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“New diseases are global threats to health that also cause shocks to economies and societies. Defence against these threats enhances our collective security. Communities also need health security. This means provision of the fundamental prerequisites for health: enough food, safe water, shelter, and access to essential health care and medicines. These essential needs must also be met when emergencies or disasters occur.”

Dr Margaret Chan  
Director-General, WHO

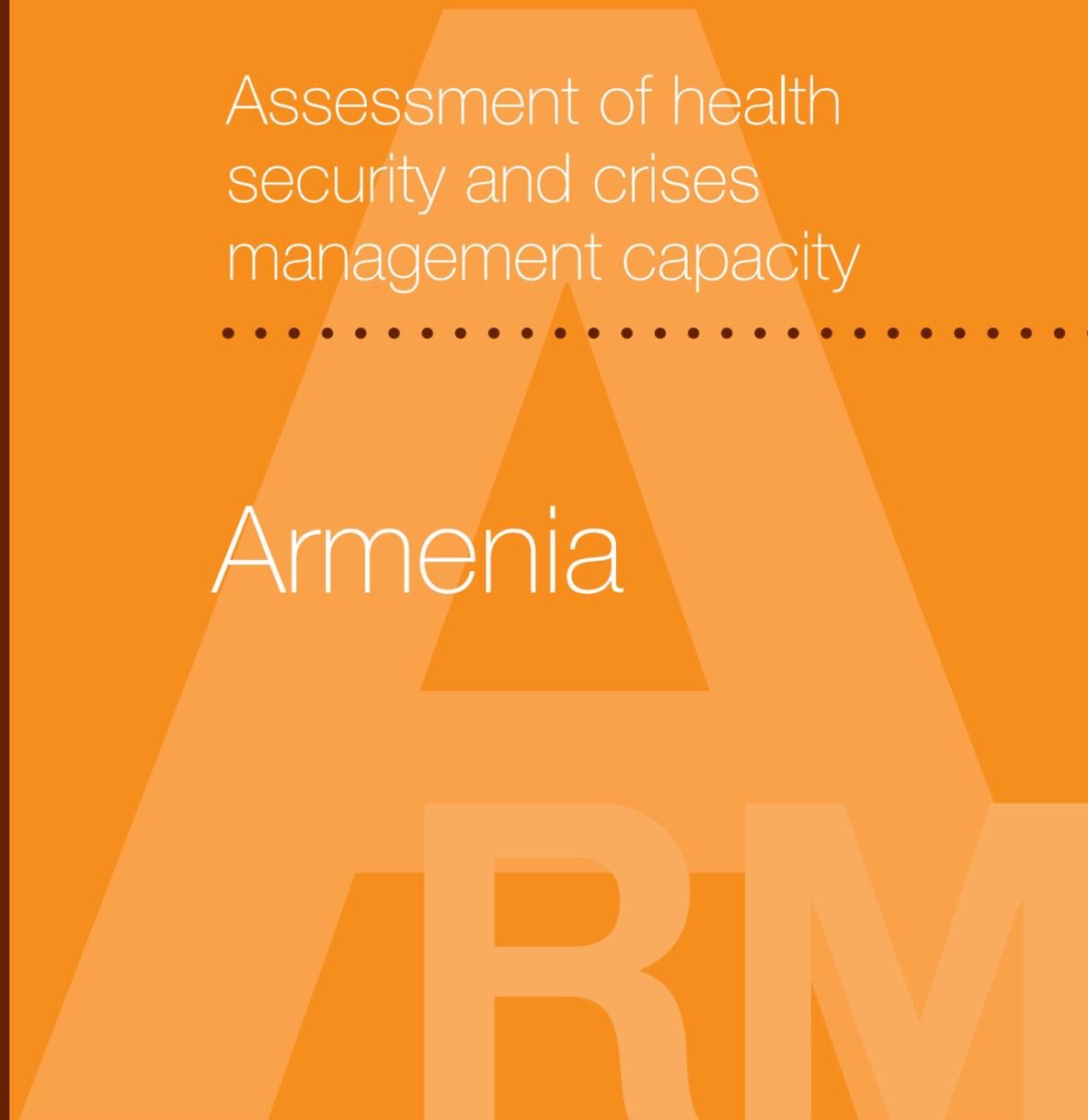
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# Assessment of health security and crises management capacity

## Armenia



Supported by



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Directorate-General for  
Health and Consumers

October 2007

# Abstract



“Support to health security and preparedness planning in EU neighbouring countries”, a WHO Regional Office for Europe project supported by the European Commission, Directorate-General for Health and Consumers, has the overall objective of assessing national capacity to respond to public health emergencies and implement the International Health Regulations (IHR), in selected European Neighbourhood Policy (ENP) countries while promoting a multisectoral approach to ensure the interoperability of existing public health emergency plans and their coherence with the EU policies and strategies. After negotiation with the relevant ministries of health, Armenia, Azerbaijan and the Republic of Moldova were selected for assessment.

In September–October 2007, a WHO multidisciplinary team, in cooperation with local counterparts, carried out the assessment in Armenia using a newly-developed standardized assessment tool. The WHO health system framework was used as the conceptual basis for describing and analysing the health system. The report includes the conclusions of the assessment team as regards generic preparedness planning, the IHR, chemical safety and climate change and health in relation to disaster preparedness and response.

## Keywords

Security measures  
Disease outbreaks  
Natural disasters  
Emergencies  
Civil defence  
Armenia

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## Foreword

This report describes the situation in the area of health crisis management in Armenia as of October 2007. A WHO mission to the country completed its work on 9 October 2007, which is therefore the cut-off date for the information in this report and any changes in the situation that have taken place since the mission are not reflected.

The report evaluates the arrangements in place and the level of health system preparedness to any crises, regardless of their cause. It also pays attention to risk prevention and mitigation initiatives in the country. While the emphasis is on the national level, some attention has been paid to crisis management capacities on the regional level and to the linkages between various levels of government.

The preparation process for comprehensive health security assessments in selected Member States of the World Health Organization European Region started in early 2007 with expert consultations to develop and define an assessment tool. The countries to be assessed also needed to belong to the group of countries falling under the so called European Neighbourhood Policy of the European Union.

Armenia was the first country fulfilling the above mentioned criteria, which welcomed the assessment team from the WHO Regional Office for Europe to pilot the newly developed assessment tool in the country. The assessment visit took place from 30 September to 9 October 2007 by a five-member team representing expertise in the areas of general disaster preparedness and response, chemical safety, health effects of climate change and the International Health Regulations. During the assessment visit, the WHO team met with over 35 representatives from the key institutions involved in crisis management activities in Armenia, mostly in the capital Yerevan but also in Lori region. The national contributors are acknowledged in Annex 2 of the report.

This health crisis management review in Armenia was carried out thanks to the efforts and support from the Armenian Ministry of Health. Special thanks go to Dr Armen Hayrapetyan, the WHO Disaster Preparedness and Response focal point in Armenia during the time of the assessment, who organized the visit, contacted all relevant sectors, provided background information and participated in most of the interviews.

Particular thanks are also extended to the staff of the WHO country office in Armenia, who supported the preparation and implementation of the mission from its inception.

We acknowledge the grant from the European Commission, Directorate-General for Health and Consumers, which supported both the implementation of this project and the preparation of the report.

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Regional Adviser

Jukka Pukkila  
Desk Officer

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## BACKGROUND AND CONTEXT

### Health security - current issues and trends

#### *Global health security*

The United Nations Commission on Human Security established that good health and human security are inextricably linked and that illness, disability and avoidable death are ‘critical pervasive’ threats to human security (1). It identified the three main health challenges as: (1) conflict and humanitarian emergencies; (2) infectious diseases; and (3) poverty and inequity.

The statistics show a steady rise in the number of disasters<sup>1</sup> worldwide, many of which are attributed to climate change. In the past 20 years, disasters have killed over 3 million people and adversely affected over 800 million.

Not only are the established infectious diseases spreading more quickly (for example, multi-drug resistant tuberculosis (TB) and HIV/AIDS are becoming an increasing threat to health security) but new infectious diseases are also emerging at a faster rate than ever before (one or more per year since the 1970s). Nearly 40 diseases now exist that were unknown a generation ago.

Natural and man-made disasters, depending on their magnitude and the vulnerability of the populations they affect, can have a devastating effect on the health status both in the short and long term. This is often aggravated by economic loss, which also has a negative impact on the health status and, therefore, on the economic burden in the health sector as a whole.

Increasingly, disaster management is becoming a priority in countries. The reasons for this are the following.

- The economic and political implications of disasters, particularly outbreaks of communicable diseases, and their effect on trade and tourism, can be enormous. Low-income countries are clearly the most vulnerable to these negative effects.
- The effects of climate change have serious implications for global health security. In addition to the consequences for the health of individuals, environmental changes may well result in mass population movement and competition for scarce resources, leading in turn to conflict and political instability.

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<sup>1</sup> For inclusion in the Centre for Research on the Epidemiology of Disasters (CRED) database, a disaster must have resulted in at least one of the following criteria: 10 or more deaths; 100 or more people affected; a declaration of a state of emergency; a call for international assistance.

- States Parties to the revised International Health Regulations (IHR 2005), which came into force on 15 June 2007, are legally bound to meet their requirements.

Governments, particularly in low-income countries, are often loath to invest in strategies aimed at disaster prevention and/or risk reduction and there is an overall tendency to under-invest in the health sector. Statistics show (2) that, on average, the lower the Gross Domestic Product (GDP) of any particular country, the smaller the percentage invested in health.

## Health security in the World Health Organization (WHO) European Region

In 2006, three countries of the World Health Organization (WHO) European Region were among the top ten countries in the world most affected by crises (according to number of deaths), ranking fourth (the Netherlands – heat wave in July), fifth (Belgium – heat wave in July) and eighth (Ukraine – cold wave in January). (3)

Between 1990 and 2006, 42 million people in the Region were directly affected by natural disasters. Of these, there were 609 accidents, 344 floods, 112 events of extreme temperature, 170 windstorms, 102 earthquakes, 31 droughts, 58 wildfires and 57 landslides and avalanches, resulting in over 90 000 deaths. This does not include the wars and violent conflicts that have killed over 300 000 people in the Region over the last 20 years (see below) or other severe events, such as the Chernobyl nuclear power plant accident in 1986, which the United Nations estimates affected several million people, and the Spitak earthquake that killed over 25 000 people.

Since 1990, a series of violent wars and conflicts in the Region have had vast political, social and human consequences. Armed conflict in Bosnia and Herzegovina, Croatia, Serbia (including the United Nations Administered Province of Kosovo), Slovenia and The former Yugoslav Republic of Macedonia resulted in an estimated 125 000 fatalities and the displacement of up to 3 million people. The break-up of the former Soviet Union brought about a number of violent episodes in Azerbaijan (Nagorno-Karabakh), Georgia (Abkhazia and South Ossetia), Moldova (Transnistria), the Russian Federation (Chechnya, Ingushetia, North Ossetia and Dagestan) and Tajikistan, causing the loss of an estimated 200 000 lives.

A number of serious terrorist attacks have taken place in the Region in the last fifteen years, including those which occurred in France (Paris, 1995), Spain (various ETA bombings; Madrid train attack, 2004), Turkey (various) and the United Kingdom of Great Britain and Northern Ireland (London, 2005). Reportedly<sup>2</sup>, more than five times as many attacks have been thwarted in Belgium, France, Germany, Italy, the Netherlands, Spain

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<sup>2</sup> <http://www.radionetherlands.nl/currentaffairs/region/westerneurope/ter050218>, accessed on 7 June 2008.

and the United Kingdom, and the list of failed or aborted attempts is probably longer than we may ever know.

The break up of the former Soviet Union and former Yugoslavia and the enlargement of the European Union (EU) have seen major changes in the health sector in many low- and middle-income countries. In many instances, the World Bank and international policies for donor funding and economic growth have been the driving force behind these changes. Often, rapid decentralization and privatization strategies for health service delivery were not preceded by the necessary process of building local management capacity at the sub-national and municipal levels; nor were they necessarily accompanied by a transfer of national resources. In many countries, access to services has only improved for the privileged few, while for the poor and vulnerable the barriers to accessing health care have increased.

## **International Health Regulations (IHR) – 2005 revision**

The need to strengthen capacity for emergency preparedness and response, particularly in low-income countries, is firmly based on current trends and statistics and supported by a wide variety of literature on global warming, environmental hazards, bioterrorism and re-emerging and emerging diseases, particularly severe acute respiratory syndrome and avian influenza. The level of international concern about this need is reflected in an increasing amount of media coverage and the establishment of various commissions, committees and international coordinating bodies (e.g. the United Nations International Strategy for Disaster Reduction, the Commission for Human Security and the WHO Health Action in Crises Programme) to address issues related to emergency preparedness and response.

Growing concern about national, regional and international public health security led, in 2005, to the revision of the IHR, first issued in 1969. The revised IHR provide a new legal framework for strengthening surveillance and protecting the public against acute health threats with the potential to spread internationally, negatively affect human health and interfere with trade and travel.

The revised IHR have a much broader scope than the original version, which focused only on the notification of specific communicable diseases. States Parties to the IHR (2005) are now obliged to assess and notify WHO of any event of potential international public health concern, irrespective of its cause (whether biological, chemical or radionuclear) and origin (whether accidental or deliberate). The criteria for assessing the international public health implications of any given event are outlined in the algorithm presented in Annex 2 of the IHR. These include health-related events that are unusual or

severe, may have a significant impact on public health, may spread across borders, and may affect freedom of movement (of goods or people).<sup>6</sup>

For effective implementation, States Parties (with WHO support) are also required to meet national core capacity requirements by 2012. How this can be achieved, particularly in low income countries, is not yet fully envisaged.

## **The European Union (EU) and the European Neighbourhood Policy (ENP)**

At present, 27 of the 53 Member States of the WHO Regional Office for Europe are also members of the EU. A further three countries are in candidate status (Croatia, The former Yugoslav Republic of Macedonia and Turkey). Albania, Bosnia and Herzegovina, Montenegro and Serbia are in the process of negotiation.

Furthermore, in 2004, to avoid the emergence of new dividing lines between the newly enlarged EU and its immediate neighbours, and with a view to strengthening the prosperity, stability and security of all concerned, the EU invited the neighbouring countries to become part of the ENP. This policy builds upon a mutual commitment to common values, such as democracy and human rights, rules of law, good governance, market economy principles and sustainable development, and is distinct from the accession process. ENP countries in the WHO European Region are Armenia, Azerbaijan, Belarus, Georgia, Israel, Moldova and Ukraine. They are bound by an agreed action plan, which includes political and economic reforms with short- and medium-term priorities, such as the harmonization of national legislation with EU directives on communicable disease surveillance and response and environmental health, and the coherence of national public health crisis plans with current EU policies and strategies.

Both the IHR and the ENP are legally-binding agreements. They provide a framework within which countries are required to strengthen crisis preparedness and response and, thus, health security at both European and global levels.

## **The European Union for crisis preparedness and response**

In March 2007, in the light of the ENP and the IHR, DG SANCO<sup>3</sup> (under priority 2.2 of the DG SANCO workplan<sup>4</sup>), provided funding to the WHO Regional Office for Europe

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<sup>3</sup>Directorate-General for Health and Consumers – <http://www.ephac.org/r/64>, accessed on 16 July 2008.

<sup>4</sup>[http://europa.eu.int/eur-lex/lex/LexUriServ/site/en/oj/2006/l\\_042/l\\_04220060214en00290045.pdf](http://europa.eu.int/eur-lex/lex/LexUriServ/site/en/oj/2006/l_042/l_04220060214en00290045.pdf), accessed on 28 July 2008,

for a one-year project entitled: Support to health security and preparedness planning in EU European Neighbourhood Policy (ENP) countries. The overall objective was to assess available capacity to respond to public health crises in selected ENP countries, including the core capacity required to implement the IHR, and to promote a multisectoral approach to ensuring the interoperability of existing public health emergency plans and their coherence with the EU policies and strategies.

The specific objectives of the project were:

- to coordinate the development of a feasible and standardized assessment tool for evaluating the priority health risks, the status of generic emergency preparedness plans and the interoperability of public health emergency plans in selected countries;
- to conduct assessments in three ENP countries of the WHO European Region, the candidate countries being Armenia, Azerbaijan, Belarus, Georgia, Israel, Moldova and Ukraine, and to disseminate the results;
- to produce and submit a final, consolidated report, including strategic and operational recommendations on further developing a joint European Commission–WHO plan of action to improve the level of preparedness in the assessed ENP countries and other EU neighbouring countries.

After negotiation with the relevant Ministries of Health, Armenia, Azerbaijan and Moldova were selected for assessment using the newly-developed assessment tool. All three countries showed a keen interest in strengthening the capacity of the health sector for crisis preparedness and response at national level, as well as a willingness to host the mission.

The following is a report on the findings of the first assessment, conducted in Armenia in September–October 2007.

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## INTRODUCTION AND METHODOLOGY

### Overview of the Republic of Armenia



Source: Map No. 3762, Rev. 4, United Nations, Department of Field Support, Cartographic Section, May 2008.

### **Introduction**

The Republic of Armenia is a land-locked, former Soviet Union state, located in the South Caucasus, bordering on Georgia to the north, Azerbaijan to the east, the enclave formed by the Autonomous Republic of Nakhchivan (Azerbaijan) to the south and the south-west, the Islamic Republic of Iran to the south and Turkey to the west. It is estimated that, since becoming independent in 1991, between 800 000 and 1 000 000 people have left the country, of these approximately 600 000 in the period 1992–1997 alone (4).

In the past few years, there has been an estimated 13% growth in annual Gross Domestic Product (GPD). This has been achieved mainly through the construction, manufacture, tourism and real estate sectors. However, the benefits of this economic recovery are not shared equally in that they are mainly concentrated in central Yerevan. Overall, there is little sign of decreasing poverty.

In 2003, Armenia scored 0.759 on the Human Development Index ranking at 83, bringing the country ahead of its neighbours, Azerbaijan and Georgia, ranking at 101 and 100 respectively, but behind the Russian Federation ranking at 62. This reflects the relatively low life expectancy and sizeable levels of poverty that exist in Armenia in spite of the high levels of adult literacy and educational attainment that are officially reported. According to the International Monetary Fund (5), 55% of the population live below the poverty line (based on the criteria of minimum biological, social, and cultural needs), of which 23% are extremely poor. The average monthly salary in mid-2004 was US\$ 78.

In addition, there are still an estimated 50 000 internally displaced persons as a result of the 1992–1994 conflict with Azerbaijan over Nagorno-Karabakh. Although not much information exists about the situation pertaining to internally displaced persons, it is the general opinion that it is a vulnerable one, especially with regard to shelter, opportunities for self-sufficiency and access to health care and education.

### ***Geo-politics***<sup>5</sup>

Country name:	Republic of Armenia
Location:	South-west Asia, east of Turkey
Area:	29 800 sq. km
Independence:	Six hundred years after losing autonomy in the 14 <sup>th</sup> Century, Armenia declared independence on 28 May 1918. On 29 November 1920, Armenia became part of the former Soviet Union as the Soviet Socialist Republic of Armenia. Based on the results of a referendum held on 21 September 1991, the Parliament (The Supreme Soviet of Armenian Soviet Socialist Republic) adopted the Declaration of Independence and announced the independence of the Republic of Armenia.
Government:	Parliamentary republic
Parliament:	The National Assembly, a unicameral body, is elected for terms of four-years. It comprises 131 members, of which 56 are from single-seat constituencies and 75 are proportional representation. The latter are assigned, on a party-list basis, among those parties that receive at least 5% of the total of the number of votes. Since the Declaration of Independence in 1991, four parliamentary elections have taken place (5 July 1995, 30 May 1999, 25 May 2003 and 12 May 2007).

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<sup>5</sup> Source: CIA world factbook: Armenia (<https://www.cia.gov/library/publications/the-world-factbook/print/am.html>, accessed on 11 August 2008).

President:	Mr Robert Kocharian <sup>6</sup> was President for the maximum period of two five-year terms, from March 1998 until March 2008.
Prime Minister:	Mr Serzh Sargsyan
Capital City:	Yerevan (population 1.2 million)
Administrative division:	<p>Administratively, the country is divided into regions (marzes) and communities (hamaynks). The city of Yerevan has the status of a community. The regions are led by governors (marzpetarans) that are appointed and dismissed by government decrees ratified by the President. The regional governors are accountable to the Government.</p> <p>The following are the ten regions (the capitals of which are shown in brackets): Aragatsotn (Ashtarak); Ararat (Artashat); Armavir (Armavir); Gegharkunik (Gavar); Kotayk (Hrazdan); Lori (Vanadzor); Shirak (Gyumri); Syunik (Kapan); Tavush (Ijevan); Vayotz Dzor (Yeghegnadzor).</p>
Climate:	Highland continental, hot summers, cold winters.
Terrain:	Highland with mountains, little forest land, fast flowing rivers; good soil in the Aras Valley.
Geography:	<p>The smallest of the three South Caucasus states in size and population, it is landlocked in the Lesser Caucasus mountains; Lake Sevan is the largest lake in this mountain range.</p> <p>Armenia has land borders with Azerbaijan, the Autonomous Republic of Nakhchivan (Azerbaijan), Georgia, the Islamic Republic of Iran and Turkey.</p>
Land use:	<p>Arable land: 17%</p> <p>Permanent crops: 3%</p> <p>Permanent pasture: 24%</p> <p>Forests and woodland: 15%</p> <p>Other: 41%</p>
Natural resources:	Small deposits of gold, copper, molybdenum, zinc and bauxite.

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<sup>6</sup> Mr Robert Kocharian was President during the period of assessment. On 19 February 2008, the then Prime Minister Serzh Sargsyan won the presidential election in the first round according to official results.

- Environmental issues:
- Soil pollution from toxic chemicals, such as DDT;
  - Deforestation due to the energy crisis of the 1990s, which led to citizens scavenging for firewood;
  - Pollution of rivers (Hrazdan and Aras);
  - Draining of Lake Sevan for hydropower, which threatens drinking water supplies;
  - Reopening of the Metsamor (or Medzamor) nuclear power plant in a seismically active zone.

**Party to international agreements on:** Air Pollution, Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Hazardous Waste, Law of the Sea, Ozone Layer Protection, Wetlands.

**International agreements signed but not ratified:** Air Pollution-Persistent Organic Pollutants.

### ***Demographics and health status***<sup>7</sup>

- Population: 2 971 650 (July 2007 estimate).
- Languages: Armenian 97.9%; Yezidi 1.0%; Russian 0.9%.
- Religion(s): Armenian apostolic 94.7%; other Christian 4%; Yesidi 1.3%.
- Ethnic groups: Armenian 97.9%; Russian 0.5%; other (mostly Yezidi Kurds) 0.3% (2001 census).  
Note: By end 1993, virtually all Azeris had emigrated from Armenia.
- Age structure:
- |                    |                        |
|--------------------|------------------------|
| 0–14 years:        | 19.5%                  |
| 15–64 years:       | 28.1%                  |
| 65 years and over: | 11.2% (2007 estimate). |
- Literacy rate: 99.4% of total population of 15 years and over can read and write.
- Population growth rate: - 0.129% (2007 estimate)

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<sup>7</sup> Source: CIA world factbook: Armenia (<https://www.cia.gov/library/publications/the-world-factbook/print/am.html>), accessed on 6 August 2008).

Infant mortality rate:	21.69 deaths/1000 live births
Life expectancy at birth:	Total population: 72.12 years
	Males: 68.52 years
	Females: 76.29 years
HIV/AIDS:	Adult prevalence rate: 0.1%
	Current no. of HIV/AIDS cases: 2600
	No. of HIV/AIDS-related deaths: <200 (2003 estimate)

### ***Economy***<sup>8</sup>

Global Product Development (GDP)	Purchasing power parity: US\$ 16.94 billion
	Official exchange rate: US\$ 6.6 billion
	Real growth rate: US\$ 13.4%
	Per capita: US\$ 5700 (2006 estimate)
GDP by sector:	Agriculture: 8.2%
	Industry: 38.6 %
	Services: 43.2%
Labour force:	Total no. employed: 1.2 million
	Agriculture: 45%
	Industry: 25%
	Services: 30% (2002 estimate)
	Unemployment rate: 7.4% (November 2006 estimate)
Inflation:	2.9%
Population below poverty line:	55% (based on the criteria of minimum biological, social and cultural needs)
Household income by % share:	Lowest 10%: 1.6% share
	Highest 10%: 41.3% share
Gross National Income (GNI) Index (distribution of family income):	41 (2004)

<sup>8</sup> Source: CIA world factbook: Armenia (<https://www.cia.gov/library/publications/the-world-factbook/print/am.html>, accessed on 11 August 2008)

### ***Transnational issues***

- The Nagorno-Karabakh dispute (Mountainous Karabakh). Since the 1990s, Armenian armed forces have occupied 16% of Azerbaijani territory.
- As a result of the Nagorno-Karabakh dispute, the Armenian borders with both Azerbaijan and Turkey remain closed.
- Azerbaijan is seeking a transit route through Armenia to connect with the Autonomous Republic of Nakhchivan (Azerbaijan).
- Armenia is a major source of women and girls that are trafficked for sexual exploitation, largely to Turkey and the United Arab Emirates. To a lesser extent, Armenia is a transit and destination country for this type of illegal activity.

### ***The health sector***

Since Armenia became independent in 1991, a process of health sector reform, financed largely from out-of-pocket payments, has effectively transformed the centrally-run state health system into a decentralized, somewhat fragmented one. The privatization of many health facilities has made access to health care more difficult, especially for the poor and vulnerable. There has been a significant investment in primary care but a disproportionate share of the resources has been invested in secondary and tertiary care. Nevertheless, Armenia is increasingly engaged in reforming the system so that the focus is less on treatment of disease and response to epidemics and more on prevention, family care and community participation. The shift towards a primary care orientation is seen in the gradual increase in the influence of the health worker on the determinants of health.

## **Disaster profile of Armenia**

### ***Natural disasters***

Armenia lies in a broad seismic zone stretching from Turkey to the Arabian Sea near India. Here, the Arabian land mass is slowly colliding with the Eurasian Plate and thrusting up the Caucasus Mountains in the north. Frequent episodes of mudflows and floods occur but these tend to remain small-scale events and rarely require international assistance. According to data of the Armenian Emergency Management Administration, the cost of damage caused by mudflows during the period which has elapsed since Armenia gained independence has averaged approximately US\$ 3 million per year. However, the cost of damage caused by mudflows amounted, in 1997 alone, to US\$ 16 million; in 1998, the figure was US\$ 25 million.

On 7 December 1988, at 11.41 hours, Armenia was hit by an earthquake registering 6.9 on the Richter scale, followed four minutes later by an aftershock registering 5.8. Despite the moderate size of the earthquake, the extent of death and damage that it caused was

devastating. The city of Spitak, with a population 25 000, was almost levelled to the ground. In Gyumri (called Leninakan at the time), the capital of the Shirak Region, with a population of 250 000, more than half of the buildings were damaged or destroyed. Damage also occurred in Stepanavan, Kirovakan and other smaller cities. Twenty-five thousand were killed, 15 000 injured and 517 000 were rendered homeless. The direct economic loss was estimated at US\$ 14.2 billion at the United Nations official exchange rate.

Many factors contributed to the magnitude of the disaster, including freezing temperatures, the time of day, soil conditions and the inadequate construction of the buildings. A number of medical facilities were destroyed, killing 80% of the medical professionals working in them. Deficiencies in the design of the buildings and errors in construction were blamed for the collapse of so many of them and for the resulting deaths. Many of the modern, multi-storey buildings, including apartment blocks, did not withstand the earthquake.

Historically, damaging earthquakes were recorded in this region in 1899, 1920, 1926 and 1940.

### ***Internal conflicts***

The region of Nagorno-Karabakh has long been a territory under dispute, creating tension between Armenia and Azerbaijan since 1923, when, under the former Soviet Union, it was created as an autonomous region belonging to Azerbaijan. When Azerbaijan became independent in 1991 after the fall of the former Soviet Union, Nagorno-Karabakh sought to become an independent republic, increasing tension in the region and leading to a full-scale war in 1992. After two years of armed conflict and the displacement of hundreds of thousands of people, Armenia and Azerbaijan signed a ceasefire agreement in 1994. As a consequence of the Nagorno-Karabakh conflict, some 360 000 refugees fled from Azerbaijan to Armenia in the late 1980s and early 1990s and an additional 70 000 people who were living in the bordering regions became internally displaced persons<sup>9</sup>. The Armenian borders with Azerbaijan and Turkey still remain closed as a result of the conflict<sup>10</sup>.

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<sup>9</sup> National survey for seismic protection of the Republic of Armenia, World Conference on Disaster Reduction, Hygo, Japan, January 2005.

<sup>10</sup> The internal political tension, instability and potential for internal conflict in Armenia were most recently illustrated by the demonstrations and violence that followed the disputes on the results of the presidential elections held on 19 February 2008.

## ***Industrial issues***

Since Armenia has few energy resources, it relies heavily on nuclear power. The Metsamor nuclear plant was constructed in 1979 and produces 40% of the country's electricity. It is located in a seismic zone, 40 kilometres from Yerevan, and was closed in 1989 for safety reasons, a year after the Spitak earthquake. However, it was reopened in 1996 and discussions are now underway to replace it with a new nuclear power plant by 2016 when its resources will be fully depleted. Hence, it is unlikely to be closed in the near future and remains a threat to health security in the region. An Iranian gas-line was scheduled for completion in 2007.

While Armenia was part of the former Soviet Union, it had sizeable electronic and chemical industrial facilities. However, most of this industry is now out of operation. Therefore, the likelihood of large-scale industrial accidents occurring in Armenia— other than nuclear accidents – is not especially high.

## ***Main types of hazards and risks reported***

It was the common opinion of many of those interviewed during the assessment visit that, apart from tsunamis, all types of hazards could be present in Armenia, the main ones being the following.

- ***Earthquakes.*** In spite of safe construction standards, there were severe problems with buildings (including medical facilities and schools) during the Spitak earthquake in 1988).
- ***Nuclear power plant accidents;***
- ***Outbreaks of disease and epidemics.*** While the routine vaccination system seems to function rather well, there are recognized weaknesses in communicable disease surveillance, early warning systems and, especially, in food safety.
- ***War and complex emergencies.*** As the conflict over Nagorno-Karabakh remains unresolved, there is a risk of new clashes or even war. The possibility of an internal civil strife (such as that which took place in March 2008) was raised by only a few interviewees.
- ***Terrorist attacks*** (including deliberate chemical, biological, radiological and nuclear releases). Although this was not considered highly probable, it should be borne in mind during the preparedness planning process.
- ***Landslides.*** There are 3000 active landslide zones, some of which have necessitated the relocation of people. Landslides are slow-onset disasters that damage roads, pipelines, railroads, etc., their impact being mainly economic. With increased rainfall, landslides can turn into mud slides, which are fast moving. Of 8000 km of roads,

1500 km are threatened by landslides, as well as 150 settlements. A drainage system is being developed, which needs to be cleaned and maintained.

- ***Decrease in water flow.*** Although there has been an increase in snowfall, which has led to more water in the short term, in the long term there is a threat of water shortage.
- ***Drought,*** especially in the Ararat valley where there was a drought in 2001 and a heat-wave (5-6 days > 40 °C) in 2006.
- ***Other major natural disasters,*** especially flooding (which recently resulted in the destruction of several settlements), strong winds, hail, landslides, snow and ice.
- ***Extremes of heat and cold.*** Temperatures range from -48 °C to +43 °C.

According to the central office of the Armenian Rescue Service (ARS) in Yerevan, the three most typical emergencies that occur in the country, in terms of the number of people regularly affected and the workload for the ARS, are caused by: (1) transport accidents; (2) poisonings (food, alcohol, medicines, chemicals, plants, etc.) and (3) fire. At the same time, earthquakes and nuclear power plant accidents are the most likely causes of large-scale disasters in the country.

Representatives of the Department of Health of the Lori Region explained that, besides earthquakes, the main health hazards in the region are the regular spring floods, hail storms, chemical poisonings and water-borne diseases. The ARS branch in the Lori Region listed snowstorms, spring floods, mudslides, wind storms, hail storms and epidemics of zoonotic diseases as the causes of the most common types of crisis experienced in the region. They all have a severe economic impact but do not often cause death. A state of emergency is declared by the Governor of the region only in connection with large disasters, such as the one involving a large water pipe that catered for half the population of the region.

## Objectives of the mission

1. To support the Ministry of Health of the Republic of Armenia in identifying the strengths, weaknesses and gaps in current disaster preparedness and response plans and in setting up a framework for developing country capacity and strengthening health security overall, including an action plan for the implementation of the revised International Health Regulations (IHR 2005).
2. To pilot and further develop a flexible tool for the assessment of the country's capacity for emergency preparedness and response with special reference to:
  - the legal framework and institutional arrangements in place for the prevention and mitigation of, preparedness for and response to potential natural and man-made disasters<sup>11</sup> ;
  - the compatibility of the national legal framework with the provisions of the IHR;
  - the core capacity necessary for IHR implementation;
  - the capacity to deal with disasters resulting from the release of chemical substances, be they accidental or intentional;
  - the capacity to deal with emerging threats related to climate change, including increased morbidity and mortality from heat, heat waves, floods, windstorms, and communicable diseases (vector-borne, waterborne and foodborne).
  - the compatibility of preparedness plans for avian influenza and pandemic influenza (and other plans related to outbreaks of communicable diseases) with the generic preparedness and response plans.
3. To share information and experiences with national personnel, other United Nations agencies, donor organizations and national and international nongovernmental organizations (NGOs) involved in disaster preparedness and response activities throughout Armenia.

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<sup>11</sup> The definition of a disaster in this context includes all natural and man-made events which affect health security and where local resources and/or expertise are overwhelmed and outside support is required to reduce the impact on morbidity and mortality. This definition covers disasters at local, regional and national levels.

## Methodology

A multidisciplinary team of five international experts (Table 1) carried out the assessment from 30 September to 9 October 2007 in cooperation with local counterparts from the WHO Country Office in Armenia and the WHO Focal Point at the Ministry of Health.

**Table 1: Members of the WHO Crisis Management Assessment Team in Armenia**

Name	Position	Area of expertise	No. of days
Dr Nida Besbelli	Technical Officer, Chemical Safety Noncommunicable Diseases and Environment, WHO Regional Office for Europe	Chemical safety and environmental health	5
Mr Thomas Hofmann	Technical Officer, Communicable Disease Surveillance and Response, WHO Regional Office for Europe	IHR	5
Dr Franziska Matthies	Technical Officer, Global Change and Health, Noncommunicable Diseases and Environment, WHO Regional Office for Europe	Health effects of global change (including climate change)	6
Ms Barbara Pearcy	Short Term Consultant, Disaster Preparedness and Response Programme, WHO Regional Office for Europe	Disaster management, communicable disease control and response, laboratories	9
Dr Jukka Pukkila	Desk Officer, Disaster Preparedness and Response Programme, WHO Regional Office for Europe	Disaster management	9

The assessment team adopted an all-hazard, multisectoral approach. Interviews were held at the Ministry of Health, subordinate institutions, other ministries, United Nations agencies and local NGOs.

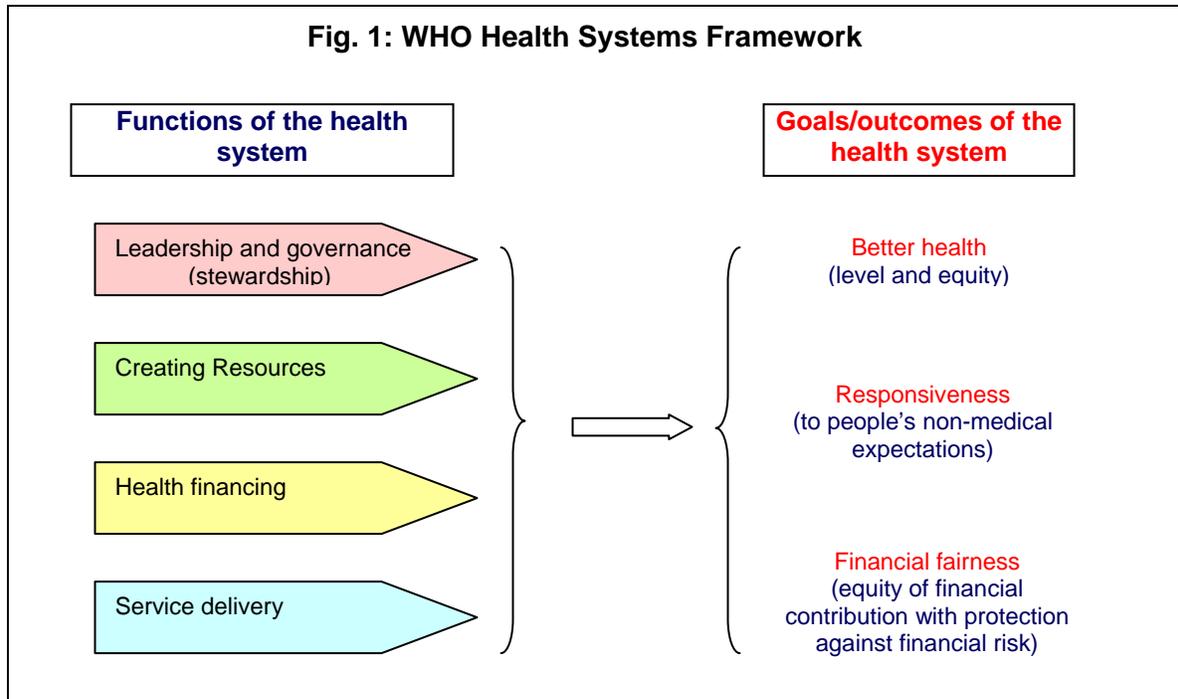
### ***The WHO health systems framework***

The WHO health system framework (6) was used as the conceptual basis for describing and analysing the elements of the health sector crisis management system in Armenia. A brief description of this framework and how it is adapted to crisis management follows.

Health systems are defined by WHO as comprising all the resources, organizations and institutions that are devoted to taking interdependent action aimed principally at improving, maintaining or restoring health. Further information on health systems can be found in: *World Health Report 2000* (6), *WHO Regional Office for Europe Health System's Strategy* (7) and *Everybody's business: Strengthening health systems to improve health outcomes* (8).

In order to fulfil their purpose, all health systems need to perform the following four key functions that make up the WHO health systems framework (6): (1) leadership and

governance; (2) creating resources; (3) health financing; and (4) delivery of health services (Fig. 1).



**Leadership and governance** of the health system are achieved through careful and responsible management that results in influencing all sectors with regards to policy on and action for population health. In connection with preparedness planning, this means ensuring the existence of national policy that incorporates health system crisis preparedness. It also means having effective coordination structures and partnerships in place and involves advocacy, risk assessment, information management and monitoring and evaluation.

**Creating resources** includes engaging all the health workers aimed primarily at protecting and improving population health. It also encompasses health technologies, infrastructure and pharmaceuticals. In terms of crisis management, preparedness planning ensures that, given the available resources and circumstances, there will be a sufficient number of qualified staff to respond to a crisis. Education and training, the collection, analysis and reporting of data, and management of the supplies and equipment needed to respond to a crisis, also fall under this heading.

The **health financing** function ensures the collection of revenues, their subsequent pooling and, finally, the purchase of health services from providers. In terms of crisis management, a good health financing system ensures that there are adequate funds for health system activities related to risk prevention and mitigation, preparedness and

response. It also provides financial protection in case of a crisis, ensures that crisis victims have access to essential services, and that health facilities and equipment are adequately insured for damage or loss.

**Service delivery** relates to a service production process that, when needed, combines the input of various providers into health interventions that are effective, safe and of high quality, and ensures their delivery to relevant individuals or communities in an equitable manner and with a minimum waste of resources. The organization and management of services are reviewed through a health system crisis management process to ensure access, quality, safety and continuity of care across health conditions and health facilities during a crisis.

Table 2 shows the key components of the four functions related to the health system crisis management process.

**Table 2. Key components related to crisis management  
– by health system function**

<b>Leadership and governance</b>	<b>Creating Resources</b>	<b>Health financing</b>	<b>Service delivery</b>
Policy and legislation	Human resources	Preparedness funding	Guidelines and protocols
Institutional framework	Medical supplies and pharmaceuticals	Contingency funding	Mass casualty management
Essential leadership tasks	Data collection, analysis and reporting		Risk management of health facilities
Partnerships and coordination			Lifelines, logistics, telecommunication and security

Health system performance is measured not only by how well each function in the framework is carried out but also by the relationship between the functions. Good interaction is crucial to attaining better health outcomes.

In the section: "Key findings and recommendations", the four core functions of the WHO health system framework are used to separate, classify and analyze the different components essential to a comprehensive and effective crisis management process.

## ***Sources of information***

Prior to the mission, relevant background documents were selected jointly by the members of the assessment team and the WHO Armenia Country Office. These included the national report, *Disaster reduction in the Republic of Armenia*,<sup>12</sup> which was presented at the World Conference on Disaster Reduction, Kobe, Japan, 18–22 January 2005<sup>13</sup>, at which Armenia was represented. It is acknowledged that, as the national report was written in 2004–2005, some of the information contained therein may no longer be relevant or correct.

The history of disasters in the country was reviewed in the light of information contained in the background documentation and the Centre for Research on the Epidemiology of Disasters (9).

The questionnaire completed in July 2006 in response to the global WHO Health Action in Crises Survey: Global Assessment of National Health Sector Emergency Preparedness and Response<sup>14</sup>, was used as the starting point for the assessment.

During a round-table meeting chaired by the First Deputy Minister of Health and attended by representatives of key stakeholders at the start of the mission (Annex 1), the international team members presented general issues related to health crisis management and response, including climate change and chemical safety, the background, objectives and expected outcomes of the mission, and the IHR.

Structured and/or informal interviews were carried out with representatives of key stakeholders, including the Ministry of Health, the Ministry of Nature Protection, the Armenian Rescue Service (ARS), United Nations agencies and national and international NGOs (Annex 2).

A one-day field visit was organized to Vanadzor, the capital of the Lori Region, which gave the assessment team an opportunity to meet a number of representatives of local key stakeholders and to assess the regional emergency preparedness arrangements.

Although some of the key interviews were attended by all of the team members, in most cases the team split into two groups, the composition of which depended on the team members' areas of expertise and degree of interest in the agency or organization in question.

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<sup>12</sup> <http://www.unisdr.org/wcdr/preparatory-process/national-reports/Armenia-report.pdf>, accessed on 16 July 2008.

<sup>13</sup> <http://www.unisdr.org/wcdr>, accessed on 16 July 2008.

<sup>14</sup> A summary report of this survey is available on [http://www.who.int/hac/about/Global\\_survey\\_inside.pdf](http://www.who.int/hac/about/Global_survey_inside.pdf), accessed on 16 July 2008.

The information collected was triangulated and every effort made to confirm statements and ensure accuracy. However, as most interviews were conducted through interpreters, complete accuracy cannot be guaranteed.

### ***Problems encountered***

- Due to administrative problems, the introductory meeting had to be postponed. This meant re-arranging the schedule and interviewing some people before they had been fully briefed.
- The methodology required that key persons at the Ministry of Health be interviewed at the start of the mission to allow for triangulation and confirmation of responses. This was, however, not always possible; one key person was not interviewed until the final day of the mission.
- It was often only possible to arrange interviews on the same day or, at the earliest, the day before. This made planning difficult.
- The ad hoc nature of the schedule resulted in many interviews having to be carried out in the late afternoon or early evening. This reduced the possibility of holding debriefing sessions in the evenings.
- Only two team members were present on all of the ten days; three team leaders left after the first week. This meant that fewer interviews than foreseen were possible and that the time for debriefing was inadequate.
- A number of key interviewees were unavailable or their importance not recognized until very late in the proceedings. Hence, it is possible that some information may be lacking. Key persons not interviewed were the First Deputy Minister and the Head of the First Department of the Ministry of Health, and a representative of the Ministry of Agriculture.

## **Deliverables**

(a) To the Armenian Ministry of Health:

1. A comprehensive report highlighting the strengths, weaknesses and gaps in the present planning framework for national disaster preparedness and response in Armenia.
2. Recommendations on and an implementation framework (or road map) for strengthening the Armenian disaster preparedness and response system over the next 3–5 years, highlighting any technical support that may be required.
3. Recommendations for developing an action plan to meet the requirements for IHR implementation.

(b) To the WHO Regional Office for Europe:

A revised tool for the assessment of crisis management capacity, which will be piloted in two of the following countries: Azerbaijan, Belarus, Moldova or Ukraine, with funding from DG SANCO.

## OVERALL FINDINGS OF THE ASSESSMENT

### Leadership and governance

#### *Policy and legislation*

##### **National crisis preparedness policy**

Two overarching laws provide the overall framework for establishing and regulating disaster management in Armenia: the law on population protection and the law on civil protection

##### **Law on population protection:**

This law provides a framework for coordinating the relevant national and international authorities, enterprises, institutions and organizations, and for defining their roles and responsibilities and the rights and responsibilities of the population. An English translation of the law is available.

Article IV of the Law on population protection covers the preventive measures to be taken to protect the population in crisis situations (including those related to the construction of buildings, engineering standards, location of high-risk industrial enterprises, and monitoring of radiation, chemical and bacteriological hazards in the environment) and to train the population.

Article V of the Law on population protection covers the action required to protect the population during an emergency (including action related to environmental surveillance and monitoring, food and water safety (from bacteriological, chemical and radiation hazards), quarantine and other sanitary-hygiene activities and the provision of medical services), and the contribution of all able-bodied citizens to the relief effort in accordance with their professional and personal qualities.

##### **Law on protection of civilians**

This law, which was passed on 5 March 2002, covers the protection of the population during wartime, defines roles and responsibilities, and makes provision for personal protection and shelter. As no English version of this law was available, its contents could not be verified.

Furthermore, there are a number of more specific laws, orders and decrees, the most relevant being the law on seismic protection and the law pertaining to the ARS.

### **Law on seismic protection**

This law provides for a plenipotentiary body to take responsibility for implementing a unified national policy for seismic protection through a national programme on seismic risk reduction. This function is carried out by the National Survey for Seismic Protection of the Republic of Armenia.

The programme on seismic risk reduction has short-, medium- and long-term (up to 30 years) sub-programmes and includes annual reporting on seismic hazards, as well as risk assessments and risk reduction strategies. It is funded through the state budget and other available resources.

Article V of the Law on seismic protection covers the assessment and reduction of seismic risk in the whole country with respect to:

- government, defence and industrial facilities; agricultural-industrial and hydro-engineering plants (including reservoirs and dams); power plants (including nuclear power stations); scientific and technical institutions; health facilities; and educational institutions.
- buildings, structures, historical and cultural monuments;
- transport and communication infrastructures;
- essential services (gas pipelines, water supply and sewage).

### **Law on the Armenian Rescue Service (ARS)**

This law, passed on 8 July 2005, outlines the role and responsibilities of the ARS before, during and after a disaster.

According to the ARS, there is a legal definition of an emergency and a Government Order (Decree) on the role and responsibilities of the Operative Section of the Service. A corresponding Government Decree relating to data collection and specifying how and when the Prime Minister should be informed in an emergency situation was also said to exist but this information was not substantiated. The ARS has a permanent mandate through Government Decision No. 1064 to carry out radiation, chemical and biological surveillance.

The ARS felt that the legal framework was inadequate as it does not take current risks and financial issues into account nor does it clearly define issues of management in a crisis situation. The ARS highlighted that they were doing more than legislation required. Information about the specific national laws and regulations on chemicals can be found in the chapter on “Preparedness for and response to a chemical crisis”.

### **Declaration of a state of emergency**

At the national level, the Prime Minister is authorized to declare a state of emergency. At the regional level, this is the responsibility of the relevant regional governor. The same instances are also authorized to declare a state of normalcy. Before a state of emergency is declared, relevant experts are consulted as required.

### **Ministry of Health crisis preparedness policy**

Health sector laws relating to crisis management refer mainly to communicable disease control and environmental health and are covered by the Law on sanitary and epidemiological safety of the population, passed in 1992.

The following legal documents were also referred to but were not submitted during the assessment.

- A new draft Ministry of Health Order concerning the urgent reporting of notifiable diseases and other issues, such as chemical and radio-nuclear contamination, and specifying the trigger points for notification, i.e. number of cases for each disease. The compliance of the private sector with this Order was reported as a problem.
- A Government Decree concerning accidents that occur close to the border, which clearly outlines the procedures to be followed in gathering information and indicates the responsible authorities.
- A government decision that regulates the generic plan and governs the emergency situation at three levels: (1) normal (2) alert, and (3) disaster. It was also said to distribute the roles and responsibilities between the Ministry of Health, the State Hygiene and Anti-Epidemic Inspectorate and the ARS. It is not clear if this government decision is specific to the health sector.

### **International Health Regulations (2005)**

The assessment team was informed that the new public health law (scheduled for completion by end 2007) had been adapted to provide for the revised IHR (2005) and was awaiting the approval of the Parliament. Subsequent acts and regulations would then follow. However, in the English version of the new law provided to the team, there was no reference to the IHR (2005)<sup>15</sup>.

There is no legal provision or government order relating to information flow or communication with the State Hygiene and Anti-Epidemic Inspectorate (National Focal Point for the IHR) in the event of a chemical accident or similar emergency with potential public health consequences. Information flow is currently unofficial and in general based

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<sup>15</sup> Since the assessment, the scheduled date for submission of the new public health law, adapted to provide for the revised IHR (2005) has been moved to end 2008.

on the normal practice of keeping key people informed. However, the Inspectorate and the ARS have signed an agreement on exchanging information of particular relevance to avian influenza.

## ***Institutional framework***

### **Health crisis unit and health crisis coordinator**

**Table 3. Structure of health crisis management in the  
Ministry of Health of Armenia**

<b>Position/Unit</b>	<b>Involvement in health crisis management</b>
Health crisis management unit	None
Health crisis coordinator	None
Head of Health Sector Task Force	The First Deputy Minister would assume this role in a (declared) crisis situation
Health crisis focal point (for WHO projects)	Involved until end 2007. Situation in 2008 and thereafter to be clarified <sup>16</sup>
District health crisis coordinators/focal points	Involved. All designated by the Ministry of Health within the framework of the BCA for 2006–2007.
National Focal Point for International Health Regulations (2005)	This function is covered by the State Hygiene and Anti-Epidemic Inspectorate

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<sup>16</sup> In January 2008, the Head of the largest multi-profile hospital has been designated as National Counterpart.

**Table 4. Key people involved in health crisis management in the Ministry of Health of Armenia**

	<b>Title/Name</b>	<b>Position</b>	<b>Reports to</b>
1.	Dr Haik Darbinyan	First Deputy Minister (responsible for crisis management)	Minister of Health
2.	Ms Ruzanna Hovakimyan	Head of the First Department of the Ministry of Health	Deputy Minister of Health (not First Deputy Minister)
3.	Mr Vladimir Darbinyan	Adviser on Emergency Situations and Military Mobilization	Minister of Health
4.	Mr Gagik Babayan	(Former) Adviser on Civil Defence to the First Department	Head of the First Department
5.	Dr Armen Haygapetyan	WHO Focal Point for Crisis Management (until end 2007)	WHO
6.	Dr Artavazd Vanyan	Head of Sanitary Hygiene and Anti-Epidemic Inspectorate	Minister of Health
7.	Dr Lilit Avetisyan	Head of Noncommunicable Diseases Department, State Hygiene and Anti-Epidemic Inspectorate, and Focal Point for the International Health Regulations	Head of State Hygiene and Anti-Epidemic Inspectorate

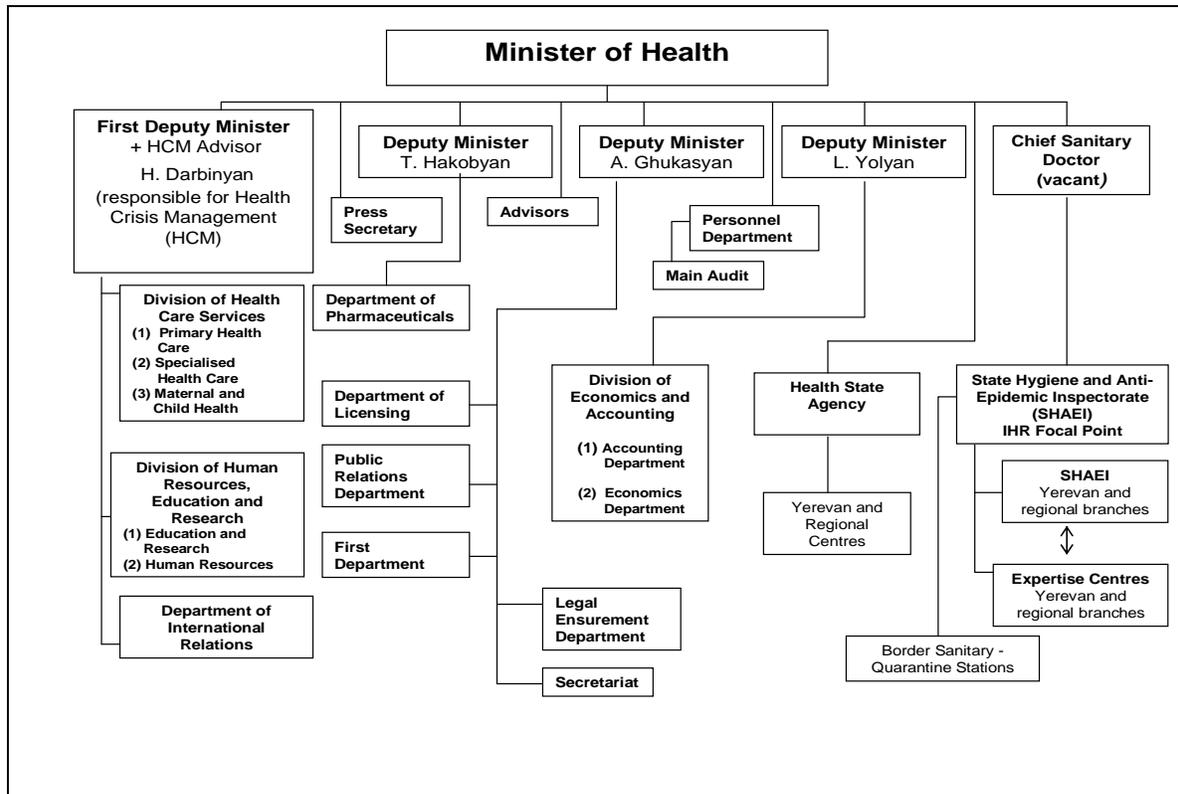
The First Deputy Minister of Health has the overall responsibility for issues related to civil defence and would assume the role of Head of the Health Sector Task Force in the event of a crisis. There is currently no dedicated Health Crisis Preparedness Unit within the Ministry of Health (Table 3).

In the past there was a department for civil protection and emergency situations with eight staff members (seven professional/technical staff and one secretary) but it was closed in 2002–2003 as part of the World Bank health sector reform (optimization) programme. The responsibility for health crises management was subsequently transferred to the First Department of the Ministry of Health. However, as it has only one staff member<sup>17</sup> and a number of other (confidential) functions, it contracts specialists in civil defence as technical advisers.

The First Deputy Minister recently appointed an Adviser for Emergency Situations and Military Mobilization but, as far as can be ascertained, this is a temporary position and not included in the organigram of the Ministry of Health (Fig 2).

<sup>17</sup> The staff member from the First Department was not available for interview.

Fig. 2. Organigram of the Ministry of Health of Armenia



Source: Ministry of Health of the Republic of Armenia

While the majority of people interviewed (including the WHO Focal Point for Crises Management, the ARS, the Head of Specialized Medical Care, and the ex-adviser on civil defence to the First Department) confirmed that the First Department was responsible for health crisis management, this was disputed by the newly-appointed Adviser for Emergency Situations and Military Mobilization. In fact no one person could be clearly identified as being responsible for the coordination of health preparedness planning and response activities in the absence of a dedicated Health Crisis Management Unit.

A similar situation was found in the regions where there is no institutional framework for coordinating the health sector. However, within the framework of the 2006–2007 Biennial Collaborative Agreement between the Ministry of Health and WHO, focal points for crisis management had been fairly recently nominated. At the time of the mission, there were no specific terms of reference for this function and in the Lori Region, the focal point was an engineer with overall responsibility for health and safety issues and, therefore, tasked with a broad range of activities. A regional coordinator should have a medical or public health background and the authority to be able to coordinate the various institutions within the health sector as well as work at a multisectoral level.

The Ministry has recently established a round-the-clock emergency telephone line with an operator, seconded from the police and based in the office of the Minister. However, only the ambulance services seemed to be aware of this service.

### **Experience and authority of key personnel involved in health crisis management**

The Adviser for Emergency Situations and Military Mobilization is an ex-colonel and a lawyer. He works under the authority of the First Deputy Minister. The (former) Adviser to the First Department on Civil Defence Issues previously worked for the ARS dealing with activities related to overall national crisis preparedness and response. He does not have a medical or public health background.

As the Head of the First Department was not available for interview, the assessment team has no information about her qualifications and experience. Neither was it possible to ascertain the terms of reference (if any), or roles and responsibilities pertaining to the following positions in the Ministry of Health: Head of the First Department; Adviser on Emergency Situations and Military Mobilization; and Adviser(s) on Civil Defence Issues to the First Department.

### **Perceptions of the national multisectoral agency for crisis management (ARS)**

The ARS is the national multisectoral agency for crisis management, which comes under the authority of the Ministry of Territorial Administration<sup>18</sup>. The ARS does not have a medical unit (except for occupational health) and therefore depends entirely on the Ministry of Health for health issues other than those connected with search and rescue services for which they have their own rescue teams.

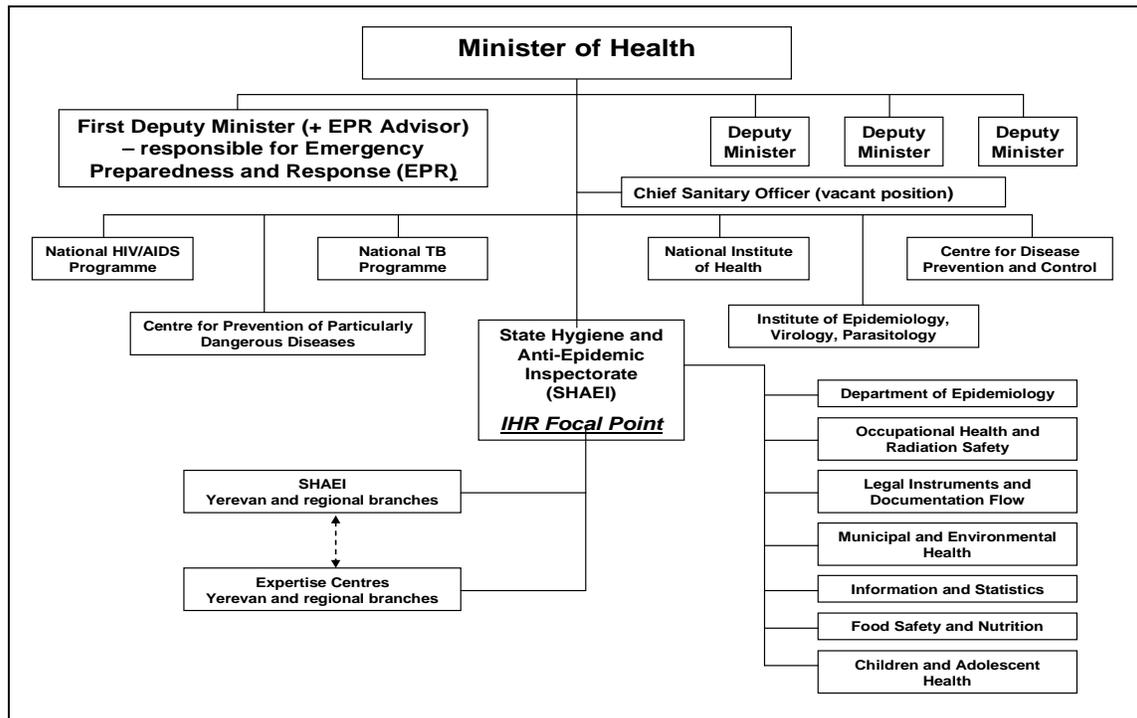
Although the ARS was not familiar with the institutional framework for crisis preparedness and response in the Ministry of Health, they fully supported the idea of having a health crisis unit, which could coordinate activities in this area.

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<sup>18</sup> In April 2008, the Ministry of Emergency Situations was established and the Armenian Red Cross became a part of it.

## Public health structures

Fig. 3. Organization of public health structures in Armenia



The State Hygiene and Anti-Epidemic Inspectorate, previously the Sanitary and Epidemiological Services of the former Soviet Union, is an autonomous organization reporting directly to the Minister of Health. The Inspectorate previously reported to the Chief Sanitary Doctor but this position is now a permanently vacant position (Fig. 3) and the State Hygiene and Anti-Epidemic Inspectorate is fully responsible for all public health issues. It functions under the Law on Sanitary-Epidemiological Safety of the Population (1992) and has the following departments: Epidemiology Department (communicable and noncommunicable diseases); Department for Occupational Health and Radiation Safety; Department for Child and Adolescent Health; Department for Municipal Hygiene (water and environment); Information and Statistic Department; Department for Legal Instrument and Documentation Flow Management; and Nutrition and Food Safety Department. It is also responsible for matters related to quarantine and points of entry at the borders and it has certain legal powers to ensure compliance with public health rules and regulations and epidemiological measures, and can take corrective/punitive action in cases of violation.

Apart from the central office, the Inspectorate has seven branches in Yerevan, an inspection centre in each of the ten regions and 47 centres at district level. It has a vertical reporting system from the regions to the central office.

The State Hygiene and Anti-Epidemic Inspectorate has been appointed as the National Focal Point for the IHR with the Head of the Epidemiology Department as the main contact point. However, this function is still not clearly defined within the overall organizational framework and there is little, if any, awareness in the other departments within the Ministry of Health of the implications of the new regulations for the State Hygiene and Anti-Epidemic Inspectorate or their own specific departments.

## ***Essential leadership functions***

### **Health crisis preparedness planning**

#### **All-hazard planning**

WHO promotes a generic, all-hazard approach to crisis planning, actively discouraging the establishment of vertical planning mechanisms, while continuing to recognize that each different type of crisis requires a specific form of technical expertise. Whether a crisis is caused by an earthquake, avian influenza, a terrorist attack or the accidental release of a biological agent, the key procedures related to crisis management are constant. They include, but are not restricted to:

- cooperation and exchange of information among the different ministries and partner organizations on risk assessment and early warning;
- the production and management of accurate and timely information that can be used in a crisis situation, and its distribution to all concerned;
- the provision of consistent, reliable and timely information to the public;
- the establishment of resource management systems for purchasing, distributing and tracking essential supplies; and
- the collection and transport of laboratory specimens.

Only emergencies involving communicable diseases and epidemics are the direct and sole responsibility of the Ministry of Health, this area being managed by the State Hygiene Anti-Epidemic Inspectorate. There is no generic plan for response to epidemics at present, although one did exist in the time of the former Soviet Union. However, there are reporting guidelines for each communicable disease and these define the trigger levels. A WHO assessment carried out in 2007<sup>19</sup> on the national response to an outbreak of tularaemia identified the need to improve the planning and coordination of activities and recommended a review of the current communicable diseases prevention programme.

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<sup>19</sup> Unpublished.

The following crisis management plans are in place:

- an overall plan covering all hazards (except epidemics);
- a plan relevant to nuclear power plant accidents;
- a plan relevant to earthquakes;
- a plan relevant to avian influenza; and
- a draft plan relevant to pandemic influenza (that will probably incorporate seasonal/avian/pandemic influenza issues) scheduled for completion by end September 2008.

In general, there was a degree of confidentiality about the contents of the crisis management plans. Most of them were said to be locked away and only accessed in the event of an emergency. The Adviser for Emergency Situations and Military Mobilization did show the members of the assessment team the Ministry of Health crises management plans for hospitals, earthquakes and nuclear accidents. However, as the timeframe was short and the plans not in English, it was not possible for the team to ascertain their content with any degree of accuracy.

According to the former Adviser to the First Department of the Ministry of Health, annual preparedness plans are first drafted by a selected individual before being reviewed and edited through a multidisciplinary consultative process. The final draft is approved by the Minister and adopted as an Order before being distributed to all regions and hospitals, which then develop their own annual plans accordingly. Although the information received regarding the time frame for reviewing and revising the plans was somewhat conflicting, it would appear that they are prepared every 3–5 years and updated annually.

### **Comprehensive planning for prevention, mitigation, response and recovery**

Through its hygiene and sanitary activities (e.g. water testing, border control and communicable disease surveillance and vaccination programmes), the State Hygiene Anti-Epidemic Inspectorate is involved in the prevention and reduction of outbreaks of infectious diseases, as well as in a number of vertical national programmes on, for example, malaria, TB and HIV/AIDS.

The various plans that exist focus mainly on activities related to the immediate response to a crisis and there was no indication of any strategy or overall plan to implement prevention, reduction or mitigation activities, or to ensure the functionality of hospital facilities in a crisis. However, health facilities are included in the two strategic national programmes on seismic risk reduction developed by the National Survey for Seismic Protection of the Republic of Armenia<sup>20</sup>.

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<sup>20</sup>The National Survey for Seismic Protection is a state management body under the Government of the Republic of Armenia. It was founded under a Government Directive on 17 July 1991 and given special governmental status. The President of the National Survey reports directly to the Prime Minister.

### **Multidisciplinary planning mechanisms**

In the event of a health emergency (declared either by the Minister of Health or the First Deputy Minister), a multidisciplinary crisis response committee is convened. The First Deputy Minister or, in some instances, the Head of Hospital Services, acts as Chair. It is at this stage that the roles and responsibilities of the various departments are defined, based on the type and magnitude of the crisis.

A multidisciplinary national influenza team has been established in the health sector through an externally-funded project supported by the Centers for Disease Control and Prevention, Atlanta, United States of America. The national influenza team has a technical remit (with agreed terms of reference) and is working to strengthen central quarantine procedures and laboratory diagnosis and to introduce sentinel surveillance for seasonal influenza. There are plans for the team to expand and become multisectoral, maintaining at the same time a technical rather than political function.

However, there is no multidisciplinary, all-hazard crisis preparedness and response committee within the Ministry of Health. The assessment team was informed that some ad hoc meetings had taken place between different departments to discuss relevant aspects of crisis planning.

The Health Authority of the Lori Region reported that it was establishing a multidisciplinary health sector task force (with terms of reference), which included an engineer, physicians and the heads of all the hospitals in the region. The Ministry of Health and the ARS have also developed joint plans for the Lori Region. It should be noted that the regional governors are overall responsible for leading the crisis preparedness and response activities at the regional level, in close cooperation with the regional branches of the ARS.

The National Institute of Health would welcome the opportunity to contribute to the health sector planning process, particularly as their staff members have ample expertise, skills and experience in this area. The Institute would support the re-establishment of the Department for Crises Management in the Ministry of Health, and advocated improved cooperation between the various government sectors and between the central and peripheral levels of government in the region.

### **Crisis planning by the ARS and local communities and institutions**

As the lead multisectoral agency in charge of overall crisis preparedness activities in Armenia, the ARS currently has national-level plans covering the nuclear power plant, earthquakes, floods, and chemical and industrial accidents. They considered that it was “impossible to include all types of disaster in plans”. Prevention and mitigation activities are not within the mandate of the ARS, and it is the responsibility of the National Survey

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for Seismic Protection of the Republic of Armenia to deal with issues related to earthquakes and the seismic stability of health facilities.

The health component included in the national-level plans is the responsibility of and developed by the Ministry of Health, mainly as separate health sector plans. The ARS has the possibility of requesting the Ministry of Health or the State Hygiene Anti-Epidemic Inspectorate for input on matters requiring health expertise. However, the ARS did not know what plans were available for the health sector.

The ARS considered disaster plans in Armenia generally to be old and unrealistic and, therefore, impossible to implement. On the other hand, they felt that the hospital plans were relatively good and that the relevant departments had an understanding of what to do. They expressed concern about the perceived lack of crisis preparedness planning in the private hospitals, where there was no control.

In addition to the regions, all communities, institutions and industrial facilities were said to have their own emergency plans, developed by local councils, institutions or factories that include annexes on potential disaster scenarios. The owners of the plans must notify the local administration of their availability.

### **Monitoring and evaluation**

A large simulation exercise that took place in the Shirak Region on 25-26 September 2007 (using an earthquake scenario) was reported as being very successful. The outcome of an avian influenza simulation exercise carried out with WHO support in the spring of 2007 was not yet available.

According to the Health Authority of the Lori Region, hospital plans were tested 4–5 times a year using simulation exercises. It is not clear from the interviews whether the hospital directors or the authorities are ultimately responsible for monitoring the effectiveness of the hospital plans.

### **Health education and public communication**

#### **Responsibility for providing public information**

There is no department in the Ministry of Health that is responsible for health promotion and public relations and, although a press secretary does exist, his role is unspecified. Overall responsibility for health promotion is assigned to the State Hygiene Anti-Epidemic Inspectorate that is also responsible for formulating messages for the public relating to communicable diseases and public health issues. It is however, the primary health care services that are now mainly responsible for the routine implementation of activities. This is attributable to the increased importance and funding of primary health care services as a direct result of the recent health sector reforms.

A number of different departments seem to be involved in preparing health promotion materials and messages, often within the framework of different programmes/projects such as those related to tuberculosis, HIV/AIDS and avian influenza. This work is often carried out with external support, for example from the Armenian Red Cross, the United Nations Children's Fund (UNICEF) or WHO. Health education materials were available in most institutions visited, including the State Hygiene Anti-Epidemic Inspectorate and the National Institute of Health, as well as in health institutions in Lori Region. The Lori Region branch of the Inspectorate had produced booklets and leaflets for distribution to schools and health facilities.

However, there do not seem to be any clear procedures for collecting information, for the formulation, approval and dissemination of messages to the public, or for monitoring the effectiveness of the messages transmitted. Moreover, no special training, education, or expertise in health communication is available in Armenia.

### **Strategies for providing information to the public during crises**

The Ministry of Health generally informs and educates the public by means of brochures, press releases, television and radio. Although the Ministry has a website, it is not used to disseminate health information.

The Armenian Red Cross uses its network of regional branches and trained volunteers to pass on key health-related messages. Their activities include organizing information meetings for women's groups, farmers, schoolchildren and teachers and producing information brochures. They work in the subject areas of TB, HIV prevention, mother and child health, integrated management of childhood illnesses, poisoning in children, the safe processing of food, avian influenza, earthquakes and vaccination. They have introduced methodologies for keeping food cool in hot weather. The education materials they produce (occasionally in coordination with WHO) are approved by the Ministry of Health.

The ARS considers public information to be extremely important and, through the media of television, promotes public awareness about the different types of disasters that could occur in Armenia and, for example, what to do in an emergency and whom to call. However, as television broadcasting is very expensive, they also produce information booklets. In addition, they run courses for civil servants, school teachers, etc., on the best way of using the information available to educate the public.

The ARS branch in the Lori Region confirmed that there is a public information unit in the Regional Governor's office. The officer in charge would be responsible for coordinating and providing information to the public in a crisis situation.

There was no indication of any mechanism for an exchange of public information between the Ministry of Health, the ARS and other ministries and organizations that

could help to ensure that messages and information distributed to the public are consistent and accurate.

## ***Partnerships and coordination***

### **The ARS – a multisectoral agency for crisis management**

The ARS is overall responsible for national preparedness and response (disaster and crisis management) in large emergencies, under the authority of the Ministry of Territorial Administration. The ARS is responsible for all hazards.

The ARS comprises the following seven departments that are managed by a director and three deputy directors:

1. Department of Operational Management;
2. Department for the Protection of the Population and Territories;
3. Department for Rescue Forces (in charge of rescue teams);
4. Department for Logistics and Procurement;
5. Department of Finance;
6. Department of Staffing and Organization; and
7. Department of Legal Provisions.

The Department of Operational Management includes the Crisis Management Centre that is responsible for policy development and all organizational activities: data collection, risk and hazard analysis, hazard mapping, coordination of sub-branches, communication systems (not public information) and provision of round-the-clock cover.

In addition, there are five independent sections:

1. International Cooperation Section;
2. Information and Mass Media Section;
3. Social Affairs Section;
4. Medical Provision Section (provides medical services to ARS staff); and
5. First Section (deals with confidential issues, internal security, etc.).

The Crisis Management Academy is the training arm of the ARS. The State Fire Fighting Inspectorate is another separate entity under the ARS.

In each of the ten regions, as well as in Yerevan, there are branches of the ARS that implement activities at the regional level. They are controlled by the Section for the Organization of Territorial Activities under the Department of Operational Management. The ARS regional branch offices work in close coordination with the relevant regional governors, and the ARS branch in the capital with the Mayor of Yerevan.

The ARS uses the telephone as its main mode of communication but short-wave radios are available if necessary. In general, the ARS responds to calls from the public on the

emergency number (101), through which the fire fighters and/or the rescue teams can be mobilized. The Ambulance Services use a separate emergency telephone number (103). The communication systems (presumably radio) that previously connected the two emergency services are no longer operational and the public number (103) is currently the only link between them. This was said to have resulted in operational problems. Coordination and communication between the ARS and the Ministry of Health seem very much to depend on the type and scale of disaster. There is, however, a degree of routine coordination for operational and technical issues. The ARS has contact with various departments, although their main point of contact was mentioned as the Adviser to the First Department (Mr Gagik Babayan) who is no longer employed by the Ministry of Health.

Following the avian influenza outbreak in Azerbaijan in 2006, the ARS established a registry of infected birds but the State Hygiene Anti-Epidemic Inspectorate remained overall responsible for preparedness for an influenza pandemic, and the Inter-Ministerial Task Force (with the Deputy Minister of Agriculture as Chair) for avian influenza.

The ARS considers the Ministry of Health as the responsible authority for all health-related issues during a crisis situation, except for emergency services during the search and rescue phases. For these, they have their own rescue teams that include paramedics.

### **Multisectoral coordination mechanisms**

There is no multisectoral planning committee for disaster preparedness that convenes on a regular basis at the national level in Armenia. In a major crisis situation exceeding the local/regional response capacity, the Prime Minister is empowered to declare a national state of emergency and establish a national multisectoral task force. At this stage, the Minister of Territorial Administration would assume both the position of Deputy Prime Minister and that of Chair of the national multisectoral task force. Depending on the type and magnitude of the disaster, responsibilities would then be allocated to the appropriate sectors.

In the event of a major emergency at regional level, the governor is authorized to declare a state of emergency and to create a multisectoral task force.

The World Bank is funding a national avian influenza project, including both human and animal health, through which an inter-ministerial, high-level avian influenza task force has been established. The task force has coordinating functions and meets twice monthly. The following are represented:

- Ministry of Agriculture (Deputy Minister - Chair);
- Ministry of Health;
- Ministry of Nature Protection;
- Police Force;

- National Security;
- ARS;
- World Bank (secretariat);
- United Nations agencies;
- NGOs.

A number of those interviewed referred to North Atlantic Treaty Organization (NATO) plans to set up either a high-level multisectoral task force and/or establish a crisis management centre in Yerevan to help manage all types of hazards, with the involvement of all ministries and organizations concerned. This would be based on the structure of the existing ARS Crisis Management Centre. No further information is currently available.

As a direct result of the response to the outbreak of avian influenza in Azerbaijan and Turkey in 2006, the State Hygiene Anti-Epidemic Inspectorate and the ARS signed an agreement on information exchange. Joint activities between the Ministries of Health and Agriculture have also resulted from avian influenza projects funded by the World Bank, the Centers for Disease Control (CDC), Atlanta, United States of America, and the United States Agency for International Development (USAID). One of the USAID-funded projects (health system related) is managed by WHO. However, contact between the Ministry of Health, other ministries, the ARS and other organizations seems to take place rather infrequently and mostly on an informal basis. The ARS considered cooperation between the different organizations during an emergency event to be very poor.

Traditionally, the Ministry of Health works closely with WHO under the Biennial Collaborative Agreements between the two parties. Crisis preparedness activities were included as a priority in the agreements for both 2006-2007 and 2008-2009.

### **Partnerships with NGOs and the private sector**

The assessment team was unable to identify any local NGOs that deal with issues related to crisis management, with the exception of the Armenian Red Cross that has a Department for Disaster Management and branches in all regions. They do not have health projects per se but are involved in community projects on, for example, local mitigation activities and the establishment of early warning systems. They also keep emergency stocks of tents, blankets, etc. The First Aid Department of the Armenian Red Cross provides training for people from all sectors and has won many international competitions.

No examples of formal or informal collaborative agreements in the area of crisis management between the Ministry of Health and private sector organizations (health or others) could be identified. However, a national decree allows the Ministry of Health to take drugs from private pharmacies during an emergency, compensation being provided

later by the Government. It is not clear if the Ministry of Health has any other authority over the private sector in relation to disaster preparedness and response.

## ***International cooperation***

### **Ministry of Health**

The Ministry of Health and the Yerevan Ambulance Service are currently benefiting from external support aimed at strengthening capacity for crisis preparedness and response in the country, including preparedness against avian and human pandemic influenza.

**Table 5. International support to strengthening capacity for crisis preparedness and response in Armenia**

<b>Project</b>	<b>Donor</b>	<b>Approximate budget</b>
Biennial Collaborative Agreement between the Republic of Armenia and WHO, 2008–2009 For crisis management (related to WHO Strategic Objective 5)	WHO	US\$ 100 000
Emergency Medical Response (EMS) Teams	Swiss Agency for Development and International Cooperation	Budget unknown. 83 EMS teams to be established, trained and equipped
Avian influenza	World Bank	US\$ 2 million over 3 years
Avian influenza	CDC Atlanta, United States	About US\$ 325 000 per year (2006–2009)
Avian and pandemic influenza	USAID/WHO	US\$ 300 000
Avian Influenza and pandemic influenza - others	Various	Budget unknown
Rapid multisectoral response to emergencies	Sweden	Budget unknown
Training in traffic accident response for Ambulance Service	Sweden (SweRoad)	Project presumably completed. Budget unknown.

In the Biennial Collaborative Agreement for 2008–2009, an amount of US\$ 100 000 is foreseen for activities under WHO Strategic Objective 5, which covers health security. Apart from this, the agreement includes funding for the control of communicable diseases.

The chapter on “Mass casualty management” provides further details on the cooperation between the Armenian health sector and their Swedish and Swiss counterparts, which is mostly in the area of support to first (medical) response.<sup>21</sup>

<sup>21</sup> In early 2008, a joint United Nations project proposal to enhance crisis preparedness capacity was developed under the lead of the United Nations Resident Coordinator. The proposal includes a health

There are a number of separate projects and initiatives targeting preparedness for avian influenza and pandemic influenza in Armenia. The three main projects are:

1. The avian influenza project funded by the World Bank. This is a national multisectoral programme with two components – health and agriculture. The budget is US\$ 6.25 million for 3 years (2006–2009), of which one-third is for health. Projects (2) and (3) below were designed to complement it.
2. The avian influenza project funded by CDC Atlanta. This is not a multisectoral project but focuses on the health sector. Its objectives are to strengthen the central quarantine centre, to develop working procedures for laboratories and to introduce sentinel surveillance.
3. The avian and pandemic influenza project funded by USAID. This project is being implemented by WHO. Its objectives are aimed at strengthening preparedness activities through: the establishment and training of rapid response teams (seven people per team, including an epidemiologist, a virologist, a veterinarian, a logistics expert, a laboratory technician and a disinfectionist); the improvement of avian/pandemic influenza case management capacity; the strengthening of infectious diseases control capacity; the promotion of the pandemic influenza planning process (including hospitals); and the development of the national influenza preparedness plan. All activities are supported by training and simulation exercises.

Major steps have been taken and progress made towards achieving a multisectoral contingency plan for avian influenza. Similarly, progress has been made in developing a national influenza pandemic preparedness plan. The epidemiological surveillance of influenza, including seasonal influenza, is being strengthened.

### **Non-health sectors**

The National Survey for Seismic Protection of the Republic of Armenia was represented at the World Conference on Disaster Reduction, which was held in Hyogo, Japan, in January 2005<sup>22</sup> and submitted a national report on disaster reduction<sup>23</sup>. It has concluded more than 50 international agreements in the field of seismic protection with the leading Surveys, including those in Azerbaijan, China, France, Germany, Georgia, Greece, India, the Islamic Republic of Iran, Italy, Japan, the Russian Federation, Switzerland and the United States.

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component developed by WHO. The intended donor is the Armenian Diaspora, a sizeable and wealthy source, especially in the United States.

<sup>22</sup> <http://www.unisdr.org/wcdr/>, accessed on 28 July 2008.

<sup>23</sup> <http://www.unisdr.org/wcdr/preparatory-process/national-reports/Armenia-report.pdf>, accessed on 28 July 2008.

The United Nations Development Programme (UNDP) has been running crisis and disaster management programmes in Armenia since 1997. An earlier project included a disaster management training programme that also dealt with disaster medicine (search and rescue) and local risk management for community leaders. The project was implemented in cooperation with the Armenian Red Cross.

Currently, UNDP is running a new two-year project in collaboration with the ARS. It has two components:

1. a local-level risk management project, which is being piloted in the Ararat Region where vulnerability and risk assessments will be carried out and, based on the results, the 2–3 most vulnerable communities selected for further risk management intervention;
2. an activity to strengthen ARS capacity in public relations. On the basis of an assessment of the ARS Information and Public Relations Department, a proposal on capacity development will be formulated jointly with the Organization for Security and Cooperation in Europe.

There is no health component included in the project.

### **Cooperation with neighbouring countries**

Armenia has signed agreements with neighbouring countries on collaboration and information exchange on possible problem situations. The Summit Declaration on Black Sea Economic Cooperation (1992) is an example<sup>24</sup>.

However, relationships between Armenia, Azerbaijan and Turkey remain difficult owing to continued hostilities over Nagorno-Karabakh, and the borders between these countries remain closed. Nagorno-Karabakh was said to have a collaborative agreement with Armenia.

The National Survey for Seismic Protection of the Republic of Armenia can provide support to other countries in the event of earthquakes. The Government of Armenia sent a multisectoral team (including seismologists, geologists, earthquake and communication engineers, a psychologist, an instructor on working with populations, physicians and rescuers) to Gujarat State, India, after the destructive earthquake in February 2001. Armenia also provided assistance after the South-East Asian tsunami in 2004.

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<sup>24</sup> <http://www.bsec-organization.org/Pages/homepage.aspx>, accessed on 16 July 2008.

## Creating resources

### *Human resources*

It was ascertained that rosters of key health personnel (with contact details) are included in the generic preparedness plan for the health sector. The Ministry of Foreign Affairs is responsible for coordinating the international response during a crisis and therefore for ensuring the most effective utilization of international personnel.

The training procedures to be followed for all segments of the population, including top and middle management, specialists, schoolchildren, non-professionals and those not usefully employed, are regulated by Government Decree No. 21-N of 20 June 2002.

One of the tasks of the National Institute of Health, an autonomous organization reporting directly to the Ministry of Health, is to provide postgraduate education and continuous professional development in the field of health. The Yerevan State Medical University, which belongs under the Ministry of Education and is the only accredited medical school in Armenia, is responsible for the undergraduate education and training of most health personnel and also plays a role in postgraduate medical education along with the National Institute of Health. Nurses, midwives, dental nurses and physiotherapists are trained at seven state nursing schools, their education lasting between two and four years. There are also four private medical schools and ten private nursing schools in Yerevan, established after the country became independent. However, the Government does not recognize these schools and their students are not entitled to take the state examinations.

The Disaster Medicine Department of The National Institute of Health provides the only post-graduate level education for crisis preparedness and response in the health field. The Head of the Department is suitably qualified for the position with extensive personal experience in crisis management as follows:

- leader of the medical services response to the Spitak earthquake in 1988;
- leader of the (military) medical services during the war in Nagorno-Karabakh in the 1990s;
- former Head of Military Medicine in Armenia;
- former First Deputy Minister of Health.

The National Institute of Health offers at least two types of courses in disaster medicine. There is a one-week basic course that is obligatory for all specialist doctors and mid-level degree health workers (nurses, 'feldchers', laboratory technicians, etc.). This course is tailored according to the education of the participants. The other course is a five-week advanced course for selected participants (not only doctors). It includes both clinical and management training in the following topics:

- outbreaks and epidemics;
- paediatrics and obstetrics in disaster situations;
- disaster psychiatry (mental health during disasters);
- blood transfusion policies;
- supplies issues – logistics.

The Chair of Disaster Medicine has eight highly qualified staff members who assist in developing the curricula, which are approved by the Scientific Committee of the National Institute of Health.

In 2006, over 1000 students took part in the one-week course and 150 participants in the five-week course. After the five-week course, the participants must pass an examination that is regarded as a pre-condition for appointment to certain posts.

The National Institute for Health was of the opinion that, as the level of practical skills among the junior doctors was often low, it was difficult to train them in advanced techniques for emergency medicine. A research paper (book) has been published on the topic, pointing out the need to improve emergency care in Armenia, including the provision of health care in the mountainous areas of the country. There is a general lack of literature on emergency medicine and crisis management.

The National Institute of Health provides training in disaster medicine to the teaching staff of the Yerevan State Medical University (under the Ministry of Education). Hence, although no representative of the Yerevan State Medical University was interviewed, it is assumed that disaster medicine (but not disaster management) is included in the undergraduate training curriculum. The Institute also provides training in disaster-related topics to people from other sectors, such as the military and the Red Cross. This allows them to strengthen cooperation and links with the other sectors. The Institute has a good relationship with the ARS Crisis Management Academy, although how this cooperation works in practice was not fully described.

### **Armenian Rescue Services (ARS)**

The ARS State Crisis Management Academy is responsible for the training of professional fire fighters and rescuers (members of the ARS rescue teams). Health-related training apparently concentrates on providing first aid skills to fire and rescue professionals. The ARS rescue teams were said to include paramedics who will actually be trained within the framework of the new project, coordinated and funded by the Swiss Agency for Development and Cooperation (see section on Mass casualty management).

## ***Medical supplies and pharmaceuticals***

Representatives of the ARS (under the Ministry of Territorial Administration), the Adviser on Emergency Situations and Military Mobilization (at the Ministry of Health) and the Ministry of Nature Protection stated that all ministries have procedures for resource management, either independently or under the umbrella of the Ministry of Territorial Administration.

In this connection, the following was identified:

- The emergency stocks of medical supplies and essential drugs are maintained under the responsibility of the ARS. The Ministry of Health gives technical advice concerning the items to be kept in stock, the list of which totals 842. Each hospital is responsible for maintaining its own emergency medical stocks.
- There is a national decree that allows drugs to be taken from private pharmacies during an emergency. These drugs are compensated for by the Government later.
- The Ministry of Nature Protection is responsible for the safe disposal of drugs that are out of date. A regulation relating to this responsibility is currently under development.
- By law, the border and customs services are required not to delay the importation of goods that are urgently required.

## ***Data collection, analysis and reporting***

### **Information management**

The National Institute of Health is responsible for both post-graduate medical studies and the collation and analysis of all health statistics. It is also involved in policy reforms and in developing documents and standards for the Ministry of Health. The Head of the Information and Analytical Department of the Institute used to hold the positions of the Chief Sanitary Doctor and the Director of State Hygiene Anti-Epidemic Inspectorate. Based on his recommendations, a presidential decision now allows public access to all disease data. The Institute regarded the data for risk assessment and early warning as generally poor. They are, for example, not disaggregated according to age or sex.

### **Risk assessment and early warning**

#### **Data (apart from those for communicable diseases)**

Risk assessment data, especially those for earthquakes, are available through the ARS and the National Survey for Seismic Protection. Geographic information system (GIS) maps of the country were developed eight years ago<sup>25</sup>. They are included in the annexes

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<sup>25</sup> [www.ema.am](http://www.ema.am), accessed 10 July 2008.

of various emergency plans and are available to all ministries. The team was given access to hazard maps in the Lori Region branch of the ARS. Although one interviewee said that all health sector plans were based on risk assessment data obtained from ARS, it was not possible to substantiate this statement within the time frame of the mission.

Data relating to the 1988 Spitak earthquake have been compiled in a book. At the time of the earthquake, special surveys among vulnerable groups were carried out by World Vision International<sup>26</sup> but details of these were not known.

The Armenian State Hydro-meteorological and Monitoring Service (Hydromet), which operates under the authority of the Ministry of Nature Protection<sup>27</sup>, is funded from the state budget and has no commercial interests. Basic information, such as the average monthly temperatures, is provided free of charge to all ministries but, for more regular and defined data, each sector is required to provide a budget allocation. For instance, the Ministry for Agriculture currently allocates 3 million drams a year.

Hydromet is involved with and linked to the national disaster plan through the ARS. A rapid response system is in place, in connection with which Hydromet provides information to the ARS on a large range of weather-related hazards, e.g. strong winds, hails, floods, extremes of heat, etc. In addition to its regular activities, Hydromet also runs a number of health-related projects on communicable diseases and climate and health. They collaborate with the World Meteorological Organization and the Yerevan State Medical University on research into the effects of heat and barometric pressure on cardiovascular diseases and hypertension. However, Hydromet has very little communication with the Ministry of Health other than through the Yerevan Centre for Communicable Diseases Control and Prevention that had contacted them not long before the assessment visit to discuss possible collaboration on malaria control. Hydromet was of the opinion that the information on the impact of weather and climate on health should be more in-depth before it could be used for better planning (see also the chapter on “Climate change and health”).

### **Information exchange**

An agreement between the State Hygiene Anti-Epidemic Inspectorate and ARS on information exchange was signed in 2005, whereby the former agrees to report all cases of avian influenza to ARS that, in turn, will report on landslides, chemical accidents, etc. Apart from this agreement, there are no clear or regular procedures (formal or informal) for collating the Ministry of Health intelligence data and that of the other sectors to help identify potential health threats. For example, there was no evidence that the Ministry of Health collects health intelligence data for early warning purposes from the media, armed forces, police, etc.

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<sup>26</sup> <http://www.wvi.org/wvi/wviweb.nsf>, accessed 10 July 2008.

<sup>27</sup> As of May 2008, included in the newly-established Ministry of Emergency Situations

## Communicable disease surveillance

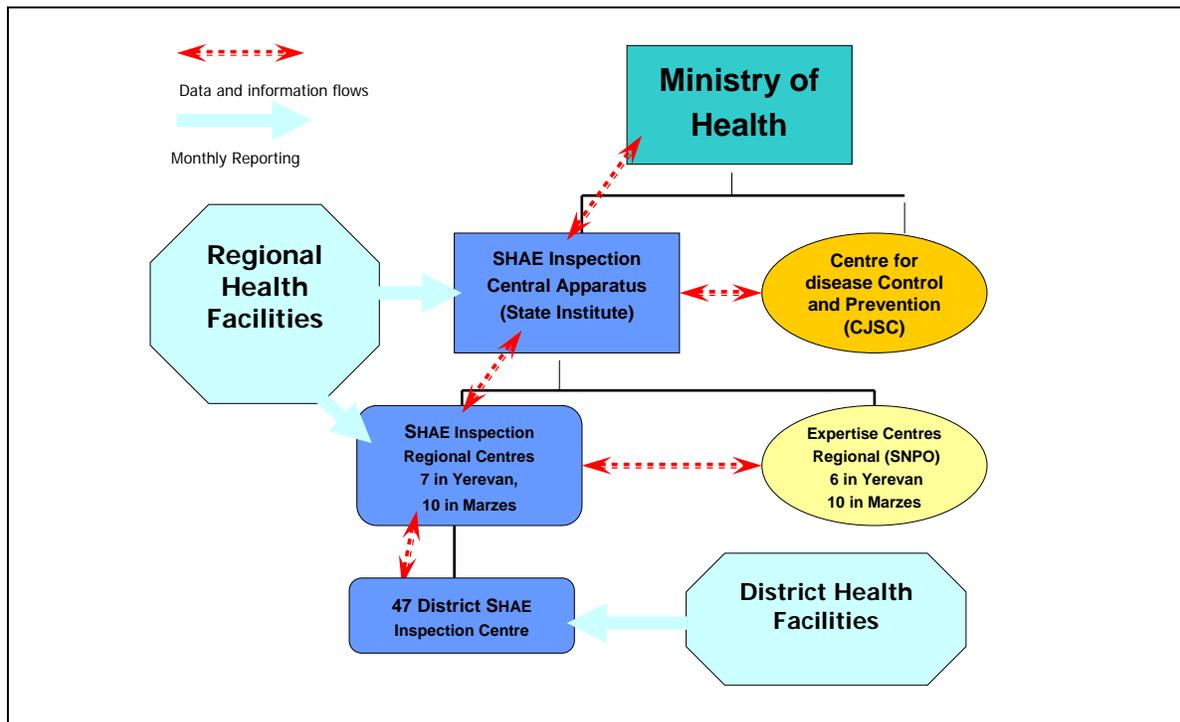
### Data collection and reporting

Currently, communicable disease surveillance in Armenia is based on the system inherited from the former Soviet Union, which monitors the incidence of 48 communicable diseases. There are no standardized case definitions or a clearly-defined differentiation between possible, probable and confirmed cases. Few cases are confirmed by laboratory investigation. Each health facility is required by law to report cases of communicable diseases. This is done on a monthly basis using standardized forms.

For 25 of the 48 diseases, one single case is considered as an outbreak and must be reported within 12–24 hours, either via the telephone or in person, to the nearest branch of the State Hygiene Anti-Epidemic Inspectorate, which is responsible for starting an investigation and reporting to the Ministry of Health. Reporting continues to be paper-based and the data are more related to sanitary and hygiene regulations than to clinical information about the patients.

The Government has approved plans to update the communicable diseases surveillance system based on International Classification of Diseases (ICD-10) forms and international standards. This will be done in cooperation with the EU, UNICEF and WHO.

**Fig. 4: Communicable disease surveillance information flows in Armenia**



In addition to the routine communicable diseases reporting system, parallel systems are in place for the surveillance of HIV, influenza, malaria, measles, polio, sexually transmitted infections and TB. These systems generally follow the same data flow pattern but reporting is carried out through the units in charge of the respective vertical programmes. Seasonal influenza is monitored on a weekly basis through syndrome-based surveillance.

### **Standard operating procedures for early warning**

No procedures or systematic approach exist in the health sector for generating and disseminating early warnings about threats, such as epidemics, extreme weather conditions and release of hazardous materials.

### **Public health reference laboratories**

Reference laboratory facilities are available at:

1. The Centre for Disease Control and Prevention, Yerevan (formerly the Republican Sanitary and Epidemiological Station). The Centre includes the following laboratories:
  - Virology Reference Laboratory (WHO-accredited for measles, rubella, polio);
  - Bacteriology Reference Laboratory (includes salmonella, shigella, botulism, cholera, tularaemia, anthrax);
  - Parasitology Laboratory (includes malaria);
  - Environmental Laboratory (includes contamination by chemicals, pesticides, heavy metals and radio nuclear material, poisonings and drinking water safety);

Steps are being taken under the World Bank programme to upgrade the public laboratory services and reorganize the Centre for Disease Control and Prevention (Yerevan) as a National Reference Centre. All of the laboratories are currently being refurbished.

2. The Centre for Particularly Dangerous Diseases (previously the Anti-Plague Institute) includes a laboratory mainly for anthrax, cholera, leptospirosis, plague and tularaemia and currently acts as the National Reference Laboratory for these diseases.
3. Laboratories associated with the national programmes for HIV/AIDS and TB.
4. The ARS, which has a chemical, biological and radio nuclear laboratory. This laboratory is in the process of being upgraded, although current capacity remains low (see chapter on “Chemical safety” under “Chemical analysis laboratories). The laboratory can provide assistance to the Ministry of Health if required. It was suggested that it be made responsible for supervising the regulation of food safety. Information was received from other sources (including the Ministry of Health)

that food safety had been the responsibility of the Ministry of Health until recently, when it was passed to the Ministry of Agriculture. Therefore, the role of the ARS in the area of food safety, if any, is unclear.

5. Laboratories of the Ministry of Agriculture (no further details available).

In general, public sector laboratories are in poor physical repair and there are shortages of even basic equipment and reagents. Methodologies employed are mainly classical so that confirmation of a diagnosis may take days rather than hours to establish. Virology diagnostic services are only available in Yerevan and there is no laboratory capacity for the diagnosis of a number of infectious diseases, e.g. legionella and Escherichia Coli type O157. The capacity to identify emerging infectious diseases or diseases previously not endemic to the country therefore needs strengthening. However, through the various avian influenza projects, polymerase chain reaction (PCR) facilities are being established at the Centre for Disease Control and Prevention in Yerevan, in the Yerevan infectious diseases hospitals, and in two of the regions (Lori and Syunik).

There is a national laboratory accreditation body but it is not recognized by the European Cooperation for Accreditation or by the International Laboratory Accreditation Cooperation.

As far as could be ascertained, there are no written procedures for collecting and transporting clinical and environmental laboratory specimens, either within the country or internationally. They do not have the sample containers that meet the international requirements for air transport.

### **Health crisis assessment**

The ability to collect, manage and share reliable and timely information that can be used in a crisis situation is crucial to a successful and well-coordinated response. To this end, the following need to be in place, as a minimum:

- procedures for and guidelines on the accurate and timely collection of data, including mortality and morbidity data, and the management and analysis of the data so that they can promptly be made available to all key stakeholders, including the local and international actors (the media, the public, etc.) involved in a response;
- provisions for establishing a centre for handling the data and for coordination, monitoring and reporting purposes;
- procedures for and guidelines on carrying out an initial evaluation of the crisis situation (within 24–48 hours), subsequent rapid damage and health needs assessments (within 2–7 days), and the speedy dissemination of the results;
- procedures for incorporating potential outside assessment teams and experts (e.g. United Nations Disaster Assessment and Coordination), if and when these are

considered useful, and mechanisms for collating needs assessment data from a variety of sources (e.g. United Nations agencies, NGOs, the media, etc.);

- procedures for and guidelines on establishing emergency surveillance systems in the disaster area, guiding the response efforts and detecting further threats to public health;
- the ability to generate accurate, periodic situation reports, event reports, post-disaster reports, etc.

Due to very limited access to the actual health sector crises preparedness plans, it was not possible for the team to verify whether the above systems and procedures were in place or would be established in the event of a crisis in Armenia.

## Health financing

### *Preparedness financing*

There is no specific budget line for disaster preparedness in the health sector. The salaries paid to the various disaster preparedness advisers of the Ministry of Health seem to be the only direct Government expenditure in this area within the health sector. At the multisectoral level, the ARS has an annual budget to cover running costs, with a breakdown for specific activities.

Disaster reduction and mitigation measures to ensure the functionality of the health facilities in Armenia are financed through the national, regional and community budgets, according to the Laws of the Republic (under the auspices of the National Survey for Seismic Protection of the Republic of Armenia). It is not known whether private hospitals are included. Information about the current level of funding and whether it is adequate was not within the scope of this assessment.

### *Contingency Funding*

The Government budget includes a reserve fund to be used in unforeseen circumstances, including those related to emergencies. It is granted on the basis of a specific request from an individual ministry or institution. None of the respondents had encountered any problems in obtaining funds when there was a real need.

If necessary, the ARS (through an Order) requests the Ministry of Finance for additional funds for contingencies and these are usually granted. Such requests are usually related to assisting other countries.

The budgets of the local authorities are used during a disaster in connection with assessing the needs, compensating the population for their losses, and providing food and shelter.

## Service delivery

### *Health Services Department, Ministry of Health*

As a result of the World Bank health sector reform (optimization) programme, the role of the Health Services Department of the Ministry of Health has changed from being overall responsible for the delivery of health services to policy-making. Only a limited number of health services now fall under the direct authority of the Ministry of Health, the remainder having become the responsibility of the community governments (for primary health care) and the regional governments (for most hospitals). Decentralization included the devolution of responsibility not only for the delivery of health services but also for finances from government to facility level, and for the privatization of hospitals and other health facilities. However, the strategy for privatization was poorly defined and an unsystematic and arbitrary implementation process resulted in problems in service delivery and overall functioning. The Government has now called any further privatization to a halt to allow for a full evaluation of the strategy (3).

The Health Services Department comprises three sections: (1) Primary Health Care and Family Medicine (responsible for general hospital and ambulance services); (2) Specialized Medical Care (deals with all specialities apart from obstetrics and gynaecology); and (3) Obstetrics and Gynaecology.

The Health Services Department cooperates closely with private hospitals, mainly on contracting services.

### *Guidelines and Protocols*

The assessment team did not have full access to the preparedness plans due to confidentiality issues, making it impossible to establish whether procedures are in place to ensure the following critical services during a crisis:

- rapid health needs assessment;
- emergency surveillance and control of communicable diseases;
- response in relation to:
  - basic health services;
  - communicable diseases;
  - nutrition and food safety;
  - safe water and sanitation;
  - mental health and psychosocial issues;
  - maternal and child health;
  - reproductive health, gender-based violence and HIV/AIDS;
  - physical rehabilitation;

- adequate and safe blood transfusion;
- health education;
- effects of extreme temperatures;
- other specific health hazards, according to local risk assessment.

## ***Mass casualty management***

### **Armenian Rescue Services (ARS)**

The ARS have their own rescue teams. Currently they are trained at the State Crisis Management Academy, which belongs to the ARS.

### **Ministry of Health**

The Ministry of Health has the capacity to mobilize 324 emergency medical teams in response to a crisis situation. Each team comprises 25 people, ten of whom are medical doctors.

### **Ambulance services**

The Yerevan Ambulance Service is a joint stock company under the responsibility of the Mayor of Yerevan. The Municipality of Yerevan holds 100% of the stocks. The Service has 38 medical teams on duty at all times, with an additional 12 reserve teams on stand-by. Each team comprises four members: a doctor (specialized in a particular area of reanimation, paediatrics, neurology or psychiatry), a nurse, a sanitary technician (in reanimation teams replaced by a second nurse) and a driver. This means that, at any given time, the Service is able to mobilize 200 staff (50 medical teams each comprising four members). In 2001, a World Bank-funded project provided 91 new ambulances. Currently, there is one ambulance per 20 000 inhabitants. There are no air services but the ARS has an agreement with the airport authorities to use their services if necessary. During the past five years, there has been a need for helicopter services on only two occasions.

Public access to the Yerevan Ambulance Service is by telephone (103). There is 24-hour coverage, every day. There are seven sub-stations in the city, which allows a 12–15 minute average response time in the city area. In Yerevan, the ambulance services are free of charge by State Order.

There are separate ambulance services in the regions. All land-line calls to 103 are automatically diverted to a service in the geographical location of the caller. However, all mobile telephone calls to 103 are received by the Yerevan Ambulance Service's central station, which subsequently contacts the appropriate Yerevan substation or the respective regional ambulance service, according to the location of the patient.

The Yerevan Ambulance Service receives a total of 400–450 calls during a 24-hour shift (13–14 calls for each medical team on duty). This totals over 150 000 calls per year, of which about 19 000 involve hospitalization. In 2006, cases of cardiovascular diseases accounted for about 30% of all calls, neurological diseases 20%, infections 7%, surgical cases 6%, and obstetrics and gynaecology 1%. Less than 4% of all calls are due to trauma cases.

The Service has two disaster plans in place: (1) for civil emergencies in times of peace; and (2) for war-time emergencies. The latter plan is strictly classified but even the plan for peace-time emergencies is sealed and kept in a safe, only to be opened if a state of emergency is officially declared. All chief specialists in various medical disciplines contribute to the preparation of the emergency plans. In the case of a civil emergency in Yerevan city, the head of the Yerevan branch of the ARS will become the Deputy Mayor and lead all response efforts, while the overall responsibility would remain with the Mayor.

The Yerevan Ambulance Service keeps a fuel reserve of 4000 litres and 12 emergency medical boxes that are updated twice a year, each containing everything needed for the emergency care of ten patients, plus personal protective equipment for the responders, including chemical protective suits. Equipment for radio-nuclear accidents is kept in specific boxes, which each contain a list of the local experts required for this type of incident.

The Service participates in regular monthly meetings chaired by the Mayor of Yerevan, at which all sectors of government are also represented. In addition to preparedness for large-scale emergencies, ways of preventing regular, small-scale accidents and everyday emergencies are also discussed.

### **Armenian–Swiss and Armenian–Swedish cooperation programmes**

A programme established with the Swiss Government (through the Swiss Agency for Development and International Cooperation) is setting up 83 medical emergency response teams. Several possible models for the structure of the teams have been proposed. Teams would probably include five members: a physician, an assistant physician, a nurse, an assistant and a driver. They would form a reserve force and would probably be under the overall coordination and control of the ARS, though this is still under negotiation.

The teams will visit Switzerland for training in emergency medicine. It was planned to start the programme in March 2008 and include all regions. The Swiss Government will provide equipped emergency vehicles as part of the programme.

The Armenian–Swedish cooperation programme is promoting a multisectorial approach to providing rapid response, i.e. by fire fighters, police, ambulance services and ARS rescue teams.

## ***Risk management of health facilities***

### **Reduction of physical vulnerability of health facilities**

The main goal of the National Survey for Seismic Protection of the Republic of Armenia<sup>28</sup> is seismic risk reduction and, to this end, it has developed two national strategic programmes, one for Armenia and the other for Yerevan city. These programmes were adopted by the Government in July 1999 and include long-term (up to 30 years), medium-term (up to 5 years) and short-term (up to 1 year) tasks. It is stated that all ministries and other governmental, nongovernmental and private organizations will participate in and contribute to these programmes under the general coordination of the National Survey for Seismic Protection of the Republic of Armenia. The seismic risk reduction strategy includes:

- seismic hazard and risk assessment;
- reduction of seismic vulnerability in urban areas (reinforcement and upgrading of existing buildings and structures, as well as areas where there are critical engineering structures (nuclear power plant, dams, bridges, etc.));
- design of new seismic building codes;
- education and training of the general public (public awareness-raising);
- early warning and notification;
- risk management, including emergency response and rescue operations;
- disaster relief and rehabilitation;
- insurance issues;
- establishment of partnerships with public and private organizations;
- development of national laws and regulations on seismic risk reduction;
- widespread international cooperation on the national seismic protection programmes.

It is unknown whether this programme also includes the 17 private hospitals in the country (all of which are in Yerevan).

The team was informed that the hospital directors were themselves responsible for ensuring that infrastructure (buildings, water, electricity) were seismic proof but this

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<sup>28</sup> Founded by the directive of the Government of the Republic of Armenia on 17 July 1991 with special governmental status (<http://www.adrc.or.jp/highlights/041/nsspra.htm>, accessed on 7 August 2008). The President of the National Survey for Seismic Protection reports directly to the Prime Minister.

seems unlikely considering the Law on Seismic Protection (see Section on “Findings of the assessment” under “National crisis preparedness policy”). Hospitals will, however, be responsible for ensuring that internal fittings and medical equipment are secure.

Until 1994, the legal requirements for construction were in accordance with those of the former Soviet Union, which were deemed lower than those required for conditions in Armenia. Hence, in 1994, the Government introduced new regulations for the construction, reconstruction and reinforcement of residential, public and industrial buildings and for transport and hydro-technical structures. The regulations were revised in 2005 by the Ministry of Urban Development, in collaboration with the National Survey for Seismic Protection of the Republic of Armenia and other relevant bodies, to bring them in line with international standards. The revised regulations require that new buildings, including hospitals, must be 9-bell<sup>29</sup> resistant (an earthquake of an intensity of 6–7 bells is considered to be the maximum hazard for Yerevan). Also, new hospitals and schools built in Armenia may not be built higher than two storeys<sup>30</sup>.

### **Role of the Ministry of Health in seismic protection**

Currently, there are 89 hospitals in Armenia, 17 of which are privately owned. The private hospitals are all located in Yerevan and, of the 72 public hospitals, 14 are in Yerevan and 58 in the regions.

After the earthquake in 1988, the Ministry of Health, at the request of the Government, provided a list of hospitals and facilities that needed to be assessed and upgraded for seismic vulnerability. Reportedly, this involved all the main hospitals in the country. This seems to be the only responsibility that was allocated to the Ministry of Health. No information was available on how many hospitals had been assessed or improved since then.

### **Role of the ARS in seismic protection**

The seismic protection of buildings is not included in the mandate of the ARS. However, the ARS was of the opinion that the majority of the public buildings (hospitals, schools and government buildings) were strongly constructed as they had been built between 1945 and 1983 and were, therefore, in accordance with the regulations of the former Soviet Union for an earthquake of 8–9 bells. This was contradictory to the opinions of some of the other interviewees who considered that the standards of the former Soviet Union were inadequate for Armenia.

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<sup>29</sup> Equivalent to the Richter Scale.

<sup>30</sup> Information source: National Survey for Seismic Protection of the Republic of Armenia, World Conference on Disaster Reduction, Nyogo, Japan, January 2005.

### ***Lifelines, logistics, telecommunications and security***

The Ministry of Health, the ARS, the Department of Health of the Lori Region, and the previous Adviser to the First Department all considered that most or possibly all of the hospitals have effective disaster plans. The Head of the Department of Health of the Lori Region said that every hospital in the country had its own plan. The ARS voiced their concern about emergency planning in the 17 private hospitals in Yerevan. It was not clear if the Ministry of Health has any authority over the private sector with respect to disaster preparedness and response.

As no hospital facilities were visited during the mission, it was not possible for the team to review a hospital plan for overall content and effectiveness. The Adviser for Emergency Situations and Military Mobilization in the Ministry of Health showed the team what was said to be a hospital plan but it appeared to be the Russian translation of the WHO document, *A practical tool for the preparation of a hospital crisis preparedness plan (10)* and not a detailed plan for a specific hospital facility. However, it is positive that this WHO document is currently in use.

Hospital directors submit preparedness plans to the Ministry of Health for review and approval. This is presumed to be the responsibility of the First Department.

Hospitals are receiving support through the USAID/WHO project to develop specific plans for influenza pandemic preparedness. These plans are not yet in place.

In some regions, there are mobile hospitals for disaster situations but they are old, dating back to the times of the former Soviet Union. The need for new mobile hospitals has been given high priority by the authorities of the Lori Region. On the other hand, the armed forces were said to have their own medical services in nearly all the regions, so that plans for mobile hospitals were not generally considered a high priority.

## International Health Regulations (2005)

### *Background*

In order to respond to the increasing complexity and frequency of health-related emergencies, a revision of the IHR was adopted by all WHO Member States during the 58th World Health Assembly in 2005 (Resolution WHA58.3) (11) and entered into force on 15 June 2007. The most important changes related to the emphasis placed on the importance of a multisectoral approach, recognizing that the IHR are no longer considered purely a health treaty, and to the new way of determining a public health emergency of international concern. The previous list of hazardous diseases has been replaced by an algorithm to guide the reporting authorities in their assessment of events. The changes made in the IHR have confronted the WHO Member States with a number of implementation challenges but, at the same time, they bring with them the potential of strengthening the involvement of the health sector in national disaster preparedness and management.

The revised IHR require that countries take immediate action: to complete national legislation; to ensure awareness and understanding of, as well as training in, the new IHR approach; to apply the new algorithm in their reporting practices; and to integrate a national focal point for the IHR in national disaster and communication plans. By 2009, countries shall have completed an assessment of the core capacity at borders and/or land crossings as required in Annex 1 of the IHR, and developed action plans to have this core capacity in place by 2012.

Questions asked during the WHO mission in relation to the IHR concentrated mainly on:

1. the establishment and role of a national focal point for IHR;
2. the legislation, translation and formal procedures needed for implementing the IHR;
3. communication with the health and other sectors on the new multisectoral, event-based approach;
4. placement of responsibility for the assessment of core capacity and the development of national plans by 2009;
5. the adoption of the IHR algorithm as the national reporting tool and the training of relevant personnel in its use.

## ***Findings***

The interviews indicated a great interest in implementing the IHR in Armenia. A number of activities have already been started, for example by the State Hygiene Anti-Epidemic Inspectorate branches in Yerevan and at the Yerevan Airport. As yet, no special legislation has been passed on formally implementing the IHR but a draft public health act reflecting the new IHR provisions was expected to be submitted to the Parliament in November 2007. The Ministries of Agriculture, Customs, Foreign Affairs, National Security, Social Affairs, Trade, and Transport are involved in an intergovernmental consultation on the implementation of the IHR. According to the Ministry of Health, assistance has been received from WHO and the World Trade Organization (WTO) in evaluating national legislation. The new act will change existing laws relating to the IHR in both the health and other sectors. The working language so far has been Russian but translation of the IHR into Armenian is planned.

A working paper to incorporate the IHR algorithm in national reporting is being drafted by the Inspectorate (with input from all the regional branches). It has been pointed out that there is a need for the stronger involvement of other sectors and for 24-hour accessibility to the National Focal Point for the IHR. In the meantime the 24-hour emergency hotline of the Ministry of Health ensures national and international accessibility on a temporary basis. The question about whether the official language for international, IHR-related communication should be English or Russian is a concern and needs to be addressed.

There is less activity at district level where knowledge about the thrust of the revised IHR is good but where any initiatives to formally and practically implement them are expected to be taken at the central level. However, the health issues that are reflected in both the original and the revised versions of the IHR, such as border sanitary posts and quarantine facilities, are included among the general disaster preparedness and management activities.

The sanitary quarantine station recently set up at the Yerevan airport under the supervision of the State Hygiene Anti-Epidemic Inspectorate seems to be quite advanced in its needs assessment for IHR implementation. So far, the station has worked out an airport emergency plan for communicable diseases, based on the IHR. Training is not yet foreseen. The station is also involved in compiling a list of countries at risk.

The Ministry of Health is quite confident that, after completion of the legislation process, unresolved questions of a financial and practical nature will be successfully managed. However, at the non-political level, there are doubts about how effectively changes can be implemented at the local level and questions about how regulations emanating from international agreements in other sectors will be changed. It was recommended that WHO communicate information about the new IHR provisions to the higher political level (e.g.

the International Civil Aviation Organization (ICAO) and WTO). As have most countries, Armenia has joined the Convention on International Civil Aviation (Chicago Convention), which accepts ICAO as the only standard-setting organization for airports. Moreover, experts interviewed during the mission pointed out that a number of IHR provisions need to be clarified in detail. For example, there is no standard for the disinfection and disinsection of vessels.

There are a number of cross-border agreements between Armenia and the neighbouring countries that include provisions for setting up emergency teams at borders and how they should function. An example of such an agreement is The Summit Declaration on Black Sea Economic Cooperation (1992).

### ***Conclusions***

Several formal preconditions and surveillance systems can be found in Armenia that should ease the process of implementing the revised IHR, especially with respect to the multisectoral approach. The authorities of various sectors at the regional and community levels are already linked through emergency plans, though less so at the central level. The roles of the local Governors and the Deputy Prime Minister in setting up multisectoral emergency teams are especially crucial to ensuring this link; relevant awareness-raising activities and training could be valuable to them. At the central level, a more active involvement of the Ministry of Territorial Administration and the Ministry of Nature Protection in IHR implementation would undoubtedly be beneficial. Even though both ministries are formally involved in the governmental consultation process relating to the draft act, information regarding the IHR has apparently not been communicated within the ministries to a great extent.

It was indicated that the State Hygiene Anti-Epidemic Inspectorate would be nominated as the National Focal Point for the IHR<sup>31</sup>. As in all WHO Member States, it will be a big challenge to formally and informally establish the National Focal Point (as a health institution) within the general national reporting and disaster preparedness system. Existing emergency plans need to be checked and adjusted and standard operating procedures need to be developed. Only experience will show whether these plans and procedures are prepared well enough to cope with multisectoral events. As regards cross-border emergencies, Armenia can take advantage of international agreements.

The assessment of core capacity for IHR implementation that should be completed by 2009 has not yet been planned. It could be useful to communicate with non-health sectors about IHR implementation beforehand with a view to identifying key persons who could be involved in the assessment.

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<sup>31</sup>Since the assessment visit, the State Hygiene Anti-Epidemic Inspectorate has been appointed as the National Focal Point for IHR.

Awareness about the new algorithm for national reporting is extensive<sup>32</sup>. After the State Hygiene Anti-Epidemic Inspectorate working group has completed its work and elaborated on the consequences of this new decision tool, those in charge of events that potentially constitute a public health emergency of international concern will need to take part in training exercises<sup>33</sup>.

## Chemical safety

### *Background*

Chemical safety came into focus when, in 1972, the United Nations Conference on the Human Environment endorsed the Stockholm Declaration on Human Environment (12), advocating the need for a common outlook and common principles on the preservation and enhancement of the human environment. Since then, there have been several landmark developments in the global response to the emerging threat of chemical risks and the need to promote chemical safety.

Chemical safety involves issues relating to the environment, health, agriculture, industry, trade, etc., that come under the responsibility of different sectors of government. Coordination and cooperation among the different government agencies is essential if a successful national chemical safety programme is to be achieved. Although the prevention of risk to human health is one of the key components of such a programme, the involvement of the health sector has been limited in many cases. The successful implementation of a chemical safety programme depends on the active and effective participation of the health sector.

### *Findings*

#### **General management of chemicals**

In 2005, through a multi-stakeholder process, Armenia developed a comprehensive national management profile of chemicals and waste management. It was based on Government Decision No. 26 of 8 July 2004: *On approval of the national profile on chemicals and waste management*. This national profile is currently being updated. As yet, there is no law on chemicals in Armenia but certain issues relating to the management of chemicals are regulated by various laws. At the national level, the regulation of chemicals and waste is dealt with by the Ministry of Agriculture, the Ministry of Defence, the Ministry of Energy, the Ministry of Finance and Economy, the

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<sup>32</sup> Since the assessment visit, the algorithm has been tested in various case studies.

<sup>33</sup> Since the assessment visit, an introductory workshop on the scope and purpose of the IHR(2005), with special emphasis on points of entry at borders, took place in March 2008, within the framework of the avian influenza project.

Ministry of Health, the Ministry of Nature Protection, the Ministry of Trade and Economic Development and their Board on Standardization, Metrology and Compliance Confirmation, the National Statistical Service, the regional governors and the Yerevan city administration

### **Preparedness for and response to a chemical crisis**

Details on the general legislation that regulates crisis, disaster and emergency preparedness and response in Armenia, also with regards to chemical emergencies, can be found in the Chapter on “Institutional framework” under “Policy and legislation”.

During emergencies related to chemical safety – for example, industrial, technological and natural disasters – special functions are assigned to the ARS (under the Ministry of Territorial Administration). According to Government Decision No. 1064, the ARS performs certain activities with respect to permanent radiation, chemical and biological surveillance. There is an agreement between the State Hygiene Anti-Epidemic Inspectorate (under the Ministry of Health) and the ARS (under the Ministry of Territorial Administration) on information exchange and the coordination of action in emergency situations.

### **Chemical incidents**

A national public health plan for chemical incidents has not yet been developed. Armenia ratified International Labour Organization (ILO) Convention 174 (13) on the prevention of major industrial accidents in 1996 and acceded to the United Nations Economic Commission for Europe (UNECE) Convention on the Transboundary Effects of Industrial Accidents in 1997 (14). The Government has designated the responsibility for the implementation of the UNECE Convention to the Ministry of Nature Protection and the ARS (under the Ministry of Territorial Administration).

### **Poison centre**

Armenia does not have a poison information centre.

### **National laws and regulations on chemicals**

#### **Chemicals**

There is no specific law on chemicals but certain issues of chemicals’ management are regulated by various laws. A system in accordance with the Globally Harmonized System for Classification and Labelling of Chemicals has been created but not yet implemented. Any dangerous substance or material that is allowed on the market in Armenia is accompanied by minimal information on its safety.

### **Workers' health**

International Labour Organization (ILO) Convention 170 (15) on safety in the use of chemicals at work was not ratified by Armenia but has been discussed at meetings of national experts, with the participation of experts from international organizations.

### **Waste and hazardous waste**

Normative acts on waste include:

- Order No. 96 of the Ministry of Nature Protection of 10 August 1999, Agency law: *On approval of lists of regulated and non-regulated wastes and their hazardous properties, documents on the procedure of application, notification and disposal;*
- Government Decision No. 526-A of 22 April 2004: *On approval of a list of measures ensuring safety of pesticides burial and assigning financial resources of state budget of the Republic of Armenia for Fiscal Year 2004;*
- Government Decision No. 874-A of 20 May 2004: *On approval of list of hazardous wastes;*
- Government Decision No. 1093-N of 8 July 2004: *On applying changes to the Government Decision No. 97 of 8 December 1995; and On approval of the Republic of Armenia 'List of prohibited hazardous wastes.*

### **Obsolete pesticides**

In Armenia the problem of the disposal of obsolete pesticides emerged at the end of the 1970s when the issue of confiscating and burying obsolete and prohibited organochlorine pesticides was raised. At the beginning of the 1980s, a site was allocated and around 500 tons of pesticides were buried in compliance with health and environmental requirements. Over time, landslides rendered the site unsafe and, in 2005, an inter-departmental commission discussed the issue and submitted recommendations on improving the site. A preliminary evaluation carried out by the Ministry of Nature Protection, included a costing of the activities required to ensure that the site was safe from an ecological point of view.

The above measures resulted in a Government Decision: *On approval of a list of measures ensuring the safety of pesticides' burial and assigning financial resources of state budget of the Republic of Armenia for the Fiscal Year 2004*". Implementation measures were entrusted to the Department of Emergency Situations of the Government and funds were assigned from the Government's reserve fund. Responsibility for the coordination and control of implementation measures remained with the Ministry of Nature Protection. However, as yet, no substantial improvements have been made or specific activities carried out to resolve the problem.

Measures that could be taken to ensure the safety of sites used for burying pesticides include:

1. conducting a study of the landslides in the territory adjacent to the sites;
2. conducting a study to determine the quality of the construction of the sites;
3. fencing off the sites and reconstructing the drainage and water catchment systems around them;
4. conducting a study to identify possible contamination of the soil and ground water in the area adjacent to the burial sites.

### **International conventions and agreements on chemical management**

Armenia ratified the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (16), the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (17) and the Stockholm Convention on Persistent Organic Pollutants (12), and appointed a National Focal Point for the Strategic Approach to International Chemicals Management. The Hazardous Substances and Wastes Management Department of the Ministry of Nature Protection is the focal point for these conventions and agreements. However, no focal point for health has been appointed for the Strategic Approach to International Chemicals Management, as recommended in WHA Resolution 59.15 (18).

The National Implementation Plan for the Stockholm Convention on Persistent Organic Pollutants (12) was prepared in 2005. The Hazardous Substances and Waste Management Department participates in many externally-supported projects related to the management of chemicals and waste (Global Environment Faculty, Strategic Approach to International Chemicals Management, United Nations Environment Programme (UNEP), UNIDO, United Nations Institute for Training and Research (UNITAR), World Bank) and has been successful in securing international support and funding (Table 6).

**Table 6: Internationally-supported chemical safety projects in Armenia**

Project	Period
To develop and sustain an integrated national programme for the sound management of chemicals and wastes.	May 2004–March 2006
To prepare/update the national profile on chemicals management as part of developing the national implementation of the Stockholm Convention.	February–July 2005
To implement capacity-building priorities in the context of an integrated national chemicals management programme.	January 2006–December 2007
To update the national chemicals management profile. To develop a tool for assessment of national capacity for the Strategic Approach to International Chemicals Management. To organize a national workshop on priority-setting for the Strategic Approach to International Chemicals Management.	June 2007–February 2009
To design a national pollutant release and transfer registers (PRTR) system for strengthening capacity for the implementation of Stockholm Convention on Persistent Organic Pollutants in Armenia.	December 2006–December 2008

### Chemical analysis laboratories

In the National Profile on Chemicals and Waste Management prepared in 2005, laboratories are listed under the Ministry of Health. However, the assessment team was informed that, owing to reorganization, many of these laboratories are no longer functioning or belong to different institutions and have other functions.

The chemical analysis laboratories at the Centre for Disease Control in Yerevan are no longer responsible for analyzing food and water samples. During the assessment visit, the only samples seen were of toys that were being analyzed for lead. The laboratories have no ongoing projects. They do have experienced staff but the laboratory conditions are unsatisfactory; for example, the instruments are old.

The ARS has both chemical and microbiological laboratories. In the central laboratory they were two rooms, one of which contained a brand new gas-chromatograph with auto sampler. This equipment was recently donated by the EU, with the assistance of the Organization for the Prohibition of Chemical Weapons. The laboratory was expecting to receive a mass spectrometer from the same donor at a later date. There is an experienced chemist but currently no analyses are being performed using the above instruments. It was not very clear under which conditions and for what purpose these instruments would be used in the future. On the other hand, there were two sets of mobile monitoring equipment that can screen up to 20 chemicals (by changing sensors). However, they were not available for use in the field, where they would be most useful.

The above findings highlight the need to better coordinate donor assistance and identify the right institution for the type of assistance required; this would help to respond to the real needs in the country.

### ***Conclusions***

The institutions dealing with chemical safety, especially the Ministry of Nature Protection, were not aware of the revised IHR and the implications of the changes made. It is therefore necessary to include awareness-raising in future IHR-related training programmes. This is also important from the point of view of the IHR national focal point with respect to establishing links with institutions that deal with chemical safety.

There is no specific unit in the Ministry of Health that deals directly with chemical safety though some units deal with certain related aspects.

The Ministry of Nature Protection plays the key role with regard to chemical safety in Armenia. The Hazardous Substances and Waste Management Department is the focal point and primary responsible agency for many international chemical conventions and projects. The Ministry of Health should actively participate in these activities, which does not seem to be the case at the moment. There is a need for better cooperation and networking between Ministry of Nature Protection, the Ministry of Health and the Ministry of Territorial Administration (ARS) on matters relating to chemical safety.

WHA Resolution 59.15 (18) urges the WHO Member States to nominate a national focal point for strategic approach – from the health sector where appropriate – in order to maintain contact with WHO. It would also be useful to have a contact point for the Strategy Approach to International Chemicals Management (SAICM) and Chemical Safety in the Ministry of Health.

## Climate change and health

### *Introduction*

According to the latest assessment report of the Intergovernmental Panel on Climate Change (IPCC), global climate change is leading to variations in weather patterns and an apparent change in extreme weather events, including heat-waves, heavy precipitation, droughts and windstorms (19). Despite the active greenhouse gas mitigation policies that are now being implemented in the European Region, some degree of global climate change is inevitable. Health systems, energy supply and infrastructure will face additional demands. Responses need to be integrated into the overall public health response measures to prevent and reduce heat-related impact on health. Therefore, proactive, multidisciplinary and multisectoral approaches by governments, agencies and international organizations need to be initiated.

Interviews were conducted with the Coordinator for Environmental Governance and the Disaster Project Manager of the UNDP in Armenia, the Head of the Monitoring Department of the Ministry of Nature Protection, and the Director and the Deputy Director of Hydromet, as well as representatives of ARS, Armenian Red Cross and the regional health services (Annex 2).

### *Country context – climate change in Armenia*

In the last decade, the average temperature in Armenia had increased by 0.4 °C and the precipitation had decreased. It is projected that, over the next 100 years, the temperature will increase by 2 °C and precipitation will decrease by 10% (19). These predictions entail an increased risk of water shortage and drought. Regional models, however, show that regional differences need to be considered, as some regions will experience less precipitation, while in others – such as the Lori Region – there might be more.

The weather in Armenia was reported to have changed over the last 5–10 years in the following ways:

- summer starts later and is hotter;
- there is more snow in winter, leading to flooding in spring;
- there is more rain so that less irrigation is needed for agriculture;
- the river levels are higher;
- although Armenia is generally rich in water, there is a shortage in some regions (e.g. the Ararat valley).

To some extent, the above information seems to contradict the data related to the ongoing desertification in the country. Armenia is a semi-arid country and 82% of the land area is

under desertification, of which 26% faces extreme desertification and 27% high desertification.

### **Communications to the United Nations Framework Convention on Climate Change (UNFCCC)**

In 1998, the first communication in climate change (mandatory reporting) from Armenia to the UNFCCC was compiled by the Ministry of Nature Protection, the UNDP and the Global Environment Faculty, in collaboration with Hydromet and others (20). Here, the impact of climate change on health was projected without taking control activities and programmes (for example, for cholera, plague and malaria) into consideration. The last cholera outbreak in Armenia was in 1998, when the number of malaria cases also peaked (Table 7) (21). The plague centres that still exist have observed that the rodent population has proliferated as the winter temperatures have become milder. Tularaemia is one of the diseases directly transmitted by rodents.

**Table 7. Malaria incidence in Armenia, 1994–2007**

Year	Type			Source		
	<i>P. vivax</i>	<i>P. falciparum</i>	Total	Autochthonous	Imported	Total
1994	196		196	1	195	196
1995	502		502	0	502	502
1996	347		347	149	198	347
1997	841		841	567	274	841
1998	1156	0	1156	542	614	1156
1999	612	4	616	329	287	616
2000	140	1	141	56	85	141
2001	79	0	79	31	48	79
2002	52	0	52	16	36	52
2003	25	4	29	8	21	29
2004	45	2	47	6	41	47
2005	7	0	7	3	4	7
2006	0	0	0	0	0	0
2007	1	0	1	0	1	1

NB: Blank cells indicate that data are either unavailable and/or have not yet been reported to WHO.

According to the UNDP, following the first communication to UNFCCC, the Global Environment Faculty submitted proposals for a project on adaptation measures for the forest region (pests) (US\$ 1 million) and a project on transport, which is under consideration.

Follow-up on climate change policy and the implementation of adaptation measures have been weak as the Government has not given the green light to start the process. In 2006, development of the second communication was initiated using a different methodology and focusing on economy, energy and human health. The health sector has not yet been consulted on the second communication though there are plans to do so. It is possible that the UNDP will consult WHO.

The second communication will not include figures on the cost of climate change for Armenia. The economic impact will perhaps be assessed in 2008, following the example of the Stern report (22). The lack of baseline data makes impact assessment difficult. The UNDP is following the strategy of mainstreaming climate change into United Nations programme activities and advisory services to governments (mainstreaming of climate change to all UNDP country offices). The UNDP Bureau for Crisis Prevention and Recovery (BCPR)<sup>34</sup> activities includes Armenia in the area of strengthening the Government's ability to assess, reduce and respond to disasters.

The forthcoming UNDP flag-ship project will deal with community development and adaptation measures. The agriculture and energy sectors are perceived to be the most vulnerable to climate change. A lack of awareness in the respective ministries has been observed because the first communication was seen to be well disseminated.

### ***Impact of climate change on health***

Climate-sensitive diseases include diarrhoeal diseases, foodborne, vector borne and water borne diseases. Recently, cases of dysentery (Shigellosis) and other water borne and foodborne diarrhoeal cases have been identified in the Lori Region. Over the last 20 years, the quality of the diagnostics of these diseases has improved, which could also have led to an increase in detected cases.

Overall, there is likely to be an increase in the prominence of heat-related health impacts on patients with cardiovascular diseases in Armenia owing to an increase (projected) in high temperatures and heat-waves.

A key message derived from a previous research project (climate Change and Adaptation Strategies for Human health – cCASHh) is that adaptation measures for future climate change are in general not new and that most of them build on well-established public health approaches (23). Public health responses could include: strengthening disease surveillance and prevention programmes; developing and introducing policies and prevention measures to address new threats; and sharing lessons learned across countries and sectors.

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<sup>34</sup> <http://www.preventionweb.net/english/professional/contacts/v.php?id=2724>, accessed on 15 August 2008.

Some recommendations for adaptation measures are proposed under the chapter on “Analysis of the strengths, weaknesses and opportunities related to current climate change and health adaptation measures”.

### ***National preparedness and response mechanisms***

Several institutions and players in Armenia have adaptation, preparedness and response measures in place for dealing with the impact of climate change on health. GIS maps of the country were developed eight years ago and are available from the ARS<sup>35</sup>. The ARS is linked to Hydromet to receive early warnings about heat-waves, floods and major natural disasters (a list of included weather conditions is given below). The early warning is then passed on to Ministry of Health and the population. It was felt that the early warning process could be strengthened.

#### **The Armenian State Hydrometeorological and Monitoring Service (Hydromet)**

Hydromet belongs to the Ministry of Nature Protection<sup>36</sup>. It provides a five-day weather forecast to various government bodies. In addition, a free-of-charge 24-hour phone line also provides this five-day forecast.

The following meteorological parameters for which early warnings are provided are measured at 45 points in the country every three hours:

- temperatures (minimum and maximum);
- precipitation;
- humidity;
- pressure;
- wind speed and direction;
- radiation;
- drought;
- water levels in rivers and lakes;
- extreme events;
- measurements exceeding historic (minimum and maximum) thresholds.

From this list, the Ministry of Health can choose the items most relevant to health in connection with which they wish to receive early warnings of threatening or exceptional circumstances.

Hydromet benefits from bilateral collaboration with the German Weather Service (DWD) and Météo France. They run projects on communicable diseases, weather and health, and

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<sup>35</sup> [www.ema.am](http://www.ema.am), accessed on 10 July 2008.

<sup>36</sup> Belongs, as of May 2008, to the newly-established Ministry of Emergency Situations.

climate and health. They are also collaborating with the WMO on looking into the effects of ultraviolet (UV) radiation on skin, and with the State Medical University on research into the effects of heat and barometric pressure on cardiovascular diseases and hypertension. Hydromet uses the Intergovernmental Panel on Climate Change (IPCC) index but, so far, no multisectoral analysis is taking place.

In Armenia, climate change is included in the meteorological training programme. However, owing to lack of funding, this training is more an exchange of experiences than formal training. Some staff members are sent abroad for training, with financial support from WMO. As Hydromet is a state organization with limited funding, it is difficult to offer working conditions that would attract experts to work for Hydromet.

Meteorological information on weather extremes is available in Armenia. However, it is not optimally used by the health sector. Hydromet seems to be providing health advice without any official basis or system.

### **Financial constraints to an early warning system between Hydromet and the Ministry of Health**

Hydromet is prepared to work with any institution in the health sector, national or regional. However, they have a budget that covers only their own core activities. When the Sanepid Department (now replaced by the State Hygiene Anti-Epidemic Inspectorate) was in force, it requested that funds be allocated to Hydromet for collaboration on malaria control. Currently, Hydromet provides certain information to the Ministry of Health free of charge, such as that on the average temperature of the previous month. This information is also distributed to the regional level. However, owing to lack of funding, the regional Hydromet offices do not send the data directly to the regional health centres.

In addition, data need specific processing to be useful to the health sector and the Ministry of Health would need to set funds aside for the provision of defined data. Each Ministry or State Agency has funding for core activities but, unfortunately, not usually for special collaboration of this kind. On the other hand, the Ministry of Agriculture has a budget for obtaining specific information from the Hydromet. It was suggested that a similar procedure be adopted for provision of data to the health sector. However, the importance of weather and climate and the usefulness of information related to these topics seem not to be perceived as a high priority within the Ministry of Health. If the provision of information by Hydromet were officially defined as a part of the national preparedness planning process, the information could be provided free of charge.

In the long term, climate change will become a priority issue in the country and a multi-stakeholder consultation process will be needed. Climate change should also be mainstreamed within the Ministry of Health. This would require strong support in terms of technical assistance and data management (environment, health and climate change). Further support would be needed for the development of human resources and for

technical, medical and managerial training in emergency preparedness and response, as well as through the input of international organizations and the inclusion of climate change in university curricula.

### **The Ministry of Nature Protection**

A report on the state of the environment in the country is available both on the Internet and as a hard copy.

The focal point for climate change (UNFCCC) is located in the Air Quality Department of the Ministry.

The Ministry has a monitoring centre for water and air.

### **National crisis preparedness plan and climate change**

A detailed description of the national crisis management system is given in the chapter on “Institutional framework”.

Hydromet (Ministry of Nature Protection) is involved in the national disaster plan through the ARS (Ministry of Territorial Administration). They provide early warning information to the ARS on hazards, such as strong winds, hailstorms, avalanches, wild fires, extreme heat, mudslides and landslides. It was not possible to identify exactly how far in advance these early warnings are given (lead-time). The difficulties described in the interview with Hydromet (above) underline the need for official links and a legal basis for early warning systems.

According to Hydromet, an action plan to develop a rapid response system, in collaboration with the NATO, had been adopted two weeks before the interview. It is foreseen that this will be done by establishing a Crisis Management Centre in Yerevan to deal with all kinds of crises and involving all ministries and organizations, including Hydromet. The new centre will be organized on the basis of the existing ARS Crisis Management Centre and its tasks will include reliable means of communication, transport and the provision of shelters.

This information could not be confirmed during the interviews with the ARS staff who did not consider that they were in a position to discuss NATO-coordinated projects in detail.

## ***Analysis of the strengths, weaknesses and opportunities related to current climate change and health adaptation measures***

### **Strengths**

- An early warning system for extreme events is already in place (Hydromet and ARS) but could be further improved.
- The ARS is well organized.
- A rapid response system is reported to be in place.
- The Climate Change Information Centre of Armenia was created for the preparation of the first national communication to the UNFCCC in 1997. It has a very comprehensive and regularly updated web page<sup>37</sup>) that displays a long list of important partners relevant for a multisectoral approach to the mitigation of and adaptation to climate change.

### **Weaknesses**

- A lack of official links and structured collaboration between agencies.
- Insufficient implementation of the rapid response system.
- The failure of the health sector to consider climate change. Other priorities dominate; if climate change is considered at all, it is by other sectors, such as that for agriculture.

### **Opportunities**

- The interest shown by the UNDP Office in Armenia and their related activity in relation to issues of climate change.
- The UNFCCC process in developing the second communication, which is currently underway with the support of UNDP.
- Action by the Ministry of Nature Protection in relation to the ratification of various conventions and international agreements.
- Plans to further strengthen the sanitary-epidemiological surveillance system to deal with new requirements and challenges, including the impact of climate change on health.
- An active Armenian Red Cross with an established countrywide network.
- Established postgraduate training courses (that could be updated).

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<sup>37</sup> <http://www.nature-ic.am/ccarmenia/en/>, accessed on 10 July 2008.

## ***Conclusions***

The connection between projected climate change and the possible impact it would have on health has not yet been established in Armenia, either in terms of epidemiological studies and institutional connections or health care preparedness plans and long-term planning. Climate change is perceived as a mere environmental problem that has an impact on nature.

However, climate change is an issue within the environmental and meteorological community in Armenia. This fact could be used as a strong starting point for raising awareness and strengthening the public health response to the projected impact of climate change on the health of the population.

## ***Recommendations for short-, medium- and long-term action in the area of climate change***

To prevent the negative impact of climate change on health, a multitude of action is required at various levels. This includes developing health system preparedness, establishing early warning meteorological systems, providing timely advice to the public and to medical professionals, and ensuring appropriate housing and urban planning.

The following principles of emergency response should be adhered to in planning for and responding to climate change and its impact on health:

- use existing systems and link to general emergency response arrangements;
- adopt a broad, long-term approach;
- communicate effectively;
- ensure that responses do not exacerbate the problem;
- evaluate.

The prerequisites for developing a national adaptation plan for climate change in Armenia could be:

- to carry out an assessment of the risks, thresholds, vulnerabilities and adaptation capacity related to climate change in the country;
- to find ways of motivating the participation and leadership of the health sector in the field of climate change (currently, non-health sectors are more active in this field);
- to carry out a study on the relationship between climate change and health, e.g. the impact of extreme weather events on health in the Armenian context.

Elements of the plan could include:

- to reach an agreement on a lead body for the coordination of preparedness and response – should it be the health sector?
- to review the legal framework with a view to strengthening it and allowing official collaboration between the hydro-meteorological services, the health sector and other sectors;
- to strengthen the existing disease surveillance systems by including climate-related health outcomes;
- to develop measures of prevention and response to the impact of climate change on health in existing and developing structures, such as overall disaster preparedness plans, the avian influenza response plan, earthquake response plans, etc.;
- to develop preparedness and response plans built around feasible and available technology;
- to conduct awareness-raising activities for both medical professionals (training and capacity building) and the general population (communication strategy);
- to identify and monitor vulnerable population groups at risk for the health effects of climate change;
- to prepare guidance for medical professionals and advice to the public on measures to be taken during extreme weather events, such as heat-waves, flooding and drought;
- to coordinate the development of health promotion materials, including a structured approval system;
- to maintain international and regional cooperation;
- to establish monitoring and evaluation procedures.

Possible mid- and long-term measures:

- improving the socio-economic and living standards of the population;
- making use of building technologies that would contribute to creating optimal temperatures (architecture);
- creating zones with a clean microclimate (gardens, greeneries) in dwelling spaces (urban planning and transport policies);
- controlling disease (including health controls at the borders (Points of Entry)) in accordance with IHR processes and mechanisms;
- creating links to water and food safety strategies and strengthening these;
- reducing carbon emission in the health sector and ensuring that adaptation measures do not exacerbate climate change (e.g. air conditioning).

## KEY FINDINGS AND RECOMMENDATIONS

### Leadership and governance

#### *Policy and legislation*

##### **Rationale**

Health security is an issue of national concern and disaster prevention, mitigation and response are key elements. Hence, political commitment and a clear legal framework are necessary not only within the health sector, but also within the context of a broader, national (legal and institutional) framework that encompasses all sectors and creates an environment for the development of appropriate public health policy. To avoid confusion, ambiguity and unnecessary friction with other health providers, e.g. the military, national policy should clearly recognize the Ministry of Health as the body responsible for leading the overall medical and public health response, and should provide not only for the implementation of activities related to mounting a response during a crisis but also of those related to prevention, reduction and mitigation.

Current (national) legislation also needs to provide for the implementation of the new International Health Regulations (IHR). In addition, there are a number of international conventions and agreements related, for example, to climate change, the environment and chemical safety, to which national governments with a political commitment to effective disaster management normally adhere.

As well as an overall national policy document, specific laws, decrees, orders and regulations should be available to allow the health sector to regulate and ensure the effectiveness of multi-disciplined, all-hazard crisis preparedness planning and response at all levels, which includes the private sector, nongovernmental organisations (NGOs) and other health-related agencies. It should specify resource allocation, monitoring and evaluation requirements, and the line of command and coordination within the Ministry of Health and the key health institutions and partner agencies involved in disaster preparedness, response and recovery operations.

##### **Key findings**

1. The existing national legal framework, embodied in the two overarching laws, i.e. the law on protection of the population and the law on civil protection, appears to be adequate for the effective implementation of disaster preparedness and response activities. It establishes a comprehensive approach which also makes provision for risk reduction, prevention and mitigation and specifically mentions these activities in relation to health facilities. It also provides for the participation of all members of

society in the overall response, which the assessment team presumes to include the international community, e.g. United Nations Agencies and NGOs.

2. The Armenian Rescue Services (ARS) clearly recognize the authority of the Ministry of Health to deal with health-related issues, and the legal framework makes provision for the implementation of public health and medical services. However, as far as can be ascertained, there is no law that specifically assigns or recognizes the Ministry as the lead agency in the health sector with the overall responsibility for setting up the medical and public health response at the national and district levels. The degree to which this civil protection framework constitutes a legal basis for formulating new health legislation that mandates activities in crisis management is, therefore, questionable.
3. The law on sanitary and epidemiological safety enables the Ministry of Health to ensure the health of the population through public health interventions, particularly in relation to communicable disease control and environmental health. However, there are no general provisions that constitute the necessary legal framework for effective crisis preparedness planning and response.
4. There is no legal provision or government order relating to information flow or communication with the State Hygiene and Anti-Epidemic Inspectorate (the National Focal Point for the IHR) in the event of a chemical accident or similar emergency with potential public health consequences. Information flow is currently unofficial and, in general, based on the normal practice of keeping key people informed. However, the Inspectorate and the ARS have signed an agreement on exchanging information of particular relevance to avian influenza.
5. A new public health law is being drafted which will make provision for the implementation of the IHR, although submission to the Government for approval has now been postponed until the end of 2008. As a European Neighbourhood Policy (ENP) country, Armenia is in the process of harmonizing its legislation with that of the EU.
6. There is no specific law on chemicals but certain issues of chemical management are regulated under the existing legislation. Although no public health plan for chemical incidents has been developed, Armenia ratified the International Labour Organization (ILO) Convention 174 (13) on the prevention of major industrial accidents and acceded to the United Nations Economic Commission for Europe (UNECE) Convention on the Transboundary Effects of Industrial Accidents (14).

## **Recommendations**

- The Ministry of Health may wish to ensure that current national crisis preparedness legislation fully addresses the needs of the health sector and clearly defines its responsibilities within the multisectoral arena.
- It is important that the legal framework for the implementation of the IHR be established as soon as possible so that activities can commence. To this end, approval of the new public health law is necessary, as well as the development of a national action plan, supported by any other acts or regulations deemed necessary for effective implementation by 2012.
- The Ministry of Health may wish to consider framework legislation specific to disaster preparedness and response. However, once the new public health law is approved, the existing framework will undoubtedly be sufficient to support new policy formulation; thus, a practical alternative would be to define disaster preparedness and response at policy level (see *Institutional Framework*).
- The Ministry of Health may wish to take a more active role in the ongoing debate on climate change and develop a clear strategy for preparedness and response to the health effects of extreme weather conditions.
- The Ministry of Health may wish to take a more active role in chemicals management, particularly in view of the new IHR.

## ***Institutional framework***

### **Rationale**

WHO and the EU strongly support the existence of an officially recognized national (health sector) programme for disaster preparedness and response with the key functions and dedicated budget required to meet international standards (model terms of reference are shown in Annex 3). This means having an institutional framework in place that allows for effective implementation through a comprehensive, all-hazard, multi-disciplinary approach. In the best case scenario this would include:

- a health crisis management unit;
- a health crisis coordinator;
- a mechanism of involving other key departments or disciplines of the Ministry of Health in the planning process – often best achieved through a multidisciplinary or interdepartmental disaster preparedness and response committee/working group/task force at central/national level.

It is recognized that these requirements are not always economically viable, politically possible or even appropriate in countries with small populations and relatively low levels of risk. Also, many low income countries are undergoing extensive public sector reform programmes, which may restrict the expansion or functions of the Ministry of Health, or in fact require the Ministry of Health to downsize.

The new IHR also require every country to have a National Focal Point – a department or institution (not an individual person) with the capacity to meet certain responsibilities as specified in separate guidance from WHO. The National Focal Point is generally located within and subordinate to the Ministry of Health, but could in fact be under the authority of a different ministry if considered more appropriate.

Hence, how each individual country decides to establish its national programme for disaster preparedness and response and meet core capacity required by the IHR depends very much on the country context with respect, for example, to population, potential hazards and associated risks, and current organizational structures. However, in the absence of a dedicated health crisis management unit, the existence of a full-time and permanent health crisis coordinator, institutionalized within the Ministry of Health, is considered a minimum standard. The health crisis coordinator should have an all-hazard function, be responsible for overseeing the implementation of the national health crisis programme, and have the background, experience and authority to steer overall policy and represent the Ministry of Health at a multisectoral level.

### **Key Findings**

1. The First Deputy Minister of Health has overall responsibility for civil protection and is the Head of the Health Sector Task Force, which convenes if a crisis is declared. It is at this stage that the roles and responsibilities of the various departments are defined, based on the type and magnitude of the crisis. The Task Force does not play a role in routine disaster preparedness and response planning.
2. The current institutional and organizational framework for crisis preparedness and response in the Ministry of Health and its subordinate institutions is ambiguous with no clear lines of authority. A dedicated health crisis unit (Department of Civil Protection and Emergency Situations) used to exist but was closed in 2002–2003, as a result of the health sector reform programme. The responsibilities are now divided between the First Deputy Minister, the First Department, the Adviser on Emergency Situations and Military Mobilization, the State Hygiene and Anti-Epidemic Inspectorate and the ex-adviser on civil defence to the First Department.
3. The First Deputy Minister recently appointed an Advisor for Emergency Situations and Military Mobilisation who does not have a medical or public health background. This position is not recognized within the Ministry of Health organigram. Hence, there is no position within the Ministry which meets the necessary criteria necessary to constitute a Health Crisis Coordinator.

4. The State Hygiene and Anti-Epidemic Inspectorate has been officially appointed as the National Focal Point for the IHR. It is an autonomous organization, reporting directly to the Ministry of Health, and responsible for public health issues; including communicable disease control, environmental health, poisonings and matters related to quarantine and points of entry at the borders. Within the overall organizational framework, its new function as National Focal Point for the IHR is not yet clearly defined and there is little awareness of its role as such within the health sector, or in its subordinate institutions.
5. While the State Hygiene and Anti-Epidemic Inspectorate still lacks a facility with round-the-clock coverage (except for the private telephones of individual Inspectorate staff), a telephone line that is open 24 hours a day, seven days a week, has recently been established in the Ministry of Health.
6. There are no health crisis coordinators in the regions other than those appointed temporarily within the framework of the 2006–2007 Biennial Collaborative Agreement between the Ministry of Health and WHO. The regional governors are overall responsible for leading the crisis preparedness and response activities at the regional level, in close cooperation with the regional branches of the ARS.
7. The ARS does not have a medical unit (except for occupational health) and therefore depends entirely on the Ministry of Health for health issues other than those connected with search and rescue services for which they have their own rescue teams.
8. There is no officially nominated body in the health sector responsible for leading and coordinating the public health preparedness and response to climate change.
9. Armenia does not have a poisons information centre.

### **Recommendations**

- The Ministry of Health may wish to formulate a strategic policy document for disaster preparedness and response defining the overall requirements, current institutional framework and related responsibilities, and setting out a continuing programme of activities. This could include a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis and option appraisal.
- Regular meetings of the Health Sector Task Force are indicated to monitor and evaluate the implementation of the disaster preparedness and response programme of activities (once established) and to ensure the involvement of all health sector departments and institutions in strategic planning and policy development.
- To ensure an effective health sector response at regional level, it is advisable that the institutional framework include an officially recognized health crisis coordinator for

each region, whose role it is to not only to coordinate the local health sector planning and response activities but also to act as the focal point on the multisectoral level.

- The role of the National Focal Point for the IHR needs to be clearly defined and other key partners made fully aware of the requirements of WHO to have the necessary core capacity for IHR implementation in place by the year 2012, as well as of their respective roles in achieving this objective. This may be best attained through specific meetings and workshops, aimed at information sharing, strategic planning and developing a national plan of action.
- The Ministry of Health is advised to consider officially nominating a department or institution in the health sector to lead and coordinate the public health response to climate change.
- The Ministry of Health may wish to consider establishing a poison information service that would be useful for dealing not only with emergencies related to chemicals but also with raising public awareness about the potential hazards of chemicals and hence play an important role in the prevention of accidental poisonings.

### ***Essential leadership functions***

As part of its leadership and governance role, the Ministry of Health is expected to perform certain functions in relation to disaster preparedness and response. The key functions reviewed here are: (a) health crisis preparedness planning; (b) public communications; and (c) monitoring and evaluation.

#### **(a) Health crisis preparedness planning**

##### **Rationale**

The modern disaster management approach is multi-hazard. It recognizes that the managerial challenges are similar regardless of the cause of the disaster or crisis and the need for information management, resource management (including human resources) and maintaining effective communication strategies are in essence the same whether the crisis is the result of an earthquake, flood or terrorist attack. Specific aspects will vary at the operational or technical level according to the type of disaster and the country context. Hence, as well as an all-hazard generic plan, more detailed technical plans (or guidelines) should cover specific issues, such as:

- incidents leading to the displacement of populations or the loss of access to services;
- large epidemics (e.g. dengue, cholera, avian influenza or influenza pandemic);

- other specific major hazards (natural, technological and social) to which the country is vulnerable;
- mass casualty management;
- zoonosis;
- emergencies related to hazardous materials;
- incidents of terrorism (biological, chemical, radio-nuclear) and other acts of violence.

All plans should be based on a comprehensive risk assessment which identifies the hazards for and vulnerabilities of different populations at national, provincial, municipal and community levels.

The European Union (EU) and WHO promote the need for transparency and sharing of plans (except where this may threaten national security) to ensure interoperability within sectors, between sectors and across the borders. Also, to nurture a sense of common purpose and ownership, it is important that those responsible for implementing the plans are fully familiar with their roles and responsibilities and have the opportunity to fully participate in the planning process.

### **Key Findings**

1. A generic plan for the health sector is available, as are separate plans for avian influenza, a nuclear accident and earthquakes. However, the generic plan does not include epidemics; and there is no separate plan for mounting a (generic) response to an outbreak of a communicable disease of possible unknown etiology. A plan for pandemic influenza is under development. Plans are prepared every 3–5 years and updated annually.
2. In general, emergency plans, including those in the health sector, are considered to be confidential and not for open review. The assessment team was given access to the health sector plans was unable to understand their content as they were not in English.
3. Health sector planning focuses mainly on emergency services and the emergency response phase. Mitigation and public health activities (except for national programmes, such as vaccination, TB, and HIV/AIDS) are not prominent. There are reporting guidelines for each communicable disease which define the trigger levels for mounting a response, but a WHO assessment carried out in 2007<sup>38</sup> on the national response to an outbreak of tularaemia identified the need to improve the planning and coordination of communicable disease prevention activities and recommended a review of the current programme in this area.

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<sup>38</sup> Unpublished.

4. The multi-disciplinary national influenza team has a technical (as opposed to political) remit and has established a participatory planning process involving all actors in the health sector; including private institutions, the military and key international and local partners. There are plans for the team to expand and become multisectoral, maintaining at the same time a technical, rather than political, function. However, no similar mechanism exists in the health sector for other disaster scenarios or for establishing an all-hazard approach to crisis planning.
5. Prevention and mitigation activities are not within the mandate of the ARS. The National Survey for Seismic Protection of the Republic of Armenia is responsible for the seismic stability of health facilities.
6. The ARS is responsible for developing multisectoral national plans that currently exist for the nuclear power plant, earthquakes, floods, and chemical and industrial accidents. The Ministry of Health is responsible for developing the health component of the plans, which is usually annexed in the overall plan together with contributions from the other sectors. In addition, the regions, communities, institutions and industrial facilities all have their own emergency plans.

## **Recommendations**

- A detailed review of the existing multi-hazard health sector plan is indicated to ensure that it contains all the relevant components. For further information and support, the reader is referred to the following document published by the European Commission: *Interim document: technical guidance on generic preparedness planning for public health emergencies, April 2005 (24)*.
- The multi-disciplinary national influenza team is a good model of a participatory planning process involving all actors in the health sector. To extend this concept to an all-hazard generic approach would be an excellent step forward. A similar mechanism at regional level would also contribute to strengthening coordination, cooperation and collaboration and, hence, health security across the country.
- The Ministry of Health may also wish to consider establishing working groups, consisting of technically competent personnel, to review and update plans for specific disaster situations relevant to Armenia.
- The public health aspects of disaster preparedness and response might be given more attention. In this respect, consultation with National Institute of Health personnel with extensive experience and skills in this area may be of benefit.
- Although, health sector plans are included in the national disaster plans, it may be advisable to place more emphasis on ensuring that they are fully compatible with and complementary to those of the other sectors, in particular the ARS.

## **(b) Public communications**

### **Rationale**

The role of the mass media in disasters is critical. This is particularly true in the event of sudden disasters that have a dramatic impact on the population. Timely and consistent information can minimize the economic consequences of unforeseen social disruption and panic, and maximize the effectiveness of the response.

Policies should therefore be in place including:

- procedures for providing information, e.g. media releases, newsletters, websites, networks of people, pre-prepared advertisements;
- agreement on responsibility within the Ministry of Health for issuing public information;
- procedures for determining the value and use of information provided to the public;
- the capacity to generate periodic situation reports, events reports, and post-disaster reports
- a network of communications managers in the Ministry of Health, the ARS, and other health sectors to coordinate the development of consistent information for the public;
- procedures and templates for generating and/or disseminating early warnings about epidemics, hazardous material and other threats

### **Key Findings**

1. The Ministry of Health generally informs and educates the public by means of brochures, press releases, the television and radio, although there is no department in the Ministry that is directly responsible for health promotion and public relations. It is unclear whether procedures for issuing public information during a crisis are included in the all-hazard (generic) plan.
2. The State Hygiene Anti-Epidemic Inspectorate is responsible for formulating messages related to public health issues including communicable diseases. However, there is no dedicated department or clear procedures for approving and disseminating messages to the public or for monitoring the effectiveness of the messages transmitted. Primary health care services are, in the main, responsible for the routine implementation of health promotion and health education activities.
3. Health promotion materials are developed by a variety of institutions and organizations, often within the framework of distinct national programmes and projects on, for example, TB and HIV/AIDS. These often benefit from external

support from, for example, the Armenian Red Cross, the United Nations Children's Fund (UNICEF) and WHO.

4. There is no special training, education, or expertise available to ensure effective public communications within the health sector.
5. The ARS considers public information to be extremely important and often run national public awareness campaigns. At the regional level public information during a crisis is the responsibility of the Regional Governor's office. However, there is no indication of any mechanism for exchange of information between the Ministry of Health, the ARS and other ministries and organizations to ensure accuracy and consistency in the information provided to the public.

### **Recommendations**

- The Ministry of Health is advised to oversee the development of a public information strategy for health related issues (including climate change) in conjunction with technical experts and other ministries, in particular the ARS, the Ministry of Nature Protection and the Ministry of Agriculture. Authority to disseminate the material should be pre-determined at all levels of the government.
- Consideration might be given to including effective public communications as a topic in post-graduate training curricula.
- It is recommended that all health promotion material and key messages are field tested and subsequently approved before distribution to the public.
- The Ministry of Health may wish to advocate at a higher political level the adverse effects of climate change on human health.

### **(c) Monitoring and evaluation**

#### **Rationale**

Monitoring and evaluation are usually viewed as key functions in any ministry – part of the role of leadership and governance – and this applies to crisis preparedness and planning. In the best case scenario, one of the responsibilities of health crisis management unit or health crisis coordinator would be to ensure that monitoring and evaluation are regularly carried out and appropriately reported, and that mechanisms are in place to ensure the incorporation of lessons learnt into revised plans. How monitoring and evaluation is implemented and by whom depends on a number of factors, including national policy, organizational structures and the size of the country. By necessity, the monitoring and evaluation of disaster preparedness and response usually takes the form of simulation exercises, either through a desktop exercise or, more often, a real live scenario field exercise. It is important to ensure that these simulation exercises do not

become merely public relations exercises but that they are designed to identify problems in the system before, rather than when, a crisis occurs.

### **Key Findings**

1. A large, multisectoral simulation exercise was carried out in the Shirak Region on 25–26 September 2007. It was said to have been very successful.
2. It is not clear who in the Ministry of Health is responsible for ensuring that health sector plans, including hospital plans, are regularly monitored and evaluated nor does there seem to be a mechanism for incorporating lessons learnt into future plans.

### **Recommendations**

- If the Ministry of Health establishes an official programme for disaster preparedness and response, a monitoring and evaluation programme should be developed as an integral part of the process.
- If the Ministry of Health establishes a disaster preparedness and response programme, it might wish to incorporate the requirement that simulation exercises for different scenarios be carried out in individual medical facilities, for example, evacuating patients during a fire alert, dealing with an armed raider, dealing with an unidentified infectious disease with a high mortality rate. Dealing with an unidentified infectious disease could be extended to involve the State Hygiene Anti-Epidemic Inspectorate and the national reference laboratories.
- It is recommended that a clear mechanism for incorporating lessons learnt into future disaster preparedness and response plans be established.

## ***Partnerships and coordination***

### **Rationale**

Coordination, cooperation and collaboration between key partners, both national and international, are essential to ensuring the best use of often scarce resources and to preventing duplication of efforts. There is often a number of cross-cutting issues (e.g. food and water safety, environmental monitoring (including pollution and radiation), communicable diseases control and chemical safety) that necessitate the involvement of more than one ministry or agency. Furthermore, in a number of countries the Ministry of Health is not the only entity responsible for delivering health care; the military, certain ministries, public enterprises, the private sector and NGOs (local and international) may augment health care delivery at primary, secondary and tertiary level. During a crisis this kind of overlapping can often lead to confusion, an uncoordinated response and wasted

resources. Therefore, it is important that the Ministry of Health is recognized as being overall responsible for health-related issues in a crisis and that there is good coordination, cooperation and collaboration between the Ministry of Health and other key agencies at all times, particularly in relation to prioritizing potential risks, implementing risk reduction strategies and planning preparedness.

Both the EU and WHO actively encourage cross-border planning mechanisms and information exchange to ensure the interoperability of national plans. This is particularly important with respect to reporting in accordance with the IHR, and for implementing the necessary measures at points of entry (border crossings) to prevent and control the spread of communicable diseases and hazardous materials, with minimum interference to global trade.

### **Key Findings**

1. The ARS is overall responsible for national preparedness and response (disaster and crisis management) in large emergencies, under the authority of the Ministry of Territorial Administration. The ARS is responsible for all hazards.
2. There is no multisectoral planning committee for disaster preparedness that convenes on a regular basis at the national level in Armenia. In a major crisis situation that exceeds the local/regional response capacity, the Prime Minister is empowered to declare a national state of emergency and establish a national multisectoral task force. At this stage, the Minister of Territorial Administration assumes both the position of Deputy Prime Minister and that of Chair of the national multisectoral task force. Depending on the type and magnitude of the disaster, responsibilities are then allocated to the appropriate sectors, including the Ministry of Health.
3. Through the World avian influenza project, an inter-ministerial, high-level task force has been established which has a coordinating function and meets twice monthly. The work of the task force has resulted in increased coordination and cooperation between the Ministry of Health and other sectors and is a good model of a participatory planning process.
4. Coordination and communication between the Ministry of Health, the ARS and other key ministries and organizations seem to be mostly on an informal basis and points of contact vary depending on the type and scale of the disaster. Routine contact seems to be infrequent and the ARS considered cooperation between the different organizations during an emergency event to be very poor. However, the recent formal agreement between the ARS and the State Hygiene and Anti-Epidemic Inspectorate on information exchange and cooperation is an especially welcome development in this direction.

5. A round-the-clock emergency telephone line has recently been established in the Ministry of Health but at the time of the assessment very few people were aware of this channel of communication.
6. The health sector receives international support from the Centers for Disease Control, Atlanta, United States, the United States Agency for International Development, World Bank and WHO for strengthening surveillance and response to avian influenza and influenza pandemic. However, health is not a key component of any of the other internationally-funded disaster preparedness and response projects and potential sources of support, for example from other national and international NGOs that could provide assistance in the health sector, have not been clearly identified.
7. Armenia has signed agreements with neighbouring countries on collaboration and information exchange about possible problem situations. The Summit Declaration on Black Sea Economic Cooperation (1992) is an example<sup>39</sup>. However, relationships between Armenia, Azerbaijan and Turkey remain difficult owing to continued hostilities over Nagorno-Karabakh and the borders between these countries remain closed.
8. Armenia has a great deal of expertise and experience in disaster preparedness and response, particularly in the area of seismology and earthquakes, and has supported other countries in times of crisis.
9. The World Health Assembly Resolution WHA59.15 (18) urges Member States to nominate a national Strategic Approach to International Chemicals Management focal point from the health sector to maintain contact with WHO.

### **Recommendations**

- The professional relationship between the ARS, the Ministry of Health and key partners could be strengthened by ensuring that there is a clear framework for information exchange, ongoing coordination, cooperation and collaboration. The Ministry of Health is advised to seek mechanisms, such as establishing technical committee(s) or working groups, to create a forum for multisectoral coordination and to strengthen technical cooperation between health partners, particularly at the national level. Possible agencies to involve include the ARS, Ministry of Nature Protection, the Ministry of Agriculture, university departments and NGOs.
- The Ministry of Health might benefit from developing an inventory of potential nongovernment partners (including the private sector) and their resources with a view to establishing collaborative agreements, depending on what each organization has to offer (human resources, technical support, training, supplies and equipment) to crisis

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<sup>39</sup> <http://www.bsec-organization.org/Pages/homepage.aspx>, accessed on 16 July 2008.

preparedness and response. This would avoid under-utilization or duplication of existing resources.

- Multisectoral consultation on the IHR is required to ensure that the various sectors are aware of the implications of the Regulations, both for themselves and the health sector, and to stimulate informed debate among partner institutions on a technical as well as political level.
- The Ministry of Health could well strengthen crisis preparedness in the health sector by seeking opportunities for developing joint projects and improving collaboration with a variety of national and international partners.
- Consideration should be given to including the aspect of health in the second communication to the United Nations Framework Convention on Climate Change (UNFCCC) as an important area that will be affected by climate change and for which tailored adaptation measures need to be developed. Close collaboration between the sectors is strongly recommended.
- The Ministry of Health might wish to consider nominating a contact point for the Strategic Approach to International Chemicals Management and chemical safety, in order to be better informed about ongoing activities at international level.

## Creating resources

The existence of a crisis plan is in itself worthless unless there are resources available to identify the hazards and risks and implement a timely and effective response. This requires access to timely and accurate information, trained personnel, appropriate medical equipment and pharmaceuticals, and the identification and effective management of all the resources available. It is important to note that these resources may not necessarily be generated by the health sector or even available at the national level; the international community can be a key source of material goods and technical expertise when there is insufficient capacity in a country. What is more important is that there are clear procedures and guidelines for accessing and managing these resources when needed.

### *Human resources*

#### **Rationale**

It is clear that an adequate number of readily available (and contactable) staff, with the right skills and knowledge, is absolutely essential during a crisis. This requires good management and pre-planning taking into consideration the need for surge capacity, and remembering that, in certain instances, for example in the event of an earthquake, the staff themselves may be personally affected by the crisis and therefore not available for

work. Resources outside the public sector, including private hospitals, national and international NGOs, the military and volunteers, should be considered during the planning process.

Technical skills need to be continuously updated and strengthened, preferably through workshops and seminars, supported with practical training and the relevant training materials in the appropriate language. The first step towards achieving this is to establish a strategy for human resource development, specifically for disaster preparedness and response, based on a training needs assessment and priorities in the health sector. This strategy should adopt a broader public health approach and address the need (not only for emergency medical services) but also for technical, medical and managerial staff. Hence, there should be an ongoing, multidisciplinary programme of courses/workshops, supported by technical (on the job) training, openly available at all levels. These would include subjects such as:

- generic disaster management, including coordination of external assistance;
- rapid needs assessment following disasters other than disease outbreaks;
- establishment of emergency surveillance systems;
- mass casualty management and disaster planning for hospitals;
- communicable diseases control and water/sanitation;
- management of supplies;
- mental health and nutrition;
- management of dead bodies.

Disaster management should also be increasingly included the pre- and post-graduate curricula of health professionals (doctors, nurses and paramedics), it is also an essential topic for any postgraduate training in public health.

### **Key Findings**

1. The need to contact staff during a crisis is well recognized and rosters of key health personnel are included in the generic preparedness plan. The Ministry of Foreign Affairs is responsible for coordinating the international response during a crisis and, therefore, for ensuring the most effective utilization of international personnel.
2. Government Decree No. 21-N of 20 June 2002 documents the training procedures for all segments of the population in response to a crisis, including top and middle management, specialists, schoolchildren, non-professionals and those not usefully employed.
3. The National Institute of Health is responsible for providing postgraduate education and continuous professional development in the field of health. It organizes an extensive national training programme for disaster (emergency) medicine, offering

accredited courses to all levels of the health sector including doctors, nurses, feldchers and mid-level health workers. These courses are also open to other sectors, NGOs and private institutions. However, in general, the level of practical skills among doctors is reportedly low and the need to improve emergency care identified in a research paper. Hence, the staff at the National Institute of Health found it challenging to ensure that trainees were competent in the more advanced skills of disaster (emergency) medicine.

4. The National Institute of Health also provides a five-week, advanced postgraduate training course on disaster management, which not only includes disaster (emergency) medicine but also public health topics, such as outbreaks and epidemics, paediatrics and obstetrics in disaster situations, mental health during disasters, blood transfusion policies, and logistics. Trainees are required to pass a competence examination which is a pre-condition for appointment to certain posts. There is little good literature available on public health topics in the Armenian or Russian languages.
5. The Head of the Disaster Medicine Department (National Institute of Health) is highly qualified for the position and has extensive personal experience in crisis management. Formerly, he held the position of Head of Military Medicine, was responsible for the medical response during the Spitak earthquake in 1988, and was a First Deputy Minister of Health. He has eight well-trained staff to support him.
6. Disaster (emergency) medicine is part of the undergraduate training curriculum of the State Medical University but the public health aspects of disasters are not included. Four private medical schools in Yerevan are operational but they are not recognized by the Government and students are not entitled to take the state medical examinations.
7. The ARS State Crisis Management Academy is responsible for the training of professional fire fighters and members of the ARS rescue teams (which include paramedics) in first aid skills and mass casualty management

### **Recommendations**

- Although the National Institute of Health and the State Medical University address some of the training needs, skill levels remain low. The Ministry of Health may wish to consider undertaking a full assessment of the human resources capacity for crisis management in order to identify gaps and current training needs and to develop a strategy for strengthening the workforce over the next 5–10 years. This could be combined with an audit of all health personnel (public and private) that would detail skills and experience, as well as current and potential involvement, in disaster preparedness and response. This should include doctors, nurses, paramedics, technicians, laboratory staff, drivers, communications' experts, etc., as well as other ministries, NGOs and international organizations.

- The skills required for disaster (emergency) medicine are clearly very different from those required for disaster management and related public health activities. It would be a good investment for the future to progressively include disaster management in undergraduate training curricula, and offer a broader range of topics at post-graduate level, such as communication strategies, water and sanitation, rapid needs assessment, hospital crisis planning, climate change and management of dead bodies.
- Further support is needed for the development of human resources through technical, medical and managerial training in emergency preparedness and response in relation to climate change and its projected health effects, as well as through the input of international organizations and the inclusion of climate change in university curricula. Established postgraduate medical training courses could be updated to include climate change and health.
- The Ministry of Health may wish to invest in supporting the participation of key managerial staff in English-language training courses: improved knowledge of the language would enable them to attend international courses and seminars, better access up-to-date literature, and download information from the Internet.

## ***Medical supplies and pharmaceuticals***

### **Rationale**

Maintaining adequate medical supplies and pharmaceuticals during a crisis depends on good management and clear administrative procedures. It is particularly important to ensure a balance between introducing flexibility, speed and effectiveness and preserving accountability. Procedures and guidelines should be in place for establishing critical stock levels, maintaining lists of suppliers, conducting inventories, rotating supplies according to shelf life, and ensuring scheduled maintenance of equipment. They should also include information relating to:

- agreements on resource sharing with the private sector and volunteer organizations;
- procedures for emergency contracting (including pre-identified technical specifications of goods), tracking supplies/services from contractors and reporting discrepancies;
- authority and procedures for requesting, accepting/refusing and coordinating external resources (medicines, personnel, field hospitals) provided by international partners or NGOs.

## **Key Findings**

1. Emergency stocks of medical supplies and essential drugs are maintained under the responsibility of the ARS. The Ministry of Health provides technical advice with respect to the relevant items, of which total of 842 is currently listed. Each hospital is responsible for maintaining its own emergency medical stocks.
2. There is a national decree that allows drugs to be taken from private pharmacies during an emergency, with compensation paid by the Government at a subsequent date.
3. The Ministry of Nature Protection is responsible for the safe disposal of drugs that are out of date. A regulation relating to this responsibility is currently under development.
4. By law, the border and customs services do not have the authority to delay the importation of goods that are urgently required.

## **Recommendation**

- The Ministry of Health may wish to ensure that the ARS, or other responsible authority, are familiar with the use of the software for the United Nations Logistical Support System<sup>40</sup> and SUMA (Humanitarian Supply Management System)<sup>41</sup> for tracking international aid donations, as well as the guidance documents for requesting, accepting, refusing and coordinating external resources (medicines, personnel, field hospitals) provided by international partners or NGOs; the Interagency guidelines for drug donations (25), the *Guidelines for health care equipment donations* (26) the *Guidelines for safe disposal of unwanted pharmaceuticals in and after emergencies* (27) and the *WHO-PAHO Guidelines for the use of foreign field hospitals in the aftermath of sudden-impact disasters* (28).

## ***Data collection, analysis and reporting***

### **(a) Risk assessment and early warning**

#### **Rationale**

All activities related to disaster preparedness and response planning in the health sector should be based on national risk assessment data. Other than that for communicable diseases, these national data are usually under the authority of other ministries and organizations but needs to be regularly updated and readily available to the Ministry of Health in an appropriate format. Similarly, it is important that the Ministry of Health receives all relevant early warnings of potential risks in the community, such as extreme

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<sup>40</sup> <http://www.lssweb.net/>, accessed 22 August 2008.

<sup>41</sup> <http://www.disaster-info.net/SUMA/english/index.htm>, accessed 22 August 2008.

weather conditions, seismic activity, landslides and floods, to ensure that the necessary measures can be promptly taken to prevent and reduce resulting health effects.

### **Key Findings**

1. The National Institute of Health is responsible for the collation and analysis of all health statistics, which are now public domain and available for risk assessment. Improvement in the quality of data is indicated as, for example, they are not disaggregated according to age and sex.
2. Risk assessment data, especially those for earthquakes, are available through the ARS and the National Survey for Seismic Protection. Geographic information system (GIS) maps of the country were developed eight years ago<sup>42</sup>, are included in the annexes of various emergency plans, and available to all ministries on request.
3. The connection between projected climate change and the possible impact it would have on health has not yet been established in Armenia, either in terms of epidemiological studies and institutional connections or health care preparedness plans and long-term planning.
4. The Armenian State Hydro-meteorological and Monitoring Service (Hydromet) operates under the authority of the Ministry of Nature Protection<sup>43</sup> and is funded from the state budget. Basic information, such as the average monthly temperature, is provided free of charge but, for more regular and defined data, each sector is required to pay for services. A rapid response system is in place for which Hydromet provides information to the ARS on a large range of weather-related hazards, e.g. strong winds, hailstorms, floods, extreme heat, etc.
5. In addition to its regular activities, Hydromet also runs a number of independent, health-related projects on communicable diseases and climate change and health. The State Hygiene Anti-Epidemic Inspectorate has taken the initial steps to collaborate with Hydromet as part of its malaria control programme.
6. Following the avian influenza outbreak in 2005, the State Hygiene Anti-Epidemic Inspectorate and the ARS signed an agreement on mutual information exchange. Other than this, there are no clear or regular procedures (formal or informal) in place for collating information from the other sectors, e.g. ARS, the National Survey for Seismic Protection, Hydromet, the media and the police, to help identify potential health threats and to assist in planning.
7. The Ministry of Health does not have procedures for generating and disseminating early warnings about potential health threats, such as epidemics, extreme weather conditions and releases of hazardous materials.

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<sup>42</sup> [www.ema.am](http://www.ema.am), accessed 10 July 2008.

<sup>43</sup> As of May 2008, included in the newly-established Ministry of Emergency Situations

## **Recommendations**

- It is important that all risk assessment data, from all sources, are thoroughly reviewed and the short-, medium- and long-term public health effects considered before a national programme for disaster preparedness and response and crisis plans are developed. Although emergency medical services are a key issue in crisis preparedness, they are only one of a broad range of issues that require serious consideration. The Ministry of Health may wish to consider strengthening information exchange on risk assessment and early warning with key partners in other sectors.
- It is important that all health statistics (including data on communicable diseases, noncommunicable diseases, ambulance call-out, hospital data, etc.) are utilized for risk assessment and identification of vulnerabilities in the health sector. The Ministry of Health may wish to ensure that the existing surveillance system also includes climate-related health effects. A review of health data collected by the National Institute of Health is indicated, with a view to improving quality.
- It might be helpful to carry out a national assessment of the risks (particularly in vulnerable groups), health effects, thresholds, and adaptation capacity related to climate change in the country (e.g. the projected increase of extreme weather events).
- The early warning process for extreme weather events could be strengthened through official collaboration between Hydromet and the Ministry of Health, and respective studies on the links between extreme weather conditions and human health.

## **(b) Communicable Disease Surveillance**

### **Rationale**

The Ministry of Health is (usually) exclusively responsible for surveillance systems for early warnings about and the control of communicable diseases. In accordance with the new IHR, States parties are now obliged to report, within 24 hours, any outbreak of communicable disease that could spread across borders and thus have implications on an international scale. Similarly, EU legislation (2000/96/EC, 2119/98/EC, 2003/534/EC)<sup>44</sup> lays down certain requirements for Member States to report communicable diseases to the European Centre for Disease Prevention and Control. Routine surveillance systems are often not sensitive or timely enough to meet these requirements and many countries are now using a variety of sources to collect what is now being referred to as “health intelligence data”. As well as establishing supplementary surveillance systems, such as syndromic surveillance and sentinel surveillance for the rapid identification of, for example, avian influenza, the Ministry of Health also collects information from other

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<sup>44</sup> <http://eur-lex.europa.eu/en/index.htm>, accessed 23 August 2008.

ministries (in particular the Ministry of Agriculture and Ministry of Nature Protection), and from laboratories, the police, the military, the media, the ambulance services and the population themselves.

To meet IHR core capacity requirements, State parties must also have access to quality national laboratory diagnostic facilities (within the health sector, other ministries or the private sector, if appropriate) and/or international laboratories for further confirmation of diagnoses or for an initial diagnosis if the national facilities are inadequate. Quality assurance of public health reference laboratories is best regulated through an internationally-recognized accreditation scheme, such as the European co-operation for Accreditation<sup>45</sup> or the International Accreditation Laboratory Cooperation<sup>46</sup>. Such a scheme should be able to certify laboratories to the International Organization for Standardization<sup>47</sup> (ISO standard 17025 (General requirements for the competence of testing and calibration laboratories) or preferably ISO standard 15189 (Particular requirements for quality and competence in medical laboratories). Procedures need to be in place on taking samples correctly, storing them appropriately and transporting them quickly and safely to the most appropriate laboratory in or outside the country.

### **Key Findings**

1. The current surveillance system monitors the incidence of 48 communicable diseases but there are no standardized case definitions or a clearly-defined differentiation between possible, probable and confirmed cases. Few cases are confirmed by laboratory investigation. The Ministry of Health has recognized the need to update the current system to meet international standards of reporting but, until this has been achieved, it is doubtful whether the system can effectively be used for the stringent reporting procedures required by EU directives and the IHR.
2. In general, laboratories are poorly equipped with old, out of date equipment that lacks modern safety features, and there is no 'category 3' facility available in the country. Methodologies employed are mainly classical and therefore confirmation of a diagnosis may take days rather than hours to establish. Virology diagnostic services are only available in Yerevan, although PCR facilities are being established specifically for avian influenza in two regional locations in the north and south. There is no national system or standard procedures for the safe transport of laboratory and environmental samples.
3. There is no laboratory capacity for diagnosing a number of infectious diseases, e.g. legionella and Escherichia Coli type O157 and there is little capacity for identifying emerging diseases or diseases previously not endemic in the country. However, steps are being taken under the World Bank programme to upgrade the public health

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<sup>45</sup> [http://www.european-accreditation.org/default\\_flash.htm](http://www.european-accreditation.org/default_flash.htm), accessed 23 August 2008.

<sup>46</sup> <http://www.ilac.org/>, accessed 23 August 2008.

<sup>47</sup> [http://www.iso.org/iso/iso\\_catalogue.htm](http://www.iso.org/iso/iso_catalogue.htm), accessed 23 August 2008.

laboratory services and reorganize the Centre for Disease Control and Prevention (Yerevan) with a view to its becoming a national reference centre.

4. The current substantial external donor funding for avian influenza has resulted in the establishment of a number of PCR facilities throughout the country which could ultimately be used for the identification and confirmation of a wide range of diseases (not only influenza), as well as for research. However, there is a lack of local expertise in the use of this technology (particularly in the public sector) and the running costs required for maintaining quality PCR facilities are extremely high. Therefore, additional time and training may be required before PCR technology is routinely used in Armenia without external donor support.
5. A national (laboratory) accreditation body exists but it is not recognized by the European Cooperation for Accreditation or by the International Laboratory Accreditation Cooperation. The Virology Reference Laboratory in Yerevan is, however, accredited by WHO for measles, rubella and polio.
6. Armenia is not a member of any international or European disease-specific networks, as required by European Commission Decision 2003/542/EU<sup>48</sup> (Annex 4: European and International Network Resources).
7. The ARS has a chemical, biological and radio nuclear laboratory. Although it is being upgraded, current capacity remains low.

### **Recommendations**

- A review of the timeliness, completeness and accuracy of communicable disease surveillance data would provide a good indication of the effectiveness of the current system. Consideration might be given to supplementing the system by gathering data from other health intelligence sources, using a single collection point.
- Upgrading the facilities at the Centre for Disease Control and Prevention in Yerevan and establishing it as a national reference centre is an excellent step towards strengthening communicable diseases surveillance and control. However, to meet European standards, the Ministry of Health may also wish to consider allocating funds for training staff, strengthening quality control, and establishing bio-security and bio-safety procedures. The current National Accreditation Scheme is advised to seek membership of the International Laboratory Accreditation Cooperation.
- Strengthening links with the European Centre for Disease Prevention and Control<sup>49</sup> and becoming a member of relevant disease-specific networks would provide Armenia with a source of scientific advice and support.

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<sup>48</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:185:0055:0058:EN:PDF>, accessed 22 August 2008.

- The WHO Country Office in Armenia should work in cooperation with the Ministry of Health and the Communicable Diseases and Response Programme of the WHO Regional Office for Europe to establish contacts with appropriate international (WHO) reference laboratories that can offer technical support and training.

## Health financing

### *Preparedness Financing*

#### **Rationale**

A large number of priorities are competing for budget allocation within the health sector, and disaster preparedness (as opposed to response) is often neglected for more pressing and immediate needs. However, effective risk reduction, early warning systems and preparedness planning could ultimately save millions of dollars, amounting not only from losses of, for example, possessions and agriculture, but also from those associated with trade and tourism. Implications for the health sector and the extra burden imposed on the already fragile health systems can be enormous. Therefore, not only is the allocation of a dedicated budget for crisis preparedness and planning within the health sector a good investment for the future but it is also a good indicator of the level of political commitment to disaster preparedness and response.

#### **Key Findings**

1. There is no specific budget line for disaster preparedness in the health sector other than the salaries of personnel appointed as advisers to the Ministry of Health.
2. Disaster reduction and mitigation measures to ensure the functionality of health facilities in Armenia are financed through the national, regional and community budgets, according to the Laws of the Republic of Armenia (under the auspices of the National Survey for Seismic Protection of the Republic of Armenia). It is unknown whether private hospitals are included. The amount allocated in the budget and whether it is currently adequate was not within the scope of this assessment.
3. Various funding sources (e.g. CDC, Atlanta, USAID and World Bank) are available for avian influenza and pandemic influenza preparedness, which amounts to approximately US\$ 2.5 million over a three year period (2006–2009). The Ministry of Health is adopting an all-hazard approach and utilizing some of this funding to strengthen public health and communicable disease surveillance and response on a wider scale, for example, by strengthening national public health reference laboratories services. This could contribute to a significant improvement in health sector preparedness capacity.

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<sup>49</sup> [www.ecdc.eu.int](http://www.ecdc.eu.int), accessed 23 August 2008.

4. At the multisectoral level, the ARS has an annual budget for cover running costs with a breakdown for specific activities.

### **Recommendations**

- As in many countries of the Commonwealth of Independent States, there are financial constraints within which ministries must work. It is clearly recognized that the Ministry of Health of Armenia has a limited budget and, therefore, when establishing a national programme for disaster preparedness and response and the necessary institutional framework, it is important to ensure that they are appropriate (based on main priority areas) and affordable (within the budgetary limits). However, a dedicated budget allocation for disaster preparedness planning, no matter how small, could be a good investment for the future and would demonstrate the commitment of the Ministry of Health to crisis management.
- It might be of interest for the Ministry of Health to compare the budget allocation for disaster preparedness and response in the health sector to those of other ministries, and to explore possible models that could be used to promote increased funding. Further international donor funding and technical support could also be a means of strengthening services in the short- to mid-term.

## ***Contingency Funding***

### **Rationale**

The availability of a contingency fund for disaster response, either in the Ministry of Health or at national level is highly desirable. There should be clear procedures for submitting requests.

### **Key Findings**

1. There is a Government reserve (contingency) fund for unforeseen circumstances, including those related to emergencies. The money is allocated based on need and requests submitted by individual ministries and institutions. Further information regarding the total budget available and how often requests are submitted and/or approved was unavailable.
2. If necessary, the ARS can (through an Order) request the Ministry of Finance for additional funds for contingencies. Such requests are usually granted but are mainly related to assisting other countries in times of crisis.
3. The budgets of the local authorities are utilized during a disaster for assessing needs, providing food and shelter and compensating the population for their losses if necessary.

## **Recommendation**

- Government contingency funds are available for response to national large-scale emergencies. However, the Ministry of Health may wish to ensure that, in the event of more localized emergency situations that do not require national intervention, clear procedures are in place for the rapid allocation of funds from the national health budget to health sector institutions in the regions to enable them to mount a coordinated and timely response.

## **Service delivery**

### ***Guidelines and Protocols***

#### **Rationale**

As well as being able to respond to the immediate health effects of a crisis, guidelines and protocols need to be in place to guarantee:

- a rapid health needs assessment;
- emergency surveillance and control of communicable diseases;
- the maintenance of the basic health services and treatment of the chronically ill;
- a response to or provision of the following specific services:
  - basic health services and treatment of chronic diseases;
  - mental health and psychosocial support;
  - nutrition and food security;
  - treatment of climate-related health problems;
  - mother and child health;
  - reproductive health/gender-based violence and HIV/AIDS;
  - physical rehabilitation services;
  - adequate and safe blood transfusion services;
  - health education;
  - safe water and sanitation;
  - treatment of patients suffering from extremes of heat, cold etc.;
  - attention to the health consequences of other specific hazards according to local risk assessment

## **Key Findings**

1. In general, there was an emphasis on providing emergency medical services to the immediately injured population rather than on maintaining basic health services. However, as no plans were available in English it was not possible to ascertain if there are guidelines or protocols on providing critical services or addressing key public health issues in the event of a disaster.
2. Recent health sector reforms have resulted in the privatization of many hospitals and hence a significant proportion of health service delivery no longer falls under the direct authority of the Ministry of Health. Furthermore, the privatization process was somewhat unsystematic and arbitrary resulting in problems in service delivery and the overall functioning of the system. This may affect the ability of the health system to respond in a crisis and seriously limit the amount of surge capacity available.
3. Since gaining independence from the former Soviet Union in 1992, Armenia has undergone quite marked demographic changes. An estimated 1 million people (mainly young healthy adults) have left the country in search of work adding to an already large Armenian Diaspora of over 5 million people. In addition, as a consequence of the conflict with Azerbaijan over Nagorno-Karabakh, approximately 360 000 refugees have fled to Armenia with an estimated 50 000 internally displaced persons. These demographic changes may pose a challenge in maintaining adequate critical services during both the emergency and rehabilitation phases, particularly for vulnerable groups.

## **Recommendations**

- If indicated, the Ministry of Health may wish like to consider developing national protocols and guidelines for critical services (including treatment protocols for climate-related health problems, such as heatstroke), which could be adapted to local situations.
- The Ministry of Health may wish to ensure that more attention is given to the public health aspects of a crisis, particularly in the post-crisis and rehabilitation phases and that all hospitals have plans to ensure continuity of care, particularly for the chronically ill.
- The Ministry of Health may need to consider the role of the private sector during a crisis to ensure that (a) adequate surge capacity is available, (b) basic health services can be maintained and (c) specific services can be delivered to those in need in the post-crisis phase.
- Consideration needs to be given to demographic changes and the number of skilled health personnel required, particularly when planning critical services.

## ***Mass Casualty Management***

### **Rationale**

Timely and effective mass casualty management can greatly reduce morbidity and mortality in the aftermath of a crisis. This requires well-trained and disciplined personnel, clearly-defined lines of authority and excellent coordination between the different players. If these factors are not in place, chaos may ensue and aggravate an already difficult situation.

### **Key Findings**

1. The Ministry of Health is not responsible for the Yerevan Ambulance Service which is a joint stock company under the responsibility of the Mayor of Yerevan (the municipality holds 100% of the stocks). The Service is in a position to mobilize 50 ambulance teams, each team comprising of four members: a doctor (specialized in a particular area of reanimation, paediatrics, neurology or psychiatry), a nurse, a technician/nurse and a driver. Public access is by means of the emergency telephone number (103), which is free by State Order.
2. The Yerevan Ambulance Service has two disaster plans in place: (1) for civil emergencies in times of peace; and (2) for war-time emergencies. They maintain fuel reserves and twelve emergency medical boxes (updated twice a year) each containing everything needed for the emergency care of ten patients, plus personal protective equipment for the responders, including chemical protective suits. Equipment for radio-nuclear accidents is kept in specific boxes, which each contain a list of the local experts required for this type of incident.
3. Ambulance services in the regions continue to be state-owned and are under the jurisdiction of the regional governors. They also respond to the '103' number and automatically divert landline calls to a service in the geographical location of the caller. Mobile telephone calls are diverted through the central dispatch office of the Yerevan Ambulance Service. Several large multi-profile hospitals also hold a limited number of ambulances and each hospital has a specific telephone number.
4. The Ministry of Health has the capacity to mobilize 324 emergency medical teams in response to a crisis situation. Each team comprises 25 people, ten of whom are medical doctors. In 2001, a World Bank-funded project provided 91 new ambulances and, currently, there is one ambulance per 20 000 inhabitants.
5. The ARS have their own rescue teams, trained at the State Crisis Management Academy, which is part of the civil protection services. There are no air services but the ARS has an agreement with the airport authorities to utilize their services if necessary.

6. Armenia is receiving support from the Swiss Agency for Development and International Cooperation to establish 83 medical emergency response teams which would form a reserve force to cover all regions, most likely under the overall coordination and control of the ARS. They are promoting a multisectoral approach to include fire fighters, police, ambulance services and ARS teams in the response. Training will be provided in Switzerland and vehicles and equipment will be provided as part of the project.

### **Recommendations**

- A number of stakeholders are involved in mass casualty management and there is the capacity to mobilize a large number of well-equipped emergency teams, particularly in Yerevan. The Swiss Agency for Development and International Cooperation is introducing a multisectoral approach to emergency response but there are still some concerns about the overall coordination. To prevent confusion and unnecessary time delays (and hence reduce morbidity and mortality during the initial phase of a large disaster), it is important that the Ministry of Health strongly advocates the need to establish clear lines of authority and that Standard Operating Procedures are in place for all sectors.
- In more isolated, rural and mountainous areas, where the capacity for providing emergency services may be more difficult, the Ministry of Health might wish to consider providing training in basic first aid to the local populations. This might be achieved through improved cooperation with the Red Cross organizations.

## ***Risk management of health facilities***

### **Rationale**

Reducing the structural and non-structural vulnerability of the hospitals to natural disasters is an international priority for the 2008–2009 biennium and the subject of Hospitals Safe from Disasters, 2008-2009<sup>50</sup>, a joint venture of the United Nations International Strategy for Disaster Reduction, World Bank and WHO. It is prohibitively costly to retrofit all of the existing hospitals in countries and unrealistic to consider doing so with limited resources. A minimum requirement of the Hospitals Safe from Disasters Initiative is that in planning, designing and building new hospitals, the risk of natural disasters be taken into consideration.

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<sup>50</sup> [www.unisdr.org/wdrc-2008-2009](http://www.unisdr.org/wdrc-2008-2009), accessed 23 August 2008, and [www.who.int/hac/techguidance/safehospitals](http://www.who.int/hac/techguidance/safehospitals), accessed 23 August 2008.

It is also of paramount importance to ensure that expensive and vital medical equipment is secure and in no in danger of being damaged during floods and earthquakes. It is worth noting that, typically, 80% of the financial value of a hospital is in its equipment, that of the buildings amounting to only 20%.

### **Key findings**

1. According to the Law on Seismic Protection, the National Survey for Seismic Protection of the Republic of Armenia is responsible for the reduction of seismic risk and the resilience of health facilities and other public buildings (including utilities). All other governmental institutions are required to contribute to the national strategic programme on seismic risk reduction.
2. Until 1994, the legal requirements for construction were in accordance with those of the former Soviet Union, which are deemed lower than those required for conditions in Armenia. The Government has since introduced new regulations (last updated in 2005) to bring them in line with international standards. The revised regulations require that new buildings, including hospitals, are 9-bell<sup>51</sup> resistant (an earthquake of an intensity of 6–7 bells is considered to be the maximum hazard for Yerevan) and that new hospitals and schools be built not higher than two storeys. The Ministry of Urban Development is responsible for monitoring compliance with the regulations.
3. After the earthquake in 1988, the Ministry of Health, at the request of the Government, provided a list of hospitals and facilities that needed to be assessed and upgraded for seismic vulnerability. No information was available on how many hospitals have subsequently been assessed or upgraded.

### **Recommendation**

- Adopting and promoting the Hospitals Safe from Disasters, 2008-2009 initiative could be a good way of advocating to the Government the need to ensure that health facility buildings, utilities and medical equipment are all resilient to damage from earthquakes and floods so that normal services can be maintained throughout a crisis.

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<sup>51</sup> Equivalent to the Richter Scale.

## ***Lifelines, logistics, telecommunication and security***

### **Rationale**

There is a difference between a generic Ministry of Health plan for response and that of a specific facility, such a hospital or laboratory. The latter are much more concrete (technical) and operational and can be evaluated and tested objectively. Hospital plans need to consider:

- planning for both internal and external emergencies, including fire and evacuation procedures;
- maintaining essential infrastructure systems, such as those for water, sanitation, energy and telecommunications;
- ensuring transportation and refuelling capabilities;
- ensuring adequate medical supplies and drugs;
- establishing hospital security systems against, for example, armed intruders and civil unrest.

### **Key Findings**

1. In general, the impression was that hospitals have effective disaster plans although there were some concerns that this did not necessarily apply to the 17 private health facilities in Yerevan. The assessment team did not have an opportunity to review a hospital plan, so actual content cannot be verified.
2. Hospital directors are required to submit preparedness plans to the Ministry of Health for review and approval, although no further information was available on the exact procedures for this and the related timeframe. Hospitals are receiving support through the USAID–WHO project to develop specific plans for influenza pandemic preparedness but these are not yet in place.
3. Mobile hospitals are available in some regions to supplement or substitute the routine health system during a disaster. However, these are old, dating back to the times of the former Soviet Union. The armed forces also run their own medical services in most regions.

## **Recommendations**

- A detailed review of the hospital plans is indicated to ensure that they contain all the key elements (including preparedness for climate change). The Ministry of Health may wish to consider translating the WHO Regional Office for Europe guidelines, *A practical tool for the preparation of a hospital crisis preparedness plan, with special focus on pandemic influenza*<sup>52</sup> (10) and distributing these to all hospital facilities.
- It may be more cost effective to strengthen routine services (which would enable the health services to better deal with any crisis event) than to invest in mobile hospitals that may never be utilized and are expensive and difficult to maintain. However, the Ministry of Health, in cooperation with the ARS, may wish to investigate which international humanitarian aid agencies may be able to assist if the need arises. The WHO–PAHO *Guidelines for the use of foreign field hospital in the aftermath of a sudden-impact disaster*<sup>53</sup> (28) may provide useful advice.

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<sup>52</sup> <http://www.euro.who.int/Document/e89231.pdf>, accessed 23 August 2008.

<sup>53</sup> Available from WHO, Country Office or <http://www.paho.org/english/dd/ped/FieldHospitalsFolleto.pdf>, accessed 23 August 2008..

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## **Annex 1**

### **Participants in round table meeting, Ministry of Health of Armenia, Yerevan, Armenia, 3 October 2007**

#### **Ministry of Agriculture**

Mr E. Stepanyan  
Head of Veterinary Department, State Safety and Veterinary Inspectorate

#### **Ministry of Health**

Dr H. Darbinyan  
First Deputy Minister of Health

Mr N. Beglaryan  
Head of International Relations Department

Dr V. Darbinyan  
Consultant, Adviser on Emergency Situations

Dr A. Hayrapetyan  
Human Health Component Coordinator, Avian Influenza Project  
WHO National Counterpart for Disaster Preparedness  
Health Projects' Implementation Unit

Mr A. Karapetyan  
Head, Finance and Economics Department

Dr V. Poghosyan  
Head of the Health Services Division

Dr K. Saribekyan  
Maternal and Child Health Department, Health Services Division

#### **Ministry of Nature Protection**

Ms A. Alexandryan  
Head of Dangerous Substances and Waste Management Department

#### **Armenian Rescue Service**

Mr H. Matevosyan  
Head, State Crisis Management Academy

### **National Institute of Health**

Dr A. Atabekyan  
Head, Emergency Medicine Department

Mr G. Babayan  
Lecturer, Emergency Medicine Department

### **State Hygiene Anti-Epidemic Inspectorate**

Dr S. Hovhannisyan  
Deputy Head, State Hygiene Anti-Epidemic Inspectorate

Ms N. Bakunts  
Head, Department of Legal Ensurance and Documentation

Dr A. Hayrapetyan  
WHO National Counterpart for Disaster Preparedness

### **World Health Organization**

Dr N. Besbelli  
Technical Officer, Chemical Safety, WHO Regional Office for Europe

Dr E. Danielyan  
Head of Office, WHO Country Office, Armenia

Mr T. Hofmann  
Technical Officer, Communicable Diseases and Surveillance, WHO Regional Office for Europe

Ms F. Matthies  
Technical Officer, Global Change, WHO Regional Office for Europe

Dr I. Papieva  
National Professional Officer, WHO Country Office, Armenia

Ms B. Percy  
Short-term Consultant, Disaster Preparedness Programme, WHO Regional Office for Europe

Dr J Pukkila  
Desk Officer, Disaster Preparedness Programme, WHO Regional Office for Europe

## Annex 2

### Schedule of Interviews

<b>Date</b>	<b>Time</b>	<b>Interviewee</b>	<b>Position</b>	<b>Interviewers*</b>
Monday, 1 October 2007	12:00–14:00	Dr Elizabeth Danielyan	Head of Office, WHO Country Office	JP, BP, FM, NB, TH
		Dr Irina Papiieva	National Professional Officer WHO Country Office	JP, BP, FM, NB, TH
	14:00–14:00	Dr Armen Hayrapetyan	WHO Focal Point for Crises Preparedness, Ministry of Health	JP, BP, FM, NB, TH
		Mr Gagik Babayan	Ex-Adviser on Disaster Preparedness to the First Department	JP, BP, FM, NB, TH
Tuesday, 2 October 2007	14:00–16:45	Ms Nune Bakunts	Head of Legal Department, State Hygiene Anti-Epidemic Inspectorate	JP, BP, NB
	15:30–16:45	Dr Lilit Avetisyan	Head of Communicable Diseases Department, State Hygiene Anti- Epidemic Inspectorate	JP, BP, NB
	15:30–17:00	Ms Anahit Aleksandryan	Monitoring Department, Ministry of Natural Protection	NB, FM
	17:00–18:00	Mr Armen Grigoryan	Disaster Project Manager, UNDP	JP, BP, FM, NB, TH
	17:00–19:00	Mr Armen Martirosyan	Coordinator, Environmental Governance, UNDP	JP, BP, FM, NB, TH
Wednesday, 3 October 2007	11:00–13:30	Dr Anjela Hovhannisyan	Director, Expertise Centre, Lori Region	JP, FM, NB, TH, IP
		Dr Khachik Hovhannisyan	Deputy Director, Expertise Centre, Lori Region	JP, FM, NB, TH, IP
	14:00–16:00	Dr Mher Markaryan	Head of Health Department, Regional Hospital, Lori Region	FM, TH, IP
		Dr Svetlana Tigrani Amiryan	Leading Specialist, Health Department, Lori Region	FM, TH, IP
		Dr Norik Babayan	Head, Armenian Rescue Service, Lori Region	NB, JP
	16:00–17:00	Dr Karine Mirzoyan	Director, State Hygiene Anti- Epidemic Inspectorate, Lori Region	JP, FM, TH, NB, IP
Thursday, 4 October 2007	11:00–12:30	Round-table meeting	Key stakeholders (Annex 1)	JP, FM, NB, TH
	14:00–16:30	Dr Vladimir Davidjants	Head, Department of Epidemiology, National Institute of Health	BP, NB, TH
		Dr Armen Atabekyan	Head of Disaster Medicine, National Institute of Health	JP, FM
	15:30–17:00	Dr Narine Karakhanyan	Head of Centre for Diseases Control and Prevention, Ministry of Health	NB
Thursday, 4 October 2007	15:30–17:00	Dr Anahit Davtyan	Centre for Diseases Control and Prevention, Ministry of Health	NB
	17:00–18:15	Dr Liana Torosyan	Focal Point for Avian Influenza, State Hygiene Anti-Epidemic Inspectorate	BP, FM

Date	Time	Interviewee	Position	Interviewers*
Friday, 5 October 2007	10:00–13:00	Mr Mher Harutyunyan	Head, Crisis Management Centre, Armenia Rescue Service, Ministry of Territorial Administration	BP, JP, TH, NB
	10:00–13:00	Mr Hovhanes Khangelidyan	Deputy Head, Operative Management Department, Armenian Rescue Service	BP, JP, TH, NB
	10:00–12:00	Mr Levon Vardanyan	Armenian State Hydrometeorological and Monitoring Service,	FM
		Mr Hamlet Melkonyan	Armenian State Hydrometeorological and Monitoring Service,	FM
	12:00–13:00	Mr Gegham Khachatryan	Chief, Sanitary Station, Yerevan International Airport	TH
		Dr Mariam Mnatsakanyan	Sanitary Station, Yerevan International Airport	TH
		Mr V. Baghiyan	Nuclear, Biological, Chemical Monitoring Division, Armenian Rescue Service Laboratory	NB
	14:00–15:00	Dr Artem Petrosyan	Director, Yerevan Medical Emergency Services	JP, FM, NB, BP
	16:00–17:00	Dr Ophelia Khachatryan	Head of Health Department, Armenian Red Cross	JP, FM, NB, BP
18:00–19:00	Mr Suren Krmoyan	Legal Adviser to the Minister of Health	TH, IP	
Monday, 8 October 2007	11:00–13:00	Mr Gagik Babayan	Ex-Adviser for Disaster and Preparedness to the First Department of the Ministry of Health	BP, JP
	14:40–15:30	Mr Armen Poghoysan	Coordinator, Avian Influenza Project, Ministry of Agriculture	BP, JP
Tuesday, 9 October 2007	10:30–11:30	Dr Laura Yenokyan	Head, Specialized Services, Health Services Department, Ministry of Health	BP, JP
	11:30–12:30	Dr Vladimir Darbinyan	Adviser on Emergency Situations and Military Mobilization, Ministry of Health	BP, JP
	12:30–13:15	Mr Hayk Grigoryan	Head, Department of International Relations, Ministry of Health	BP, JP
	16:00–17:30	Dr Marietta Basilisyan	Deputy Head, State Hygiene Anti-Epidemic Inspectorate	BP, JP

**\*Interviewers**

Abbreviation	Name	Area of expertise
JP :	Dr Jukka Pukkila	Disaster Management
FM :	Ms Franziska Matthies	Global Warming and Climate Change
NB :	Dr Nida Besbelli	Chemical Safety/International Health Regulations
TH :	Mr Thomas Hofmann	International Health Regulations
BP :	Ms Barbara Pearcy	Disaster Management/Communicable Diseases Prevention and Control

## Annex 3

### Model terms of reference for a Ministry of Health crisis management programme

#### 1. Mandate of the crisis management programme

The crisis management programme, in the context of a dedicated programme for emergency management and disaster risk reduction, will lead, coordinate and support the efforts of the Ministry of Health and of the entire health sector in reducing the impact, specifically that on health, of:

- natural and human-made disasters with particular emphasis on the management of extreme weather events related to climate change;
- conflicts or other forms of collective violence, and displacement of populations;
- the accidental or deliberate use of chemical, biological and radio-nuclear substances.

The programme will promote and undertake activities in prevention, mitigation, preparedness, response, rehabilitation and early recovery related to public health, including – but not limited to – hazard and vulnerability analyses and monitoring, the establishment of early warning mechanisms, the provision of medical care, the surveillance and control of diseases, the availability of safe water, sanitation, and nutrition.

#### 2. Areas of responsibility

The programme will have a multi-hazard scope, including all large-scale emergencies regardless of their etiology (natural disasters, chemical accidents, radiation accidents, conflicts, terrorism or other forms of violence).

It will be inter-disciplinary, cutting across all technical programmes, divisions or units of the Ministry. It will extend beyond immediate medical response and reflect the modern and wide-ranging public health approach of disaster risk management (reduction).

The functions of the programme will be promotional, normative, educational, coordinative and operational in nature.

##### **Promotional functions**

- Promotion of the health and social aspects and benefits of disaster risk reduction and management in other sectors, including the private sector.
- Promotion of disaster reduction measures/activities for inclusion in the developmental activities of other programmes/divisions of the Ministry of Health and the health system, in particular the adoption of mitigation measures for existing and new hospitals and health facilities or water/sewage and other essential supply lines and support systems.

- Promotion of equitable access to health services in case of emergencies, irrespective of wealth, gender, age or ethnicity.
- Promotion of public awareness and health preparedness by means of the mass media and health education.

### ***Normative functions***

- Establishment of safety norms and standards for hospitals and health facilities in disaster-prone areas.
- Establishment of norms and standards for contingency planning, simulation exercises and other preparedness measures in the health sector.
- Establishment of disaster preparedness and safety criteria for the accreditation of hospitals.
- Development of specific guidelines and establish norms for disaster response, including evaluation of damages and assessment of needs.
- Establishment of lists of the drugs, equipment and supplies essential in emergencies.
- Development of protocols for telecommunication (Internet, radio, etc.).
- Establishment of standards or norms for the operation and registration of national or foreign humanitarian organizations (NGOs, medical services, etc.).

### ***Educational functions***

- Provision of in-service training for health personal (from prevention to response).
- Inclusion of disaster management in the curricula of pre- and post-graduate schools in health-related sciences.
- Inclusion of health-related topics in the training programmes of other sectors (planning, engineering, foreign affairs, etc.).

### ***Coordination –liaison functions***

- Effective coordination of the health sector in its capacity as the “lead agency”.
- Coordination with the authorities for civil protection and civil defence, as well as with national emergency committees or other national agencies with multisectoral responsibilities in disaster management.
- Coordination with counterparts, such as disaster focal points, units or commissions in other public sectors (social security, congress or parliament, foreign affairs, public works, etc.) or in the private or nongovernmental sector.
- Coordination and collaboration with disaster programmes in the health sectors of neighbouring countries.
- Technical liaison with humanitarian or developmental organizations at national or international level (bilateral, UN agencies, etc.) that are of potential relevance to the health sector.

### **Operational functions**

- Provision of assistance in the mobilization and operational coordination of the immediate health response in case of large-scale emergencies resulting from natural, technological or human-made disasters.
- Coordination of health needs assessments and provision of advice on the formulation of priorities and the assignment of resources.
- Provision of assistance in the mobilization of external resources.
- Contribution to the formulation of rehabilitation plans with special attention to the adoption of mitigation measures to reduce the vulnerability in future disasters.
- Compilation and dissemination of lessons learnt from emergencies with a view to improving and adjusting future preparedness and mitigation activities of the sector.

### **3. Reporting Channels**

The crisis management programme of the Ministry of Health should report directly to the cabinet of the Minister and organizationally not set up under or as part of a specific technical division. In view of the scope of its cross-cutting responsibilities, it should have equal access to all technical and administrative areas or departments of the Ministry.

Direct access to the highest decision-making levels of the Ministry is essential.

### **4. Personnel and Budget:**

Full-time professional staff proportionate to the identified vulnerability to priority hazards is essential, taking the economic capacity of the country into consideration. The professional qualifications of the staff will reflect the public health requirements in the national context.

A special line item should be assigned in the Ministry of Health budget and the national budget dedicated for disaster risk reduction and the management of the public health aspects of crises.



## Annex 4

### European and International Network Resources

#### European Disease Networks

DIPNET: European Diphtheria Surveillance Network and the European Laboratory Working Group on Diphtheria (ELWGD)

[http://www.hpa.org.uk/hpa/inter/elwgd\\_menu.htm](http://www.hpa.org.uk/hpa/inter/elwgd_menu.htm)

EUVAC-NET: A Surveillance Community Network for Vaccine Preventable Infectious Diseases

<http://www.euvac.net/>

EISS: European Influenza Surveillance Scheme

<http://www.eiss.org/>

EU-IBIS: The European Union Invasive Bacterial Infections Surveillance Network – (Neisseria meningitidis and Haemophilus influenzae)

<http://www.euibis.org/>

ENTER-NET: International surveillance network for the enteric infections Salmonella and VTEC O157

<http://www.enter.net/>

EuroTB: Surveillance of Tuberculosis in Europe

<http://www.eurotb.org/>

EuroHIV: HIV/AIDS Surveillance in Europe

[http://www.eurohiv.org/mainframe\\_eng.htm](http://www.eurohiv.org/mainframe_eng.htm)

ESSTI: European surveillance of sexually transmitted infections in Europe.

<http://www.essti.org/>

EWGLI: European Working Group for Legionella Infections

<http://www.ewgli.org/>

ENIVD: European Network for Diagnostics of “Imported” Viral Diseases

<http://www.enivd.de/>

EARSS: European Antimicrobial Resistance Surveillance System

<http://www.rivm.nl/earss/>

## Other European Resources

IRIDE: Inventory of Resources for Infectious diseases in Europe  
<http://iride.cineca.org/>

EFSA: European Food Safety Authority  
<http://www.efsa.eu.int/>

ESAC: European Surveillance of Antimicrobial Consumption  
[http://www.esac.ua.ac.be/main.aspx?c=\\*ESAC2](http://www.esac.ua.ac.be/main.aspx?c=*ESAC2)

IPSE - Improving Patient Safety in Europe. IPSE aims to resolve persisting differences in the variability of preventive practices and outcomes with respect to nosocomial infection and antibiotic resistance in Europe.  
<http://helics.univ-lyon1.fr/>

Eurosurveillance: Peer reviewed European information on communicable disease surveillance and control.  
<http://www.eurosurveillance.org/>

EPIET: European Programme for Intervention Epidemiology Training  
<http://www.epiet.org/>

DIVINE-NET: An EU funded research project under the "Health and Consumer Protection Directorate General" surveillance of outbreaks due to Noroviruses,  
<http://www.eufoodborneviruses.co.uk/>

CISID: Centralized Information System for Infectious Diseases.  
<http://data.euro.who.int/cisid/>

FluNet: WHO Global Influenza Programme  
<http://gamapserver.who.int/GlobalAtlas/home.asp>

GOARN: Global Outbreak Alert & Response Network  
<http://www.who.int/csr/sars/goarn/en/>

GPHIN: Global Public Health Intelligence Network (Canada) a secure, Internet-based "early warning" system that gathers preliminary reports of public health significance in seven languages on a real-time, 24/7 basis.  
[http://www.phac-aspc.gc.ca/media/nr-rp/2004/2004\\_gphin-rmispbk\\_e.html](http://www.phac-aspc.gc.ca/media/nr-rp/2004/2004_gphin-rmispbk_e.html)

INFOSAN: The International Food Safety Authorities Network which provides a mechanism for the exchange of information on both routine and emerging food safety issues.

[http://www.who.int/foodsafety/fs\\_management/infosan/en/](http://www.who.int/foodsafety/fs_management/infosan/en/)

Salm-Surv: WHO Global Programme for salmonella and shigella.

<http://www.who.int/salmsurv/en/>