrition, mental health and communication, was appointed and deployed by 1 November 2005. The taskforce developed and implemented a lead crisis action plan, in line with WHO's coordinating and stewardship role, involving key partners and cross-ethnic and intersectoral working groups.

46. Since November 2005, the WHO Regional Office for Europe has been working to expand the existing public health programmes in the IDP camps, with continued support from leading WHO and international experts. As of March 2006, most of the RAE inhabitants in two of the camps had decided to move to a safer place, Camp Osterode, a former French military camp. A medical therapy plan has been initiated. A public awareness campaign is continuing to reduce the risk of additional lead exposure. The WHO activities have been funded in past years by the Government of the Netherlands, and the work of

the Regional Office taskforce and the programme developed were made possible by a generous donation from the Norwegian Government.

Analysis and lesson learnt

47. The general situation in Mitrovica/ë region remains highly fragile and vulnerable to rapid change because of the political and security uncertainty over the status of Kosovo (Serbia) that could potentially affect health security.

48. The immediate response activities to cope with the environmental crisis should increasingly be broadened and integrated into comprehensive preparedness strategies for the local health system; WHO support at policy level should be further strengthened.

49. Coordination and advocacy by WHO, which has consistently articulated a clear position on this public health crisis, has been crucial in resolving this complex public health emergency, where politics, health, and social and security issues are at stake. Prompt WHO technical support in health risk assessment and management, following international standards, has been essential, and regular sharing of reliable information with stakeholders has been instrumental in building trust.

50. Public awareness, communication and support to decision-makers have been effective tools in the successful implementation of necessary preventive measures. Dialogue with key stakeholders in the decision-making process and continuous communication with the RAE groups have proved crucial in preventing misinformation and uncertainty. A sound WHO information and communication strategy in crises is essential, and should be further strengthened.

Heat-wave related health consequences – case study (2003)

Situation description

51. A severe heat-wave over large parts of Europe in 2003 exceeded the record temperatures observed in the 1940s and early 1950s in many locations in Europe. The 2003 heat-wave created stress on ecosystems, electricity demand and services, agriculture, food supplies, water systems, the tourism industry and health systems. Damage to the agricultural sector has been estimated at more than €11 billion. Many major rivers (e.g. the Po, the Rhine and the Loire) fell to record low levels, resulting in disruption of irrigation and power plant cooling. Elevated temperatures led to thawing of the permafrost and increased numbers of rockfalls in the Alps. More than 25 000 wild fires were recorded in Austria, Denmark, Finland, France, Ireland, Italy, Portugal and Spain, burning around 650 000 hectares of forest vegetation. Between 25% and 30% of food-related establishments found their cooling systems to be inadequate.

Health and security impact

52. An estimated 50 000 excess deaths were observed. Excess mortality was reported from Belgium, the Czech Republic, France, Germany, Italy, Portugal, Spain, Switzerland, the Netherlands and the United Kingdom. The rate of mortality differed significantly between cities within individual countries, perhaps because of differences in local climatic conditions and/or the preparedness of the health sector to deal with health risks to elderly people. The people most at risk were those suffering from chronic diseases, with mental disorders, or taking certain medications. Several environmental, social and health-care-related risk factors contributed to higher levels of mortality, the most important being living in the city, being alone and living on high floors. Early summer heat-waves are associated with higher mortality than late season heat-waves. Episode studies showed that effects were overwhelmingly concentrated in the older age groups and in deaths from heat stroke, respiratory disease, cardiovascular disease, mental disorders and diabetes. Deaths in younger adults were associated with high-risk groups, including the homeless, and those with alcohol dependence, mental illness, or severe physical disability.

53. It is estimated that, by the 2050s, there will have been a 250% increase in heat-related mortality in the United Kingdom and that, in Portugal, by the 2020s, heat-related mortality rates will range between 5.8 and 15.1 deaths per 100 000, compared to a 1970–1990 baseline of 5.4–6 deaths per 100 000 (6). The growing number of older people in Europe and their increasing social isolation are likely to lead to more people being at risk from heat. The heat-wave and the high death tolls generated a public health crisis in France and have led the French Government to take various steps to limit the effects of any future heat-waves.

Action taken

54. A French parliamentary inquiry concluded that the health impact was ‘unforeseen’, that the deaths were only detected belatedly, and that the lack of a public health response was due to lack of experts and poor exchange of information between public organizations which were understrength because of the holidays and whose responsibilities were not clearly defined (7). Health authorities were overwhelmed by the influx of patients and crematoria/cemeteries were unable to deal with the influx of bodies (8). In 2004, the French authorities established national and local action plans that included heat health warning systems, health and environment surveillance, and meteorological forecasting (9).

Analysis and lessons learnt

55. Within the WHO-coordinated project on climate change and adaptation strategies for human health (cCASHh), the actions taken after 2003 were investigated in other European countries. The immediate health system action taken in many countries was to study the health impacts in the country and to develop and implement heat prevention plans. These include components related to early warning and rapid detection, and recommendations on actions to be taken at different levels. In addition, there has been some re-evaluation of care of the elderly and of possible structural improvements to residential institutions (adding a cool room). The effectiveness of these measures still has to be evaluated.

Floods: the Bulgarian case study (2005)

Situation description

56. In Europe, floods are the most common natural disaster. In the summer of 2005, severe flooding hit central and eastern Europe, causing widespread damage to infrastructure and agriculture. In terms of vulnerability, certain countries and populations were less equipped to cope and recover than others.

57. In Bulgaria, torrential rains and flooding affected 2 million people, claiming 20 lives and leaving an estimated 10 000 people homeless. Damage to the economy was estimated to be around \$624 million, with huge amounts of farmland and vital infrastructure destroyed. The regions of Targovishte, Rousse, Velico Tarnovo, Stara Zagora, Haskovo, Pazardzik, Shoumen and Bourgas were worst affected.

Health and security impact

58. Following the floods, WHO conducted a rapid health assessment of the affected areas. While no major outbreaks had been reported, contamination to water supplies and food sources posed a potential threat to health, livelihoods and security. Cultivated lands that normally provided basic food items for families were flooded and contaminated by septic pits. The resulting economic losses affected a wider population than those directly affected by the floods, leaving people, especially vulnerable groups, in a difficult situation. Although water supply was not disrupted, the wells in private homes were largely contaminated by sewage water. The population was warned by the local authorities about the risk of possible water contamination and advised to only use mineral water – adding another burden to the already strained finances of rural families. The media reported deaths by drowning as a result of the flooding and one man was killed by lightning as he tried to rescue his livestock.

59. The WHO assessment also found a high level of distress among people, particularly the elderly. Research from previous floods indicates that, aside from the actual experience of being flooded, many of the mental health problems, such as increased incidence in anxiety and depression, stem from the troubles

brought about by geographic displacement, damage to the home or loss of familiar possessions. Lack of insurance is also likely to make recovery difficult. Some previous studies suggest an increase in suicides following a flood, although, in the case of Bulgaria, this is without evidence.

Action taken

60. A state of emergency was declared in the flood-affected areas. Immediate assessments and urgent search and rescue activities were conducted by the state agency for civil protection, together with the Ministry of Health and other government stakeholders. A communicable disease surveillance system was in place and vaccinations continued without interruption. Health facilities were largely unaffected by the floods and no shortage of drugs or vaccines was reported. The provision of basic health care was uninterrupted.

61. An international response was also launched to deliver emergency supplies such as clean water, blankets and food and to provide technical support to the government. This was coordinated by the United Nations Country Team. Agencies involved included WHO – who assisted the Ministry of Health in identifying environmental health threats and addressing the public health needs of the population – the United Nations Children’s Fund, the United Nations Development Programme, the Office of the United Nations High Commissioner for Refugees, CARE and the Bulgarian Red Cross.

Analysis and lessons learnt

62. While the immediate health consequences of the floods in Bulgaria were addressed through public health measures such as disease surveillance, water analyses and treatment, and health education and information to the public, the more enduring health consequences, such as the effects on mental health and reduced access to health care among vulnerable groups, were less likely to be adequately dealt with.

63. The case of Bulgaria shows that floods threaten populations’ security simultaneously through their impact on health and their impact on economic stability, increasing vulnerability, in terms of communities’ and individuals’ ability to cope and recover.

64. Hence, greater emphasis needs to be put on disaster preparedness and strategies for risk reduction before a flood occurs. This requires a cross-sector approach and can include: legislating to relocate structures away from flood-prone areas, proper land use, planning and maintenance of river ways, improved early warning and flood forecasting, and insurance policies. It also implies international cooperation, in terms of land and river use and flood forecasting.

65. The impact of the floods on regional security, economics, health and politics, is more difficult to measure and quantify. However, if predictions of increased flooding resulting from potential future climate change are correct, it is an issue that the European Region has to address through coordinated planning, action and cooperation in response.

Turkey: the Marmara earthquake (1999)

Situation description

66. An earthquake measuring 7.8 on the Richter scale struck the Marmara region of Turkey on 17 August 1999. It hit a densely populated area at 3:02 in the morning. About two million people in five towns were affected. It was essentially an urban earthquake. According to official statistics, 18 256 people died, 48 905 people were wounded and 357 322 buildings were damaged, of which a third collapsed. An estimated 200 000 people were left homeless.

Health and security impact

67. Crush syndrome was reported in 639 cases of the survivors pulled from the rubble. Hospitals were ill-equipped with dialysis facilities to treat associated renal failure and neither rescue personnel nor medical emergency teams were in a position to give immediate on-the-spot medical treatment to crush

syndrome patients. As a result, crush syndrome was the major cause of death amongst survivors of the earthquake.

68. Numerous myths and misconceptions regarding the health threats which followed the earthquake surfaced in the Turkish media. Media reports fearing cholera and typhoid epidemics were in fact largely unfounded, on the basis of experience from previous earthquakes. The threat that dead bodies posed to public health was also exaggerated.

69. The earthquake's enduring health impact was evident in the prevalence of mental health problems, especially post-traumatic stress. Only a few affected people got proper treatment. Vulnerable groups such as the elderly, children, women and the unemployed faced increasingly difficult access to medical services following the earthquake. Unable to afford the costs related to the additional burden caused by a natural disaster, these groups' economic and health security became more precarious.

Action taken

70. The disruption of water and sanitation infrastructure and the resulting unsafe water did pose a risk of diarrhoeal disease. However this was adequately addressed by the distribution of thousands of bottles of clean drinking water. WHO assisted the Turkish government in setting up an early warning surveillance system to monitor five major diseases, including diarrhoea and measles, with particular focus on those left homeless by the earthquake.

71. The overemphasis on the perceived threat that dead bodies posed resulted in a misallocation of resources and time into public health interventions, such as spreading lime around buildings, spraying disinfectant into the air and mass and rapid cremation of dead bodies. This misguided efforts away from more urgent health threats - such as treating crush syndrome - and did little to promote stability, with families not being given the time to identify and adequately mourn relatives.

Analysis and lessons learnt

72. In terms of key lessons learnt from the Turkish earthquake, the need for accurate information regarding health threats following an earthquake and appropriate health interventions is paramount, in both government and the media. A central office has now been set up within the Ministry of Health to address disasters and a major effort has been made to research and collect data on major types of wounds, required medicines, equipment and human resources in the aftermath of the earthquake.

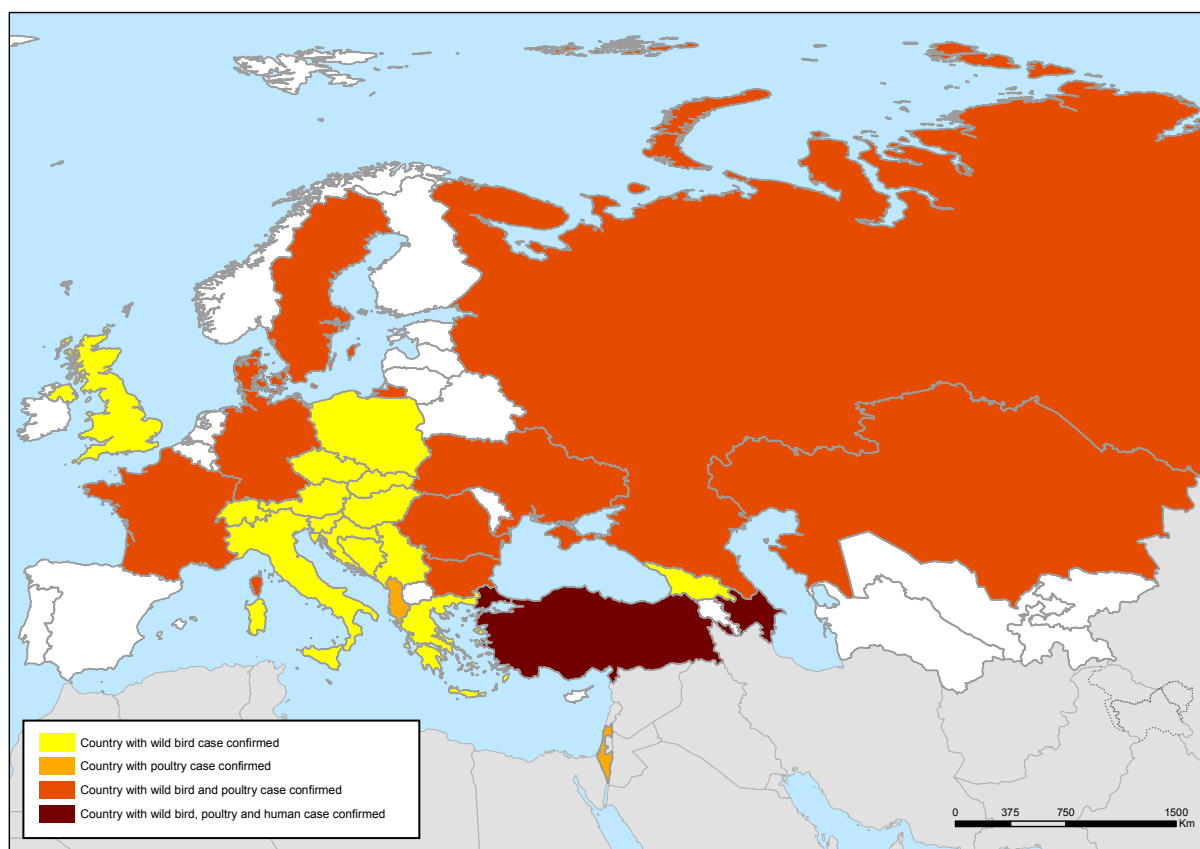
73. Lack of coordination between both ministries and humanitarian actors was a major impediment to the earthquake response. The lack of a coordinated appeal for donations resulted in some inappropriate donations and an excessive number of international medical volunteers. Strong coordination involves the sharing of information in order to best identify needs and address gaps in assistance.

74. In the aftermath of the earthquake, certain buildings such as hospitals, schools and administrative structures had to be rebuilt to resist hazards, and to ensure that they could continue to function in any kind of disaster. Postgraduate training programmes on disaster preparedness have now been introduced in engineering faculties, and the curricula of medical faculties and legislation have been changed to better prepare the state for future disasters.

75. These disaster preparedness measures must be implemented concurrently with sustained development efforts. Communities with educated, health-informed, organized individuals living and working in healthy environments are more likely to be resilient and better equipped to cope with the health aspects of disasters.

Avian and human influenza A/H5N1 outbreaks in the European Region (2006)

Fig. 1. Confirmed cases of A/H5N1 avian influenza in the WHO European Region



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

Data source: World Health Organization Regional Office for Europe; National Governments; World Organisation for Animal Health (OIE)

Situation description

76. Due to an unprecedented geographical spread, (see Fig. 1) as of May 2006, 32 Member States in the WHO European Region had been affected by animal outbreaks of influenza A/H5N1, mainly in poultry and wild migratory birds, with few documented cases in carnivores.

77. Together with its partners, WHO has promoted the development of national pandemic preparedness plans, and all 52 Member States have now established such plans to prepare their health systems to cope with a potential pandemic and to coordinate with other sectors. In several countries, WHO has provided technical assistance to develop the human health and communication components of national plans, and to address potential humanitarian implications in a worst-case pandemic scenario through effective cross-sector coordination. WHO has been working closely with the European Centre for Disease Prevention and Control (ECDC) to assess the strengths and weaknesses of existing plans and to provide recommendations for improvement. They will also work in coordination with other United Nations agencies and donors to effectively mobilize resources for Member States in need of further support by the international community.

78. Turkey and Azerbaijan experienced human infections with limited family cluster outbreaks in January and March 2006 respectively. In Turkey, close contact with diseased or dead poultry has been identified the main source of exposure whereas in Azerbaijan a newly documented suspected source of infection was direct contact with diseased wild birds, in particular dead swans during defeathering.

79. Both outbreaks were successfully and rapidly controlled by the local health authorities with international technical support from WHO-led joint interagency missions.

Health and security impact

80. In Turkey, 12 human cases (including 4 deaths), were registered and confirmed by a WHO reference laboratory in London and 8 confirmed cases (including 5 deaths) were recorded in Azerbaijan. The family clusters investigated and the confirmed cases from Turkey were all linked to close contact with sick poultry, with no evidence for human-to-human transmission. Health security concerns in neighbouring and several European countries contributed to enormous media coverage of the event in Turkey. In Azerbaijan, health security aspects became relevant in the development of appropriate messages to raise public awareness that diseased wild birds were for the first time the likely source of infection.

81. Many countries in the Region initiated trade and import restrictions and bans on poultry products from affected countries, with economic consequences.

Action taken

82. The outbreak response operation in Turkey involved a WHO-led joint interagency mission with 15 international experts; the main focus was to support the epidemiological investigation, to provide technical support for infection control measures and laboratory diagnostics, and to coordinate with the relevant ministries, local health authorities and United Nations partners, specifically on information management issues and crisis communication. The technical support provided to Azerbaijan on the request of the Ministry of Health concentrated on laboratory diagnostics, including logistics associated with the shipment of blood samples to reference laboratories, case management and social mobilization.

Analysis and lessons learnt

83. As the primary focus, specifically in Turkey, was on the immediate outbreak response, certain aspects and opportunities to initiate and coordinate research initiatives might not have been addressed as a priority. The limited resources readily available to the WHO country offices posed certain challenges in terms of the necessary logistics and the rapid deployment of expert teams. Media relations and communications became a major component of WHO involvement, as did information sharing and coordination with national authorities and international stakeholders.

84. A potential pandemic scenario has serious security and safety implications, possibly affecting all segments of the society, and pandemic preparedness plans need to address security implications by involving all relevant sectors and government institutions.

85. The recent global developments, with the situation in Indonesia suggesting that human-to-human transmission within a family cluster might have occurred, have raised increasing concerns about potential consequences for global health security.

Case studies – conclusions

86. Analysis of the above, and experience from other, events indicate that:

- unexpected, rapidly occurring and developing events can, even in advanced health systems, create a situation of crisis with confusion and delayed action. Anticipating potential risks is essential for health system planning;
- well prepared public health systems and established preventive measures (e.g. flood- and earthquake-proof buildings, resilient water and sanitation systems, and emergency care facilities), effectively reduce the negative impact on human health and security;
- events impact on supply systems and affect multiple sectors, resulting in simultaneous population exposures, aggravating negative impacts on health and security;

- cross-sector coordination and predefined streamlined decision-making processes are crucial in crises and emergencies to minimize health and security impacts;
- rapid and accurate information about potential health effects, and effective, evidence-based interventions to minimize and reduce them, are essential; and
- public awareness, communication and guidance for decision-makers are effective tools in promoting and implementing essential preventive measures. Continuous dialogue with key stakeholders in the decision-making process and reliable information can prevent mistrust and uncertainty.

WHO's role

87. Maintaining the highest possible level of health is a core mandate of WHO. The orientations for the current biennium 2006–2007, as outlined in the programme budget, comprise several goals that address health and security (10).

88. Through epidemic alert, it is intended “to ensure global health security and foster action to reduce the impacts of communicable diseases”.

89. Through actions in environment and health, it is intended “to achieve safe, sustainable and health-enhancing human environments, protected from biological, chemical and physical hazards, and secure from the effects of global environmental threats”.

90. Through preparedness and health system response, it is intended “to reduce avoidable loss of life, burden of disease and disability among populations affected by crises, emergencies and disasters, to optimize health at times of post-crisis transition, and to contribute to recovery and development” with a strong emphasis on building sustainable local capacity.

91. WHO is an active partner of various bodies of the United Nations and supports the effective coordination of emergency and humanitarian action. It is an active member of the Working Group of the United Nations Inter-agency Standing Committee and other interagency initiatives, and collaborates closely with the United Nations Office for the Coordination of Humanitarian Affairs. WHO also collaborates actively with the United Nations Economic Commission for Europe, the United Nations' International Strategy for Disaster Reduction and the World Meteorological Organization in the development and implementation of products such as the “Flood prevention guidelines” (11) and the development of heat – health warning systems. The recent United Nations humanitarian reform process and the associated introduction of cluster lead agencies - with WHO being the health cluster lead agency - gives WHO an even stronger mandate in humanitarian response operations.

Building WHO institutional readiness

92. A coordinated, horizontal health system response has increasingly become a core orientation for the Regional Office. Only continuous in-house effort and close collaboration between all levels of the Organization, at headquarters, regional and country levels, can enable WHO to ensure that coordinated public health interventions are tailored to respond appropriately to fast-evolving emergency scenarios and health security needs.

93. With the Global Outbreak Alert and Response Network (GOARN), WHO has an effective global mechanism to quickly mobilize international expertise from a well established network of experienced international experts. In order to build and improve its own institutional readiness, WHO needs to further develop and update its skills and capacities to operate in crises and emergencies, including the refinement of mechanisms to mobilize its internal regional technical expertise, as well as external expert rosters – based on the GOARN model – involving collaborating centres and donor organizations. The Health Action in Crises team at WHO headquarters recently initiated the Health Emergency Action Response

Network; this could be further developed as an effective training and mobilization mechanism, with the creation of an effective Region-based, roster and deployment arrangement for health experts to be mobilized in future emergencies.

94. Recent experiences from the involvement of Regional Office experts in crisis response operations to the Asian tsunami, the Pakistan earthquake, security incidents like the Beslan hostage-taking in the north Caucasus, the Andijan refugee crisis in Kyrgyzstan, the environmental health crisis due to lead exposure in the United Nations-administered province of Kosovo (Serbia), the heat-wave response in western Europe, and the response to the A/H5N1 human outbreaks in Turkey and Azerbaijan all clearly demonstrate the importance of extracting the lessons learnt in order to improve future readiness and ensure appropriate response operations.

95. The establishment of a regional joint operational platform for the timely mobilization of international expertise and resources would definitely improve the logistic aspects of future crisis response operations. It would require close coordination with relevant programmes in WHO headquarters and other regional offices to ensure the necessary back-up and support, as well as coordination with external partners.

The way forward

96. The Regional Office will further coordinate and collaborate with Member States, partners within the United Nations system and, at the pan-European level, with EU institutions, the European Commission and ECDC, to ensure that the evidence base and the lessons learnt, including early warning/early action mechanisms, are integrated and reflected in preparedness strategies for national health systems, emphasizing the importance of comprehensive cross-sector preparedness for health security.

97. Further consultations with Member States will take place to guide, identify and jointly agree on priority areas for coordination, collaboration and intervention along the lines proposed above.

98. The Regional Office promotes a multi-hazards approach for preparedness and response to health crises, involving the entire health system in a coordinated response to possible contingencies, and including a strong stewardship role to promote prevention and mitigation.

99. Good governance to improve the stewardship within health systems is essential for the implementation of IHR (2005), in order to mobilize a comprehensive response at the national and the international levels.

100. An institutionalized and dedicated preparedness programme for health security and crises, with a strong institutional anchor in ministries of health, is a crucial element in developing intersectoral collaboration on health security.

101. Essential public health measures should be integrated into intersectoral coordination efforts including private sector and civil society.

102. Setting out principles of public communication, education and awareness, with a communication strategy for future crises prepared and tested well in advance, can prevent a health threat from becoming a political or a security crisis.

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Annex

Definitions

“Crisis” is an unstable situation of extreme danger or difficulty that arises when local health systems on which people depend are overwhelmed, and are unable to respond to the needs or the increased demand.

“Emergency” is a state in which normal procedures are suspended and extraordinary measures are taken in order to avert the impact of a hazard on the community; it results from a disastrous event in which the needs and available resources are imbalanced. WHO has applied this concept predominantly in the case of developing countries.

“Disaster” is a serious disruption in the functioning of a community or a society that causes widespread human, material, economic or environmental losses that exceed the ability of the affected community or society to cope using its own resources.

Another notion linked to crisis is the concept of the interdependence of risk, hazards and vulnerability:
Risk = Hazards x Vulnerability.

“Risk” is the probability of harmful consequences, or expected losses (deaths, injuries, losses to property or livelihoods, disruption of economic activity or environmental damage) resulting from interactions between natural or human-induced hazards and vulnerable conditions.

“Complex emergency” is a “humanitarian crisis in a country, region or society where there is total or considerable breakdown of authority resulting from internal or external conflict and which requires a multisectoral international response that goes beyond the mandate or capacity of any single agency and/or the ongoing United Nations country program” (12).