

Assessment of  
health-system  
crisis preparedness

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Israel

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# Assessment of health-system crisis preparedness



# Israel



May 2012

# Abstract

In 2008, with the support of the European Commission Directorate-General for Health and Consumers, WHO launched the project, "Support to health security, preparedness planning and crisis management in European Union (EU), EU accession and neighbouring countries", with the aim of improving preparedness for public health emergencies in countries of the WHO European Region. One of the objectives of the project was to test the tool being developed for use in assessing the capacity of health systems for managing crises. This tool, which is based on the WHO health-system framework, was piloted in planning and crisis management assessments carried out in 2007-2008 in Armenia, Azerbaijan and the Republic of Moldova under the joint European Commission-WHO project, "Support to health security and preparedness planning in EU neighbouring countries". The experience gained in these countries and during a second round of assessments carried out in Poland (2009), Kyrgyzstan (2009), Ukraine (2009) and Kazakhstan (2010) contributed to the finalization of the tool, which has since been used in assessments in Turkey (2010), Croatia (2011) and England (2011). This report describes the level of preparedness of the Israeli health system to deal with crises, regardless of cause. It also examines the risk prevention and mitigation initiatives of the country. While the main focus is on the national level, some attention has been paid to weaknesses in the command structure at the regional level. Recommendations on possible action are included.

*This document has been produced with the financial assistance of the European Union. The views expressed herein can in no way be taken to reflect the official opinion of the European Union.*

## Keywords

Process assessment (health care)  
Disaster planning and response  
Emergencies  
Risk management  
Health systems plans  
Delivery of health care – organization and administration  
Israel

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# Acknowledgements

The review of the Israeli health system's preparedness for crises was made possible through the kind cooperation and support of the Ministry of Health (MoH).

It was conducted by a team of evaluators from Ben-Gurion University of the Negev, PREPARED Center for Emergency Response Research. This input and collaboration is much appreciated.

## Abbreviations

AAR	After action review
ATD	Admission transfer and discharge
CBRN	Chemical, biological, radiological or nuclear
EDMD	Emergency and Disaster Management Division
EMS	Emergency medical service
EU	European Union
GIS	Geographic information system
GPS	Global positioning system
HFC	Home Front Command
ICDC	Israel Center for Disease Control
IDF	Israel Defense Forces
IHR	International Health Regulations
IRA	Initial rapid assessment
MCI	Mass casualty incident
MDA	Magen David Adom (Israel's EMS)
MISSION	Medical information support system for infectious disease outbreak of non-conventional origin
MoH	Ministry of Health
NEMA	National Emergency Management Authority
OECD	Organisation for Economic Co-operation and Development
RSMID	Report system for monitoring infectious diseases
SHA	Supreme Health Authority
SOP	Standard operating procedure

# Introduction



The number of emergencies and disasters resulting from natural or man-made causes and the severity of their impact has increased worldwide in recent decades. All countries are required to create and maintain preparedness for a variety of anticipated emergencies. This development emphasizes the importance of the role of health systems in the overall cycle of disaster preparedness, risk prevention and mitigation, response and recovery.

In order to enable a health system to respond effectively in the event of an emergency – thus saving lives and alleviating suffering – it is essential to anticipate the health needs of the population in a crisis and to implement the necessary preparatory steps. However, the tasks of strengthening health-system crisis preparedness and creating the necessary core capacity for effective emergency management and implementation of the International Health Regulations (IHR) (1) are complex and challenging ones. Bolstering stewardship; implementing preparedness planning as a continuous process with a multihazard approach; establishing sustainable crisis management and health risk reduction programmes; and assuring the mechanisms for an immediate emergency response require a clear understanding of the country's situation.

To facilitate the creation and sustainability of emergency preparedness and response the WHO Regional Office for Europe has developed a standard methodology to assess the preparedness of a health system to deal with crises. This report uses the framework to provide a summary of the main aspects of emergency preparedness in Israel in 2012. It offers important contributions to the evidence being collected on the preparedness of health systems for crises and to the refinement of the standardized tool for assessing capacity for response at both national and international levels. The report provides key facts on the health system's resources and capacity to manage crises, which can be used by policy-makers.



# Background

## 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 (2). It identified the three main health challenges as conflict and humanitarian emergencies; infectious diseases; and 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 established infectious diseases spreading more quickly (for example, multidrug-resistant tuberculosis and HIV/AIDS are increasingly becoming a threat to health security) but new 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 health status in both the short and long terms. This is often aggravated by economic loss, which also has a negative impact on health status and, therefore, on the economic burden on the health sector as a whole.

Increasingly, disaster management is becoming a priority in countries for several reasons.

- The economic and political implications of disasters, particularly outbreaks of communicable diseases, and their effect on trade and tourism can be enormous.
- 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.
- States Parties to the revised IHR (1), which came into force on 15 June 2007, are legally bound to meet their requirements.

## Health security in the WHO European Region

Between 1990 and 2010 approximately 47 million people in the WHO European Region were directly affected by natural disasters that resulted in over 132 000 deaths (see Table 1). This does not include the wars and violent conflicts that have killed over 300 000 people in the Region over the last 20 years. Other severe events of the recent past include the Chernobyl nuclear power plant accident in 1986, which affected several million people according to United Nations estimates, and the Marmara earthquake that killed nearly 18 000 people and injured close to 45 000 people in Turkey in 1999.

<sup>1</sup> For inclusion in the EM-DAT international disaster database (3), an event has to result in at least one of the following: 10 or more deaths; 100 or more people affected; the declaration of a state of emergency; a call for international assistance.

**Table 1. Crises (excluding conflicts) and their consequences in the WHO European Region, 1990–2010**

Type of event	Number of events	Number of deaths	Total number affected	Economic damage (US\$ thousands)
Accident	719	19 424	163 117	13 751 707
Drought	36	2	15 875 969	15 488 309
Earthquake	107	22 002	5 702 222	38 649 449
Epidemic	59	676	216 043	n/a
Extreme temperature	159	81 457	3 452 957	16 865 750
Flood	442	4 221	12 437 525	90 666 061
Mass movement <sup>a</sup>	59	2 298	199 181	1 594 389
Storm	315	1 730	8 861 009	76 582 849
Volcano	4	0	7 000	19 600
Wild fire	77	345	1 295 267	10 768 811
Total	1 977	132 155	48 210 290	264 386 925

<sup>a</sup>Mass movement includes avalanche, landslide, rockfall and subsidence events.

Source: EM-DAT.<sup>2</sup>

Since 1990 a series of violent wars and conflicts have had vast political, social and human consequences. Armed conflict in Bosnia and Herzegovina, Croatia, Serbia, including Kosovo (in accordance with United Nations Security Council resolution 1244/1999), Slovenia and the former Yugoslav Republic of Macedonia resulted in an estimated 125 000 fatalities and the displacement of up to 3 million people. Israel was also involved in two conflicts in this period.

The break-up of the former Soviet Union brought about a number of violent episodes in Azerbaijan (Nagorno-Karabakh), Georgia (Abkhazia and South Ossetia), the Republic of Moldova (Transnistria), the Russian Federation (Chechnya, Ingushetia, North Ossetia and Dagestan) and Tajikistan, causing the loss of an estimated 200 000 lives. The civil unrest in Kyrgyzstan, where the mass displacement of populations also affected neighbouring countries, similarly underlined the importance of ensuring that national health systems are equipped to respond effectively to the health security aspects of violence-related crises.

A number of serious terrorist attacks have taken place in the Region in the last 15 years, including those that occurred in France (Paris, 1995), Spain (various ETA bombings; Madrid train attack, 2004), Turkey (various) and the United Kingdom (London, 2005). Reportedly, more than five times as many attacks have been thwarted in Belgium, France, Germany, Italy, the Netherlands, Spain and the United Kingdom, and the list of failed or aborted attempts is probably longer than we may ever know (4).

## IHR

The need to strengthen capacity for emergency preparedness and response is firmly based on current trends and statistics and supported by a wide variety of literature on global warming,

<sup>2</sup>Although there are methodological problems with the data collected and reported by EM-DAT, this database is currently the only one available of relevance.

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 (such as the United Nations International Strategy for Disaster Reduction, the United Nations Commission on 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 to the adoption of the revised IHR by the 58th World Health Assembly in May 2005. These provide a new legal framework for strengthening surveillance and response capacity and protecting the public against acute health threats with the potential to spread internationally, affect human health negatively and interfere with international trade and travel.

States Parties to IHR are obliged to assess and notify WHO of any event of potential international public health concern, irrespective of its cause (whether chemical, biological, radiological or nuclear (CBRN)) 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).

For effective implementation, States Parties (with WHO support) were also required to develop a national IHR implementation plan by June 2009 and to meet national core capacity requirements by June 2012. It is still not clear if this can be achieved in the planned time frame.

# Cross-cutting issues related to disaster preparedness and response

Effective crisis preparedness and response is governed by a number of cross-cutting (strategic) principles that WHO encourages Member States to adopt. These relate to the all-hazard approach, the whole-health approach, the multidisciplinary (intrasectoral) approach, the multisectoral approach and the comprehensive approach.

## **The all-hazard approach**

The concept of the all-hazard approach acknowledges that, while the sources of hazards (natural, technological and societal) vary, the resulting challenges to the health system are broadly similar. Thus, regardless of the cause of a hazard, activities relating to risk reduction, emergency preparedness, response and community recovery are usually implemented along the same model. Experience shows that the various essential response actions have a substantial number of generic elements (health information, emergency operations centre, coordination, logistics, public communication, and so on), and that prioritizing these generates synergies to better address the hazard-specific aspects.

## **The whole-health approach**

The whole-health approach promotes the concept that the emergency preparedness planning process, the overall coordination procedures, and the surge and operational platforms should be led and coordinated by emergency coordination bodies at the central and local levels, involving all the relevant disciplines of the health sector and dealing with all potential health risks.

## **The multidisciplinary (intrasectoral) approach**

Health systems are defined as comprising all the organizations, institutions and resources that are devoted to improving, maintaining or restoring health. This includes public and private initiatives (for example, by nongovernmental organizations and international agencies) and action at the central, local, population and military levels – from tertiary care to local community health care – all of which may have a role to play during a crisis. WHO, therefore, encourages transparency and interoperability in the planning process and promotes the involvement of all disciplines and all levels of the health system to ensure a coordinated and effective response, making the best use of often scant resources and ensuring that plans are appropriate and feasible.

## **The multisectoral approach**

Health-sector and national plans for disaster preparedness and response need to be linked to avoid confusion, prevent duplication of effort and make the best use of resources. This is important not only during a crisis but also as part of prevention, reduction and mitigation strategies. Other government departments, private enterprises and commercial organizations can play an important role in reducing the negative health effects of, for example, inappropriate urban development and use of land, poor agricultural practices and inadequate legislative procedures. Although not directly responsible, ministries of health need to ensure that health is not overlooked in the push for greater profits and economic growth, and to advocate a multisectoral approach in dealing with health issues. However, multisectoral planning continues to be a challenge in many countries as government departments often prefer to develop their own individual plans, in parallel with other key partners.

## The comprehensive approach

The economic consequences of a crisis can be enormous and the prevention, reduction and mitigation of the related risks are priority areas that increasingly need to be taken into consideration in preparedness planning. Therefore, WHO encourages Member States to develop and implement strategies for the different aspects of crisis preparedness, bearing in mind that they are not separate entities but overlap with each other in scope and time frame. They can be summarized as follows.

- *Prevention, reduction and mitigation* activities aim to minimize the likelihood or impact of a disaster and, in the health sector, are devoted mainly to ensuring the functionality of the health facilities and key installations in the aftermath of a disaster.
- *Preparedness* requires a multidisciplinary, multisectoral planning process to strengthen the capacity and capability of systems, organizations and communities so that they can better cope with emergencies.
- *Response and recovery* action covers a wide range of activities implemented during and after an emergency, which have specific humanitarian and social objectives linked to long-term strategic goals and sustainable development.

For programmatic purposes, WHO has designed specific activities aimed at preventing, mitigating and preparing for emergencies, disasters and other crises. For the purposes of this document, the following definitions apply (5).

- *Risk reduction* involves measures designed either to prevent hazards from creating risks or to lessen the distribution, intensity or severity of hazards. These measures include flood mitigation works and appropriate land-use planning. They also include vulnerability reduction measures, such as awareness raising, improving community health security, and relocation or protection of vulnerable populations or structures.
- *Emergency preparedness* is a programme of long-term activities whose goals are to strengthen the overall capacity and capability of a country or a community to manage efficiently all types of emergencies and bring about an orderly transition from relief through recovery, and back to sustained development. It requires that emergency plans be developed, personnel at all levels and in all sectors be trained, and communities at risk be educated, and that these measures be monitored and evaluated regularly.

In 2007, the European Commission Directorate-General for Health and Consumers and the WHO Regional Office for Europe embarked on a joint project to develop a standardized assessment tool, which would support Member States in objectively evaluating the preparedness of their health sectors to respond to natural and man-made disasters, taking all functions of the health system into consideration. Other aspects for inclusion in the evaluation were priority health risks and the interoperability of public health emergency plans. The project was coordinated by the Regional Office for Europe.

A multidisciplinary team of experts in the areas of disaster preparedness, communicable diseases and environmental health worked together to elaborate, refine and pilot the tool. Baseline assessments were conducted in Armenia, Azerbaijan, Kazakhstan, Kyrgyzstan, Poland, the Republic of Moldova and Ukraine. Comprehensive reports were delivered to the beneficiary countries highlighting strengths, weaknesses and gaps in organizational, legal and policy frameworks for planning national health-system preparedness. Furthermore, in collaboration with the ministries of health and key stakeholders in these countries, a framework was developed for strengthening the preparedness of health systems.

The finalized tool has been used to conduct assessments of the preparedness for crises of the health systems of Turkey (2010), Croatia (2011) and England (2011).

The assessment tool may be used for purposes of self-evaluation by all interested nations. As such, the WHO Regional Office for Europe approached the Israeli MoH with a request to conduct such an assessment. Following the MoH's consent, a team of evaluators from Ben-Gurion University of the Negev performed the evaluation.

## Country overview

### Flag of Israel



### Geography and history

Israel is situated to the east of the Mediterranean Sea, with an area of 20 770 km<sup>2</sup>. Bordering countries are Egypt, Jordan, Lebanon, Syrian Arab Republic, Israel has a 273 km coastline with the Mediterranean Sea and a short coastline with the Red Sea.

Although a small country, Israel has a wide variety of geographic characteristics, including the Negev desert in the south and mountain ranges in the north. The central region has a low coastal plain to the west and tall mountains to the east, where the Jordan Rift Valley also serves as a natural border with the Syrian Arab Republic and Jordan.

### Population

Israel has a population of 7.881 million people (April 2012), of which 5.931 million (75.3%) are Jewish, 1.623 million (20.6%) are Arab and 327 000 (4.1%) are from other groups, including Christians and Druze. The annual population growth rate is 1.8% (6).

The median age is 29.3 years; 10% of the population is older than 65 years and nearly 30% is younger than 14 years. Life expectancy at birth in the total population is currently estimated at 83.4 years for females and 79.7 years for males, which places Israeli males in the group of countries with the highest life expectancy (based on Organisation for Economic Co-operation and Development (OECD) data; only Switzerland (79.9) and Iceland (79.7) have higher life expectancy at birth for males). Israeli females, however, rank lower – in tenth place among the OECD countries. Their life expectancy at birth is three years lower than that of the leading country, Japan (86.4 years), and equal to that of Iceland and Luxembourg.

The majority of the Israeli population (92%) lives in urban settlements. The vast majority (97.8%) of the population of Israel is literate. At the age of 18 years, Jews and Druze are drafted to obligatory military service (36 months for males and 21 months for women). Christians, Muslims and other minorities may volunteer.

## **Government and economy**

The government in Israel is a parliamentary democracy, consisting of 120 members. Israel has no formal constitution and is ruled by the basic laws of the parliament (Knesset) and laws adopted from the English Common Law, British Mandate regulations, and Jewish, Christian, and Muslim religious laws.

There is no standard (cross-organizational) regional division of the country, but most government authorities divide the country to six administrative districts.

Israel has a technologically advanced market economy. In 2010, Israel was formally accepted to the OECD.

## **Communication**

Israel's communication system is considered to be the most highly developed in the Middle East. Its domestic system comprises both coaxial cable and microwave radio relay; all systems are digital. Four privately owned mobile-cellular service providers offer countrywide coverage. International communications are supported by submarine cables to Europe, parts of the Middle East and satellite earth stations. There are nearly 10 million cellular/mobile lines and 3.3 million land lines. In 2009 there were 4.5 million internet users in Israel.

The state broadcasting network, operated by the Israel Broadcasting Authority, broadcasts on two television channels in Hebrew and Arabic. There are five commercial channels and cable TV provides access to foreign channels. The Israel Broadcasting Authority also broadcasts over eight radio stations and Israel Defense Forces (IDF) Radio broadcasts over two. In addition, there are approximately 15 privately owned radio stations.

## **Police**

Israel has a countrywide national police force that is subordinate to the Minister of Internal Security. Its main function as a law enforcement force is delineated in the *Police Ordinance (New Version) – 1971* as well as in accordance with additional legislation. The functions of the police include law enforcement; maintenance of public order; prevention of disturbances during public gatherings; and protection of life and property, while respecting fundamental human rights (7).

## **The Ministry of Environmental Protection**

Until 1973, responsibility for the environment was divided among several ministries in Israel. Within a year of the Stockholm Conference, the government established the Environmental Protection Service as a first step in the creation of a comprehensive and modern environmental administration,



and in December 1988 a Ministry of the Environment was established. This proved a landmark in Israel's environmental development and in the government's determination to tackle environmental issues.

In 2007, the renamed Ministry of Environmental Protection initiated a comprehensive and in-depth process aimed at setting long-term policy, including a ministerial vision, multiannual targets, and goals for each year. Its multiannual targets are minimization of emissions and waste which damage the environment and human health; protection, increased efficiency of use and rehabilitation of environmental resources and ecosystems for future generations; prevention and reduction of population exposure to risks and hazards; increased capacity to confront and prepare for environmental risks (climate change, chemicals, pests, etc.); fair distribution of environmental costs and benefits among different population groups; improved access to a high quality environment for public well-being; promotion and use of Israeli environmental technologies; and increased efficiency and effectiveness of policy tools: regulatory, informative, economic and operational to achieve ministerial targets (8).

## Health care system

### **Ministry of Health (MoH)**

The MoH has national responsibility for ensuring the health of the population and managing the provision of health services in Israel (see Fig. 1). It sets policy in the fields of health and medicine and is in charge of planning, supervision, control, licensing and coordination of the services of the health care system. The MoH deals with organization, operation and supply of means of prevention, diagnosis, care, rehabilitation and research, both directly and through medical institutions. It supplies health services in the fields of hospitalization and preventive medicine and insures the population needs in the fields of mental health, geriatrics, public health and rehabilitative equipment. Its stated goals are to realize the basic right to health and health promotion of all citizens through a health care system that strives for the highest quality and equality while respecting the values of man and society (9).

### **Public health services**

Israel's public health services concentrate on the healthy individual from the personal, community and environmental preventive medicine perspectives, through assimilation of the innovative concept of health promotion. These services are committed to promoting health and disease prevention among the citizens of Israel and include family health stations, health services for schoolchildren and district health offices, as well as professional administrative staff.

Seven district health offices are responsible for the coordination of public health services and medical operations in each region, collaborating with all health care entities that operate in the region.

### **Hospitals**

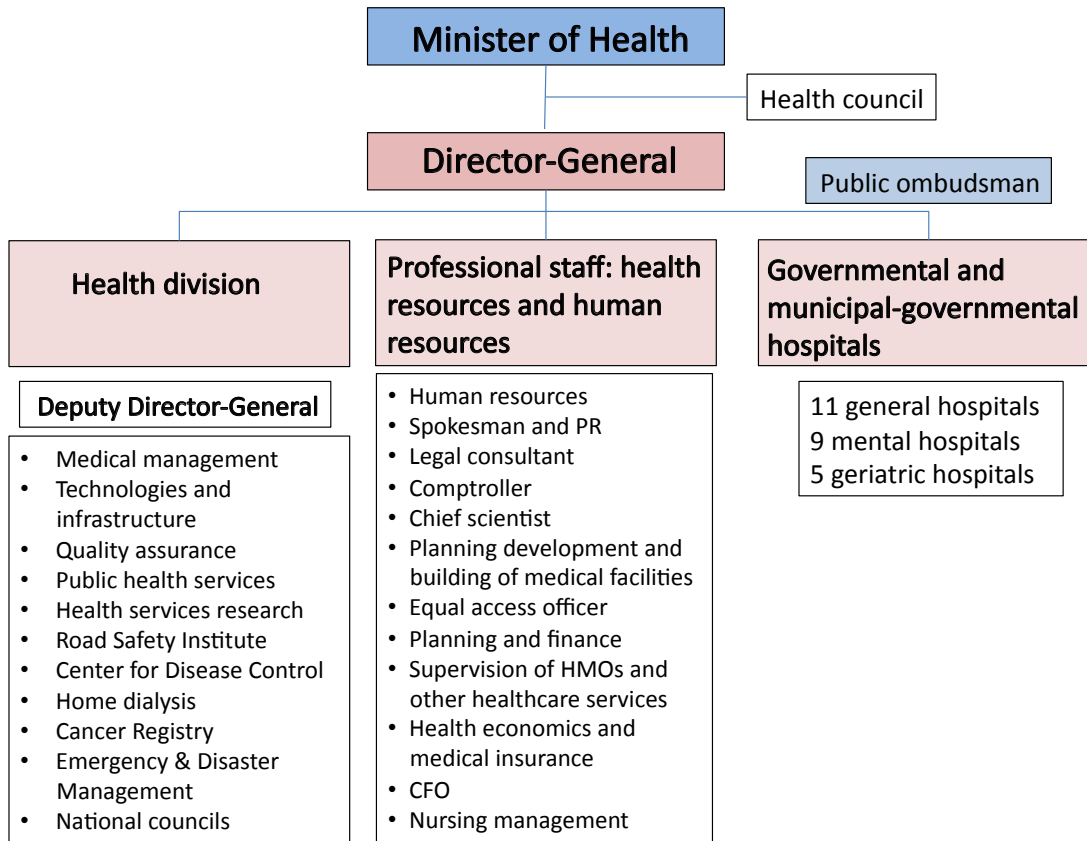
Israel has 28 general hospitals (11 are governmental, 8 belong to an HMO (Health maintenance organization), 6 are under public not-for-profit ownership and 3 belong to a church or mission), with 15 579 beds around the country. The overall bed to population ratio in 2009 was 1.94 per 1000, although the ratio varies widely between regions. In January 2012, there were 1123 emergency



department beds, 436 operating theatres and 349 beds for rehabilitation. Annual bed occupancy is 95% but there are large variations between departments: ophthalmology has the lowest at 57%, venereal and dermatology has the highest (126%), and most critical departments for emergency situations operate at near or above full occupancy all year round (105% in general intensive care, 111% in neurosurgery, 97% in orthopaedics).

The annual rate of visits to the emergency department in acute care hospitals was 352 per 1000 people; the rate for external causes was 83 per 1000.

**Fig. 1. Structure of the Israeli MoH**



### Prehospital and blood services

Magen David Adom (MDA) provides prehospital emergency medical care, blood and transfusion services and training. The organization was established in 1930 and is recognized (by law since 1950) as the national emergency medical service (EMS). It is also recognized by the government as the sole organization entrusted to carry out the functions assigned by the Geneva Conventions to national societies of the Red Cross in Israel.

MDA's medical teams provide emergency medical treatment to over 568 000 people a year. MDA operates 750 vehicles throughout the country – including ambulances, mobile intensive care units, blood mobiles and emergency motorbikes – directed from national and regional dispatching centres via a computerized command and control system. In addition, to reduce response time further, MDA has about 3000 volunteer first responders who go out on life-saving calls before the arrival of the ambulances. Training teams also instruct over 60 000 teenagers, adults and medical teams in the community annually.

MDA Blood Services is responsible nationally for the collection, processing, supply and storage of blood and blood components. The service includes the national organization for voluntary rare blood type donors, the national blood bank and the Plasma Fractionation Center (10).

### **Health funds**

Primary care medical services are provided by four health funds. Following national health insurance legislation, all residents are insured, and thereby entitled to receive medical care, by one of the funds. Primary care is highly accessible: in three of the four health funds the cost of primary care visits is fully covered by national health insurance and co-payments are limited to specialist visits. There are over 5000 primary care physicians and waiting times are short (only 5% of patients reported having to wait more than three days for an appointment). The number of outpatient contacts in Israel ranks among the highest in the WHO European Region, with 7.1 per person in 2000, exceeding the European average of 6.8. This above average rate may be due, in part, to the geographic and financial accessibility of primary care (11).

### **Workforce in the health sector**

#### **Physicians**

At the end of 2010, 34 046 physicians were registered in Israel, of whom 26 001 were below the age of 65. The physician to population ratio in Israel is 4.42 physicians per 1000 residents (226 people per physician).

Over 700 physicians are newly certified in Israel annually. About half of them are educated locally, 33% in eastern Europe, 13% in western Europe and the US, and 5% in Asia and Africa.

At the end of 2010 half the physicians (16 888) were specialists, and 13 612 of these were below the age of 65. The proportion of specialists continues to climb despite the decrease in the proportion of physicians per capita (2.2 specialists per person in 2012 versus 1.5 in 2000) (12).

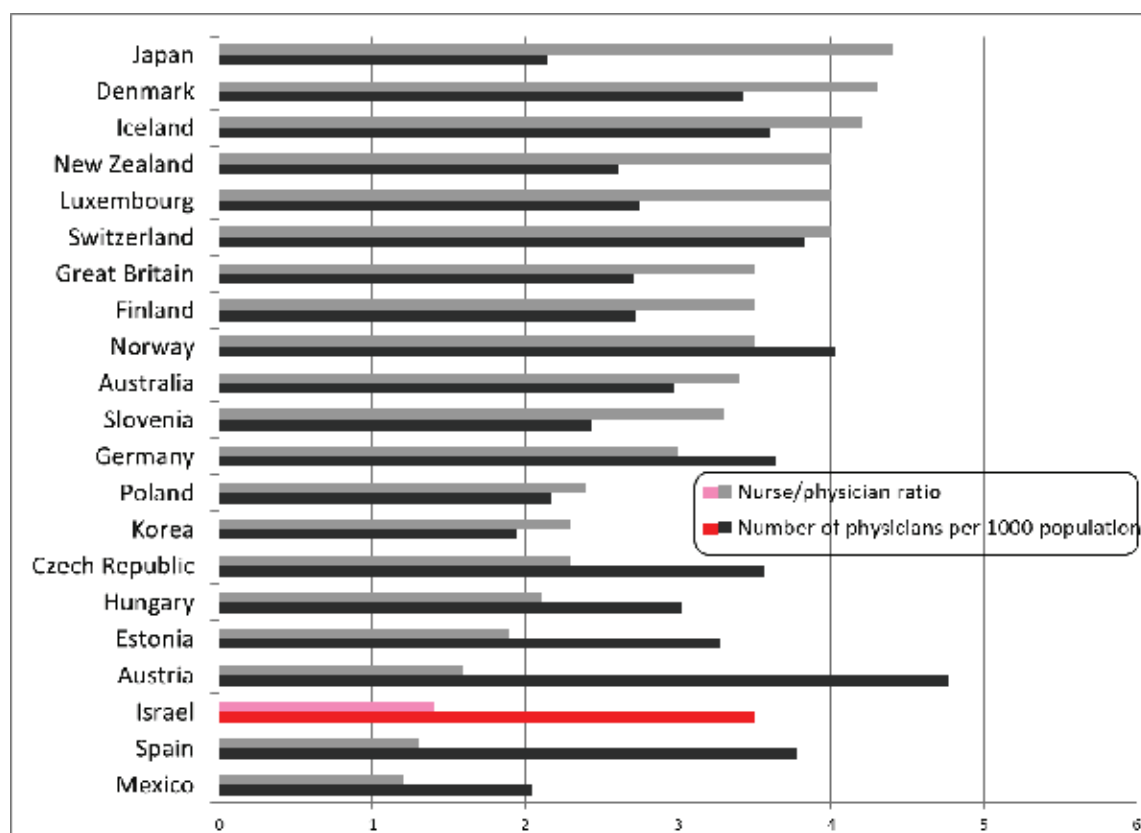
#### **Nurses**

The number of registered nurses in Israel at the end of 2010 was 57 609, of whom 46 743 were below the age of 65. The majority of these were registered nurses and 13 968 were practical nurses. The proportion of registered nurses has grown in the last decade. Nevertheless, the overall number of new licenses for nursing has been decreasing since 2003 – in 2010 only 903 new nurses were certified, in comparison to 1864 in 2002: a drop of 50% (13).

There is concern over the national decline in nursing staff: the number of nurses below the age of 65 per 1000 people was 6.07 in 2010, compared to 6.5 a decade earlier. Based on an Israeli Central Bureau of Statistics workforce survey, in 2010 there were 36 300 nurses employed in the civilian sector: 4.8 per 1000 people, compared to 5.3 per 1000 in 2005. Large gaps exist between the regions, with a rate per 1000 people of 3.2 in the south, 3.7 in the north, 6.4 in Haifa, 5.1 in the centre, 6.0 in Tel Aviv and 4.9 in Jerusalem. Approximately 75% of nurses are employed in hospitals.

Israel has a relatively low nurse to physician ratio, but ranks higher for the proportion of physicians per 1000 people (based on OECD data for the years 2006–2009, latest years available), compared with several OECD countries (see Fig. 2).

**Fig. 2. Nurse/physician ratio and number of physicians per 1000 people**



Source: Bin-Nun G, Keidar N, International Comparison of Healthcare system: Israel and OECD Member States 1970-2005, State of Israel Ministry of Health, Department of Health Economics Jerusalem 2007.

### Pharmacists

At the end of 2010 there were 7458 pharmacists in Israel. The number of pharmacists has climbed from 0.6 per 1000 people in 2000 to 0.97 in 2010, the equivalent of 1032 people per pharmacist.

### The health of the population

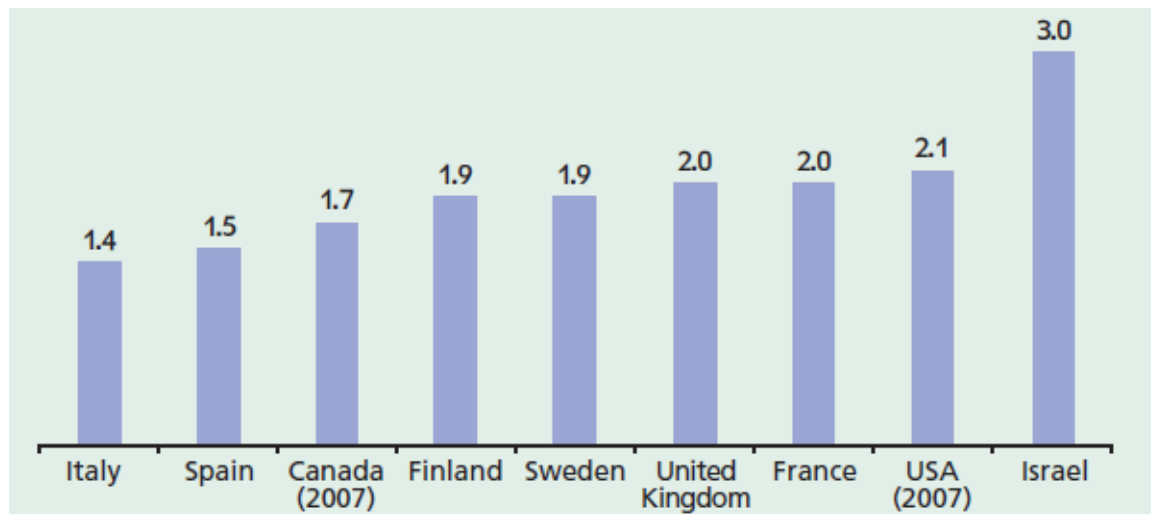
Life expectancy at birth in Israel has been rising, from 77.4 years for males and 81.6 years for females in 2005 to 79.7 and 83.4 years respectively in 2010. Health indicators of the Israeli population in comparison to OECD countries are depicted in Table 2 and Fig. 3.

**Table 2. Health indicators, Israel and OECD average, 2005**

Indicators	Israel		OECD	
	Male	Female	Male	Female
Life expectancy at birth (total, years)	77.4	81.6	75.5	81.2
Infant mortality rate (per 1000 live births)	4.5		5.5	

Source: Bin-Nun G, Keidar N. International comparison of healthcare system: Israel and OECD Member States 1970-2005, State of Israel Ministry of Health: Department of Health Economics Jerusalem, 2007.

**Fig. 3. Total fertility rate, Israel and selected countries, 2008**



Source: Israeli Central Bureau of Statistics, 2010.

### **Leading causes of death**

In the last decade a downward trend has been reported in the rates of most leading causes of death in Israel, particularly in diseases involving blood vessels in the brain, chronic obstructive pulmonary disease and diabetes. Concurrently, a rise has been reported in deaths associated with sepsis, pneumonia and influenza. There has also been a significant rise in deaths from Alzheimer's disease. While there seems to be evidence that the rate decreases are accurate, the apparent rise in these latter causes of death may be a result of the decline in other causes and of a change in registration at the Central Bureau of Statistics, which took place in 2008.

The standardized (for age) death rate in Israel (533 per 100 000 in 2009) is lower than that in the US and in most European countries and is similar to that found in Sweden, although lower mortality rates are found in Italy (512), Spain (520) and France (523). Cancer is the leading cause of death and heart disease the second most common in Israel, the US and most European countries (United Kingdom, Ireland, France, Italy, Austria, Belgium, Germany, Poland, Sweden, Norway, Denmark, Spain, Portugal and the Netherlands). In Finland, Hungary, Slovenia, Romania and the Czech Republic, conversely, heart disease is the leading and cancer the second most common cause.

### **Increasing resilience**

This report focuses on various aspects of preparedness, including response to risks, hazards and vulnerabilities, stewardship and readiness. Resilience is the "glue" that facilitates their ability to work together as one force, strengthening and supporting each other, rather than pulling apart and weakening the systems' ability to cope and manage an emergency situation.

A method for assessing community resilience has been developed in Israel – a result of the accumulation of over 30 years' experience of society's exposure to emergencies and threat. This method, the Conjoint Community Resiliency Assessment Measure (15), is being adopted by various government ministries as well as the Home Front Command (HFC) in order to assess, monitor, and evaluate the resilience of the population and its systems for coping with disasters. It enables the identification of weak points – such as leadership, knowledge, social cohesion or security – in order to direct intervention to strengthening these areas.

# Mission objective and methodology

## Objective

The objective of the assessment was to produce a report on Israel's preparedness for crisis management, including health-system capacity. The assessment focused mainly on national level preparedness for emergencies and disasters, both natural and man-made, in order to identify strengths and weaknesses as well as gaps in the current preparedness of the health system for crises. The resulting report aims to broaden the evidence base of best practice in health-system crisis preparedness and includes recommendations for consideration.

## Assessment participants and design

A multidisciplinary team of experts in emergency management (see Annex 1) carried out the assessment in Israel in cooperation with stakeholders from the MoH and other interface entities (see Annex 2). The areas of expertise of the team members included disaster management from both academic and practical angles.

Using the standardized toolkit for assessing health-system capacity for crisis management developed by the Country Emergency Preparedness programme of the WHO Regional Office for Europe (see Annex 3), the team adopted an all-hazard, multisectoral approach to evaluating the preparedness of the health system for crises.

Communication with representatives of key stakeholder institutions served as the basis for this report, including:

- the MoH and additional government ministries
- the National Emergency Management Authority (NEMA)
- the IDF, including the HFC
- health facilities and institutions
- MDA
- nongovernmental organizations.

## Assessment form

The assessment form, which includes all the essential attributes and indicators to be evaluated, is sectioned according to the six functions (building blocks) of the WHO health-system framework (see Table 3).

**Table 3. The WHO health-system framework**

Function	Overall goals/outcomes
Leadership and governance	Improved health (level and equity)
Health workforce	
Medical products, vaccines and technology	Responsiveness
Health information	Social and financial risk protection
Health financing	Improved efficiency
Service delivery	

WHO defines health systems as comprising all the resources, organizations and institutions that are devoted to producing interdependent actions aimed principally at improving, maintaining or restoring health. Further information on health systems can be found in the following documents: *The world health report 2000 (16)*, *Everybody's business: strengthening health systems to improve health outcomes (17)*, *The Tallinn Charter: health systems for health and wealth (18)* and *Key components of a well functioning health system (19)*.

Leadership and governance (also called stewardship) is arguably the most complex function of any health system; it is also the most critical. Successful leadership and governance involves ensuring strategic policy frameworks exist and are combined with effective oversight, coalition-building, the provision of appropriate regulations and incentives, attention to system-design, and accountability (17). In relation to crisis management, this means ensuring that national policies provide for a health-sector crisis management programme. Effective coordination structures, partnerships and advocacy are also needed, as well as relevant, up-to-date information for decision-making, public information strategies and monitoring and evaluation.

The health workforce (human resources for health) includes all health workers engaged in action to protect and improve the health of a population. A well-performing health workforce is one which works in ways that are responsive, fair and efficient to achieve the best health outcomes possible, given available resources and circumstances (17). This necessitates the fair distribution of sufficient numbers and the right mix of competent, responsive and productive staff. A preparedness programme aims to ensure that such workers represent an integral part of the health workforce by conducting training-needs assessments, developing curricula and training material and organizing training courses.

A well-functioning health system ensures equitable access to essential medical products, vaccines and technologies of assured quality, safety, efficacy and cost-effectiveness, and their scientifically sound and cost-effective use (17). Medical equipment and supplies for prehospital activities, hospitals, temporary health facilities, public health pharmaceutical services, laboratory services and reserve blood services needed in case of a crisis also fall in this category.

A well-functioning health information system is one that ensures the production, analysis, dissemination and use of reliable and timely information on health determinants, health-system performance and health status (17). A health information system also covers the collection, analysis and reporting of data. This includes data gathered through risk and needs assessments (hazard, vulnerability and capacity) and those relating to early warning systems and the overall management of information.

A good health financing system ensures the availability of adequate funds for the health system, and its financial protection in case of a crisis. In addition to providing funds for essential health-

sector crisis management programmes, it ensures that crisis victims have access to essential services and that health facilities and equipment are adequately insured for damage or loss.

Service delivery is the process of delivering safe and effective health interventions of high quality, both equitably and with a minimum waste of resources, to individuals or communities in need of them. The crisis preparedness process provided by the WHO health-system framework makes it possible to review the organization and management of services, ensure the resilience of health care facilities and safeguard the quality, safety and continuity of care across health facilities during a crisis.

The six sections of the assessment form (structured according to the functions of the WHO health-system framework) are broken down into key components of a health-sector crisis preparedness programme (see Table 4).

**Table 4. Key components of the WHO health-system framework, by function**

Function	Key components
Leadership and governance	<ul style="list-style-type: none"> <li>Legal framework for national multisectoral emergency management</li> <li>Legal framework for health-sector emergency management</li> <li>National institutional framework for multisectoral emergency management</li> <li>National institutional framework for health-sector emergency management</li> <li>Components of national programme on health-sector emergency management</li> </ul>
Health workforce	Human resources for health-sector emergency management
Medical products, vaccines and technology	Medical supplies and equipment for emergency response operations
Health information	<ul style="list-style-type: none"> <li>Information management systems for risk reduction and emergency preparedness programmes</li> <li>Information management systems for emergency response and recovery</li> <li>Risk communication</li> </ul>
Health financing	National and subnational strategies for financing health-sector emergency management
Service delivery	<ul style="list-style-type: none"> <li>Response capacity and capability</li> <li>EMS system and mass casualty management</li> <li>Management of hospitals in mass casualty incidents (MCIs)</li> <li>Continuity of essential health programmes and services</li> <li>Logistics and operational support functions in emergencies</li> </ul>

Certain attributes are considered essential for the successful implementation of each key component. There are 51 essential attributes; they are listed according to the key components of each of the six WHO health-system framework functions (see Annex 3).

The assessment is facilitated by questions relating to each of the essential attributes. Assessors are required to answer each indicator-related question by choosing “yes”, “partially” or “no”, and to justify the answer given. This information forms the basis of a detailed narrative assessment report, structured in accordance with the WHO template, which can be used to develop a plan of action to address gaps identified and monitor progress during follow-up assessments.

# Findings and recommendations

The organizations, institutions and health care facilities described in this report are components of a national, integrated health care system with operational and management realities that change over time. The capacity for crisis management in Israel's health care system was evaluated against the benchmarks and indicators of the WHO health-system crisis preparedness assessment tool, which is based on formal research and consultations.

The report is not intended to judge the comprehensiveness and effectiveness of the current system but rather to assess it with the WHO health-system framework in mind and to propose modifications, taking into consideration financial and other constraints.

## 1. Leadership and governance

Key element 1.1:	Legal framework for national multisectoral emergency management
Essential attributes:	<ol style="list-style-type: none"><li>1. Laws, policies, plans and procedures relevant to national multisectoral emergency management</li><li>2. National structure for multisectoral emergency management and coordination</li></ol>

### ***Legal framework for multisectoral emergency management***

Israel has had to deal with emergency situations since the declaration of its independence in May 1948. As a result, the national laws, decrees, regulations and guidelines provide extensive authority to the different ministries, clearly delineating roles, responsibilities and managerial tools for emergency preparedness and response. Several laws and government policies, as well as binding guidelines and regulations designated to ensure provision of vital services during emergencies, have been legislated and enacted during the 64 years of the country's existence (20).

### ***Emergency Regulations***

The Emergency Regulations were enacted by the Israeli Parliament in May 1948. The regulations authorize ministers to activate emergency measures that are required to ensure provision of vital services to the state's population. The regulations are very powerful tools: upon their application they supersede most other laws. Because of their potential strength, since 2010 these regulations have been under review by all ministries, coordinated by the Ministries of Defense and Justice which are designated to maintain the necessary authority to direct emergency management procedures. Nevertheless, efforts are being made to limit the measures that will be integrated in the Emergency Regulations, to avoid as far as possible any violation of human rights.

### ***Civil Defense Law***

The Civil Defense Law of 1951 authorizes implementation of all actions pertaining to the well-being of Israel's population during periods of emergency. The law establishes the civil defence service; mandates the construction and upkeep of shelters in all buildings, both residential and industrial; enables the state's authority to make use during emergencies of infrastructure, resources or equipment, regardless of their ownership (whether private or public); and provides the Ministry of Defense with the authority and responsibility for directing the overall smooth operation of all vital



services, in order to ensure their provision to the population. The law also defines a civil state of alert and lays down regulations regarding the use of toxic and hazardous materials. As part of the authorities provided by this law, the HFC can direct the operations of first responders and other emergency services, including medical agencies such as the EMS and health maintenance organizations, during states of conflict or war.

The declaration of a state of emergency can be activated for the whole state or can cover a specific territory (referred to as “special situation of the home front”). The emergency that triggers this declaration can result from various types of threat, such as war or limited military confrontations, major terror attacks, epidemic outbreaks, natural disasters or operational incidents (with the potential of becoming mass disasters).

**Modification of the Police Ordinance**

The Police Ordinance was modified in 2005 in order to authorize the Minister of Internal Security to declare a state of “mass disaster” for a period of up to 48 hours. Upon its application, police officers are responsible for the control and command of all on-site operations during the event. Accordingly, the police are authorized to direct operations of all first responders, to confiscate any resource needed by rescue agencies (regardless of ownership) and to close areas or prohibit entrance or exit.

**Risk reduction – National Master Plan 38**

One of the threats faced by Israel is the potential occurrence of a severe earthquake. As part of the risk reduction programme, rigid building codes were implemented in 1975 as a modification of the Planning and Building Law enacted in 1965. Since many buildings were constructed before the modification of the law, National Master Plan 38 was legislated in 2005, encouraging property owners to implement measures designed to strengthen buildings constructed before 1980 and to enhance their survivability during an earthquake. As part of this programme, in order to provide motivation for its implementation, building owners are eligible for additional building rights if they execute the strict regulations. The Plan, which was initially valid for five years, was extended in 2009 for an additional period of five years to 18 May 2015.

**IHR 2005**

The IHR form an international instrument that is legally binding for all States Parties. The scope and purpose of the IHR is to prevent, protect against, control, and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks and avoid unnecessary interference with international traffic and trade. The IHR require States Parties to designate a national IHR focal point accessible at all times to the WHO IHR contact point. The Israeli Government has designated the MoH as the national IHR focal point.

Key element 1.2:	Legal framework for health-sector emergency management
Essential attributes:	<ul style="list-style-type: none"> <li>3. Laws, policies, plans and procedures relevant to health-sector emergency management</li> <li>4. Structure for health-sector emergency management and coordination</li> <li>5. Regulation of external health-related emergency assistance</li> </ul>

Israel has participated in all the negotiations concerning establishment of the IHR and was one of the first countries to ratify them. Implementation of the IHR depends upon good governance, decentralization and infrastructure of the public health services of the MoH. Israel’s small size and the potential mobilization of workforce from one place to another within a few hours are thus an

advantage to the country. However, implementation of the IHR to the ports of entry – including airports, seaports and land borders – needs to be further elaborated, so Israel has requested an extension of one year in order to complete implementation of the IHR in this regard.

## **Legal framework for health-sector emergency management**

### **Public Health Ordinance**

The Public Health Ordinance was legislated by the British mandate in 1940 and adopted by the Israeli parliament upon the creation of the State of Israel in May 1948. This law allows the Director-General of the MoH to enforce any action needed in order to prevent communicable and highly infectious diseases, mitigate their consequences or manage their effects. The law's coverage is considered to be extensive and includes a wide range of actions including detainment, isolation or quarantine of individuals suspected to have been exposed to infected areas or agents; making use of any land or property needed in order to accommodate or treat the detained population; managing the dead in any alternative that is deemed to be appropriate to the situation; and compelling medical institutions and personnel to deploy all directed measures in order to supply necessary medical and public health services.

The present limitation of this act is that it pertains mainly to infectious and communicable diseases but does not cover other types of emergency situations. In order to overcome this limitation, efforts are now being made by the MoH to implement the necessary legislative actions to expand the authorities issued by the act to the Director-General of the MoH to encompass all types of hazard.

### **National Health Insurance Act**

The National Health Insurance Act was legislated in 1995 and ensures the rights of all residents of the state to access medical services at all times (both routine and emergency). This Act obliges the health funds to provide a basic basket of services at all times to the state's residents and ensures their right to accessibility and availability of crucial medical services including prevention, health education, primary, secondary and tertiary medical services.

### **All-hazard approach**

Since Israel (like many other countries) is required to create and maintain preparedness to manage numerous types of emergency, the MoH has adopted the all-hazard approach to emergency management, aimed at creating mechanisms for a generic universal response to various threats. According to the policy implemented in the last decades, preparedness for conventional MCIs constitutes the basis for maintaining readiness to rapidly emerging threats, such as natural disasters, mass toxicological, chemical and radiological events. Necessary modifications are implemented in emergency plans according to the specific characteristics of the situation, such as personal protective gear and/or decontamination capabilities for toxicological or chemical events.

<b>Key element 1.3:</b>	<b>National institutional framework for multisectoral emergency management</b>
Essential attributes:	6. National committee for multisectoral emergency management 7. National operational entity for multisectoral emergency management

The MoH is designated to lead the health sector in management of a national disaster, and as such, develops and disseminates policies and guidelines to all medical institutions and agencies,

both public and private. The MoH operates and undertakes activities according to a national plan that mandates an all-hazard, multidisciplinary approach to risk reduction and crisis management. The Director-General of the MoH or his representative is a member of the national multisectoral emergency management body.

## ***Institutional framework for multisectoral emergency management***

### ***Emergency Economy***

The Emergency Economy is a body created in 1955 to ensure continued activity of vital enterprises during an emergency. An Emergency Economy order allows the recruitment of workers for essential private and public services, such as emergency services, medicine, local authorities, food and equipment supply, communications, and any other service deemed vital. Until 2010 the Emergency Economy was responsible for preparing the local municipalities for emergencies, including absorption of evacuees from disaster stricken areas.

A Supreme Emergency Economy Committee was created in 1986, headed by the Minister of Defense or a senior deputy. The directors-general of all government ministries, the head of the Jewish Agency and the chairpersons of the local municipalities, IDF and police are members of this committee, which is responsible for the ongoing effective operation of similar structures in regional districts and local municipalities. In 2010, a few years after the establishment of NEMA, the Emergency Economy was integrated into NEMA as an integral component of the multisectoral emergency management system.

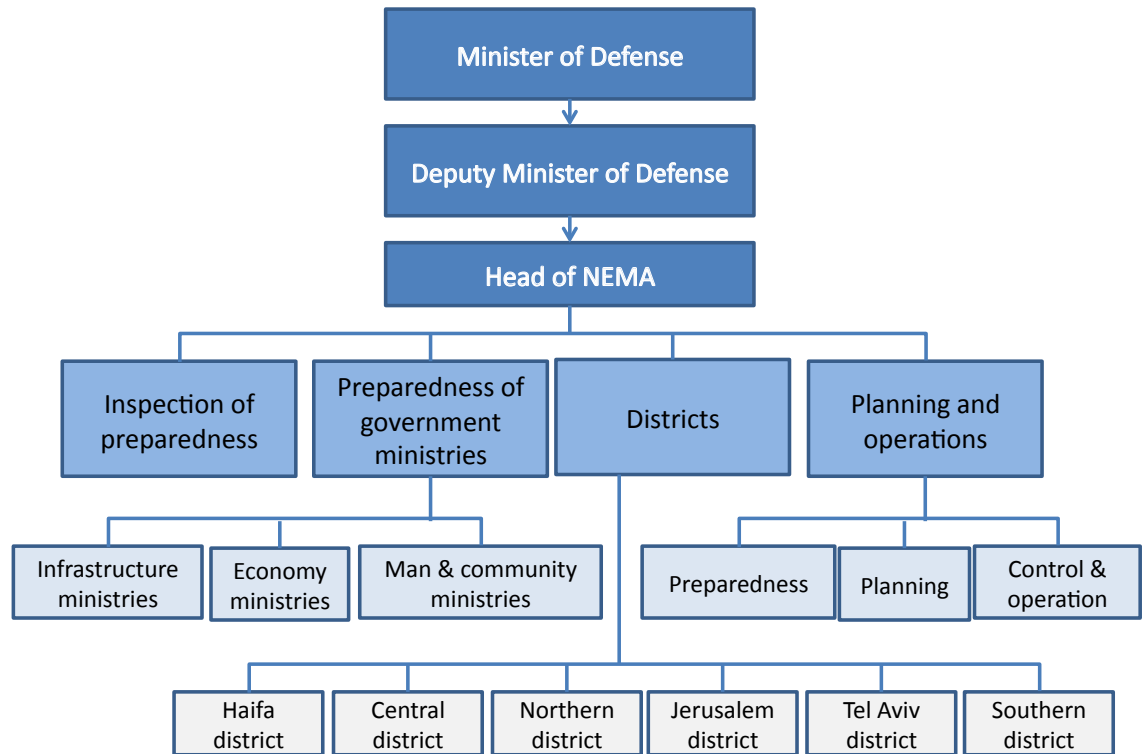
### ***National Emergency Management Authority (NEMA)***

NEMA was established in 2007, as part of the Ministry of Defense (see Fig. 4), and is responsible for preparing Israel's home front for any potential emergencies. This is accomplished by directing and coordinating among emergency organizations, government offices, local authorities, and other relevant institutions.

NEMA is responsible for creating sustainable plans to ensure preparedness of the home front for all types of emergency; ensuring appropriate critical resource reserves (such as fuel, food, water and so on); initiating research in the field of emergency preparedness; promoting activities designed to improve the population's resilience to emergencies; centralizing information collection and distribution; and coordinating the activities of the various government ministries during emergencies. NEMA's responsibilities cover all components of emergency management, including disaster risk reduction, prevention, mitigation, response, reconstruction and rehabilitation activities.

As part of the coordination mechanism, NEMA operates a National Council for Emergency Management, headed by either the Deputy Minister of Defense or the Minister of Civil Protection (depending on the structure of the government at the time). Senior representatives from all government ministries serve as members on this Council. Its major role is to coordinate activities designed to prepare the nation for all hazards and to manage an emergency upon its occurrence. The policies mandated by the Council are implemented by NEMA, so regular evaluations of all government agencies are conducted by this body to assess the ongoing state of preparedness. The organization and structure established at the national level are mirrored at the regional district levels.

**Fig. 4. Structure of NEMA**



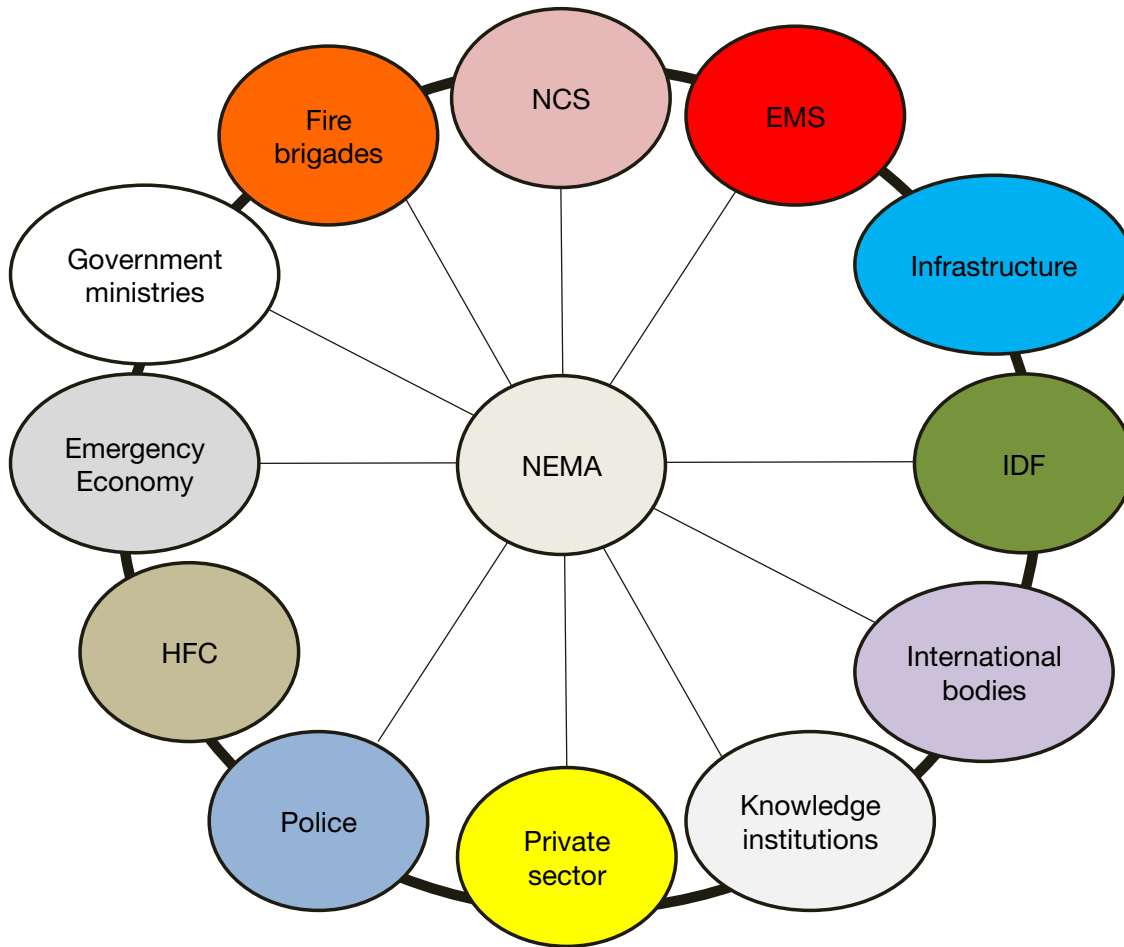
In order to ensure proper implementation of emergency preparedness and management, each government ministry has created and maintains a national authority that is responsible for directing operations of the agencies under its jurisdiction during emergencies. For example, the MoH operates a Supreme Health Authority (SHA) that is responsible for coordinating the operations of all health agencies in preparation and management of emergency situations.

NEMA integrates the activities of all ministries, organizations and bodies relevant to effective emergency preparedness and management (see Fig. 5).

In routine times, NEMA coordinates on a national level several activities designed to ensure emergency preparedness. It prioritizes potential threats; conducts risk analysis; develops national emergency policies; presents to the government annual reports on home front preparedness levels; promotes and leads relevant legislation in the state cabinet and parliament; coordinates international cooperation including exercises and workshops as well as work information-sharing; and leads the building and enhancement of population resilience.

During periods of emergency, NEMA operates the National Emergency Management Center that serves as a supreme operations centre designated to monitor and report a real-time situation analysis to the government; supervises the fulfilment and implementation of directives/instructions disseminated by the Minister of Defense; coordinates with the National Information Directorate the general information dissemination activities; advises the Minister of Defense and the government regarding key decisions that need to be implemented in real time to ensure effective emergency management; and activates the national resilience system.

**Fig. 5. Entities coordinated by NEMA**



Key element 1.4:	National institutional framework for health-sector emergency management
Essential attributes:	8. National committee for health-sector emergency management 9. National operational entity for health-sector emergency management 10. Mechanisms of coordination and partnership-building

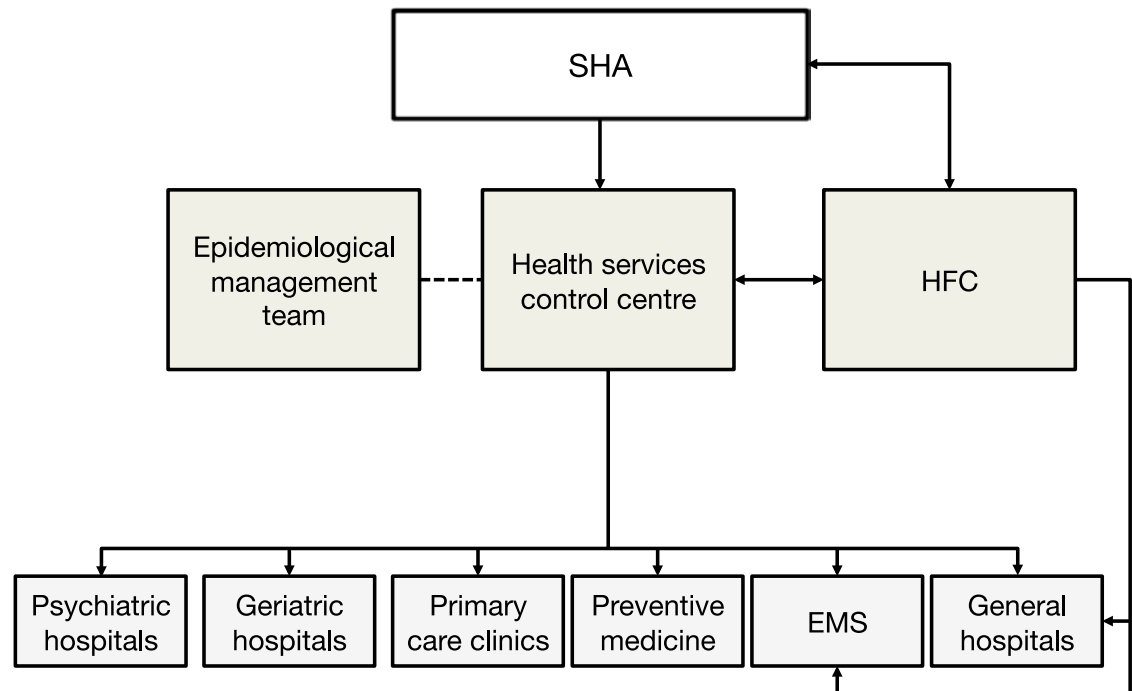
***Institutional framework for health-sector emergency management***

***The Supreme Health Authority (SHA)***

In Israel, the MoH is responsible for preparing the health care system for and coordinating the management of emergencies, and the SHA was created for these purposes. It is headed by the Director-General of the MoH; the directors of the health maintenance organizations and the Surgeon General of the IDF are members. The director of the Emergency and Disaster Management Division (EDMD) is the coordinator of the SHA during routine times, and in emergencies this function is performed by the Deputy Director-General of the MoH. Representatives from all relevant health care agencies along with interface bodies such as the Ministry of Defense participate in meetings of

the SHA, which directs the preparedness and emergency operations of all medical agencies, both public and private institutions, regardless of their ownership (see Fig. 6).

**Fig. 6. Structure of the SHA**



The SHA operates according to a structured national plan that delineates the roles, responsibilities and mode of operation for both routine times and emergency situations. The plan includes a detailed guideline for each subunit that operates on behalf of the SHA during crises.

The SHA convenes at regular intervals during routine times, most often five to six times annually. The decisions taken during the meetings and the policies adopted are distributed to all medical institutions and their implementation is monitored continuously by the EDMD of the MoH.

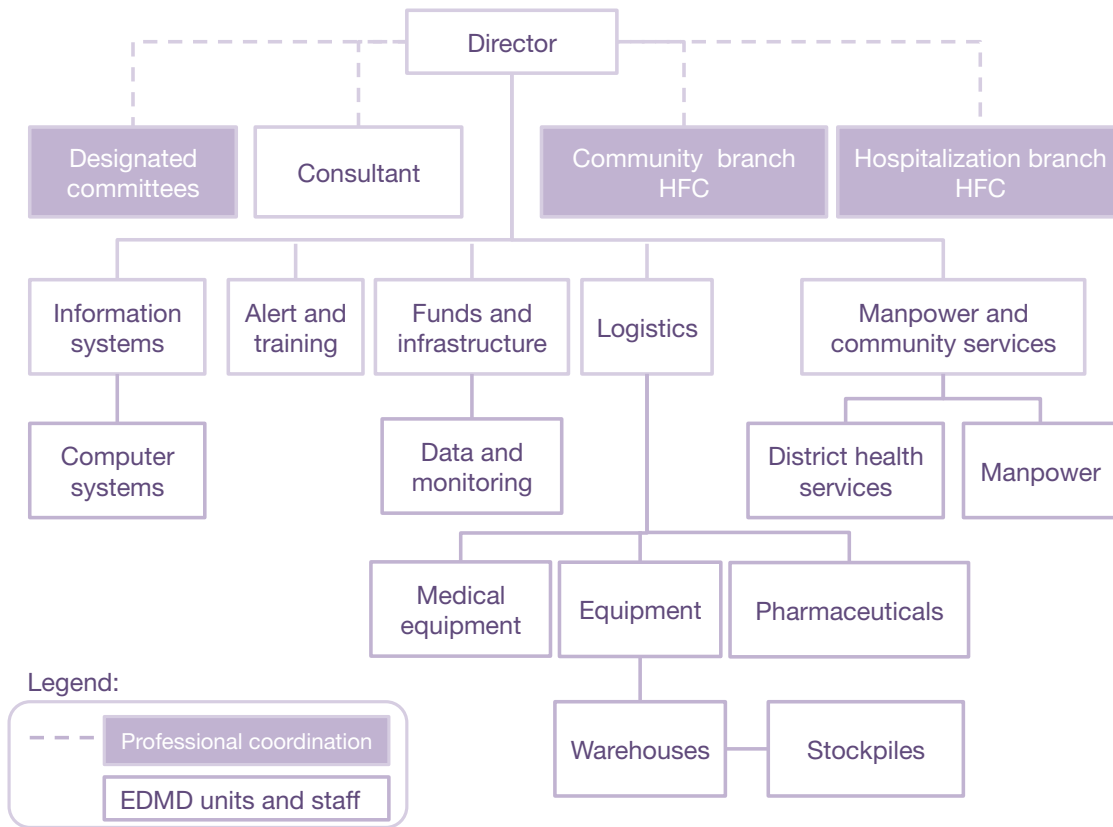
During emergencies the SHA convenes twice a day, either through face-to-face meetings or via teleconference. This mechanism allows for ongoing monitoring of the situation, real-time decision-making, close communication and collaboration between management and field authorities and active participation of all relevant stakeholders in the decision-making process.<sup>3</sup>

***The Emergency and Disaster Management Division (EDMD) of the MoH***

The EDMD is the operational entity of the SHA. This unit, created in 1975, is responsible for coordinating preparedness and response to emergencies and disasters of all health care institutions and agencies (see Fig. 7). Its roles encompass all phases of emergency management including risk assessment, risk reduction, capacity building for crisis management, training and exercises, evaluation of preparedness as well as emergency management during the occurrence of an MCI or a disaster.

<sup>3</sup> As there are only 28 acute care hospitals (11 governmental hospitals, 8 HMO hospitals and the rest run by not-for-profit institutions), 4 health funds and 7 regional district health offices, this can be facilitated routinely during emergency periods.

**Fig. 7. Structure of the EDMD**



The EDMD employs (on an ongoing basis) personnel specializing in various areas of emergency preparedness and response, as well as senior consultants and experts in the different fields of emergency management. In times of crisis the EDMD operates a national control centre that can be fully functional within 30 minutes. Following its activation, the centre is fully equipped with the required infrastructure, communication and logistics resources to enable its ongoing operation until it is deactivated. In addition, in order to ensure 24/7 capacity to manage emergencies, the military operations centre located in the HFC serves as an auxiliary of the EDMD. During MCIs, this operations centre is authorized by the MoH to act on its behalf and to issue directives relating to casualty evacuation and hospital surge capacity, including the coordination of secondary evacuation and relocation of casualties.

In prolonged emergency situations, when both operations centres are active, a liaison officer from the HFC is assigned to the MoH operations centre to ensure information-sharing and coordination of activities. This military-civilian collaboration in coordinating the emergency response during a crisis allows for effective and immediate activation of resources as well as central control and command of operations.

Joint standard operating procedures (SOPs) that define the roles and authorities of each entity have been developed. These include the mechanisms for operation in each phase of the emergency, the available communication, information and logistics resources, and integrative relations with interface agencies.

The EDMD serves as the operational support unit for the SHA. As such, it coordinates and supervises the planning, implementation and activation of emergency operations of all health care organizations including hospitals, primary care and public health agencies. Annual budget

allocations are provided to the EDMD to enable its proper function by the MoH, Ministry of Finance and Ministry of Defense. These budgets are then used, according to the priorities set by the SHA, to promote the emergency preparedness of the different components of the emergency health care services.

The EDMD is supported by regional medical officers serving as coordinators of emergency management at the district level. These officials facilitate the implementation of all directives and/or guidelines issued by the EDMD within the medical facilities and local councils operating in the region.

### ***Coordination and partnership-building***

Emergency management of the health care system is based on a “5C model” composed of:

- comprehensive contingency planning
- command of operations
- central control
- continuous capacity building
- coordination and cooperation between all relevant stakeholders.

Both the SHA and the EDMD collaborate, in regard to emergency preparedness and response, with all relevant institutions: public and private, civilian and military. This ongoing relationship is based on four main factors:

- a strong sense of commitment to assuring readiness to emergencies, stemming from the fact that Israel has had to manage numerous emergency scenarios since its creation;
- recognition of health care institutions as vital resources and, therefore, their obligation by law to provide emergency response services;
- creation of a culture of collaboration, coordination and partnership between relevant stakeholders from within and outside the health care systems;
- awareness that a large proportion of citizens, especially those involved in emergency response, have served in the military which provided them with tools and competencies to manage emergencies.

As such, agreements with entities in the public and private sector exist and ensure their continued effective operation not only in routine times but also during emergencies.

An important element that has been successfully implemented in numerous crises that occurred in the last decade is an ongoing coordination mechanism. As mentioned above, during crises, the EDMD and or the SHA conduct a teleconference twice a day with the directors of all health care institutions and other relevant stakeholders. These coordination mechanisms enable direct communication between the parties, facilitate rapid identification of gaps or shortcomings and encourage joint problem-solving. The topics discussed in these meetings, as well as the conclusions and/or directives issued, are documented and disseminated in real time to all stakeholders. The EDMD follows up and monitors the implementation of these decisions and reports the findings to both the health care institutions themselves and the governing bodies.



Key element 1.5:	Components of national programme on health-sector emergency management
Essential attributes:	11. National health-sector programme on risk reduction 12. Multisectoral and health-sector programmes on emergency preparedness 13. National health-sector plan for emergency response and recovery 14. Research and evidence base

### ***National programme on health-sector emergency management***

The MoH initiates and updates the risk analysis of potential hazards to the country every few years, based on the work of risk analysts from the multisectoral entities. Following an update, a national risk reduction programme is formulated and a plan for its implementation developed by teams of multidisciplinary advisory committees. The recommendations of these committees are presented to the SHA, which has the authority and responsibility to approve them. The most recent risk reduction programme to date was established in 2010 and it is now under review, to establish whether modifications are required. The programme is developed for and by the health care authorities, but its implementation is coordinated with other stakeholders such as the Ministry of Defense, the IDF, the Ministry of Foreign Affairs and additional relevant partners.

Based on the programme, vulnerable populations are identified, as are risk-prone health facilities. The response model developed with the aim of mitigating such risks considers these vulnerable components and attempts to decrease their potential effect. The model includes the development and dissemination of national emergency management guidelines that serve as a generic tool for emergency response. All health care facilities are then required to prepare an institutional plan, aligned with the principles integrated in the national guidelines, and to submit it for approval to the MoH and/or the HFC.

The national programme also includes measures targeted at reducing vulnerabilities of medical facilities, especially hospitals. As part of the “Safe Hospitals” plan, a survey was conducted by the HFC in collaboration with the MoH, in which vulnerabilities of hospitals, public health facilities and community health care clinics were identified. An all-encompassing multiyear programme was prepared, targeted to reduce these vulnerabilities by strengthening both structural and non-structural infrastructure for all hazards, taking into account both natural disasters and man-made threats. Designated funding has been provided by the Ministry of Defense, MoH and the National Intra-Ministerial Committee for Earthquake Preparedness. Implementation of the programme was initiated in 2009 and is still in process. Nevertheless, numerous buildings in many of the medical facilities are still not sufficiently protected against all hazards.

### ***Emergency preparedness and response programmes***

National policies are developed for all potential hazards by special committees and task forces nominated by the MoH, based on the all-hazard approach. They include various components of emergency preparedness and response mechanisms including control and command mechanisms, utilization of equipment and infrastructure, activation of personnel, coordination between stakeholders, risk communication, health promotion and education strategies, training programmes and emergency management procedures. The policies are disseminated to medical organizations, which are required to develop and adapt their institutional SOPs based on the national policies, taking into consideration their available resources and infrastructure. Organizational SOPs are reviewed and authorized by the MoH or by the HFC, performing this task on behalf of the MoH.

Evaluation of emergency preparedness of all medical organizations is needed in order to assess strengths and weaknesses and to promote enduring emergency preparedness. The MoH has developed a structured tool based on measurable parameters, which enables evaluation of the level of preparedness of all medical organizations (21). Annual evaluations are carried out in hospitals, EMS districts, health funds and health districts. The evaluations are aimed at encouraging continuous improvement of emergency preparedness, identifying elements that should be improved and monitoring the effective implementation of lessons learned. They encompass all elements relevant to emergency preparedness, including policies, SOPs, infrastructure and equipment, knowledge and capabilities of staff, training and drills. In the last year, the evaluations have been expanded to encompass additional potential emergency situations, such as preparedness to manage paediatric MCIs.

### **Information systems**

Evacuation of patients and casualties to hospitals is performed based on a continuous needs assessment of available hospitalization resources. Therefore, information regarding utilization and availability of hospital beds is assimilated daily. Three computerized information systems are operated by the MoH to ensure an online and accurate view of hospitals' potential and surge capacity:

- an online information system that interfaces with the admission transfer and discharge (ATD) reporting systems of all general hospitals that displays the online utilization of hospital beds, including admittance and discharge of patients in emergency departments;
- a web reporting system through which hospitals report (once a day during routine times and twice a day during emergencies) information on ventilated patients in and outside the intensive care units and on the severity of injuries of all casualties admitted to the emergency departments, including acute stress reactions;
- a computerized system for identification of casualties to facilitate transfer of information to the public.

The ongoing connectivity between field medical institutions and the MoH facilitates the ability to coordinate the use of resources during emergency situations in the most cost-effective way.

### **After action reviews (AARs)**

Learning lessons from emergencies is a crucial element in improving readiness and preparedness. Following each MCI or emergency, an AAR is carried out at three different levels:

- an organizational AAR in each organization that participated in managing the event;
- a regional AAR headed by the director of the Emergency Division of the MoH, in which representatives from all relevant agencies participate;
- presentation of lessons learned to the SHA in order to review results and recommendations and view the need to implement modifications in the policies.

Structured evaluation tools are used for all AARs. The systemic lessons learned are disseminated by the EDMD to all medical institutions, either directly or through the MoH web site.

### **Joint drills and exercises**

Managing drills and exercises in which different emergency agencies participate strengthens collaboration and coordination of operations between the bodies, creates regional networks and facilitates effective communication. The SHA defines annual and perennial training policies to

include drills, which are then disseminated as a compulsory programme to all medical institutions. The training and drills are implemented in hospitals in cooperation with the HFC. The annual programme is coordinated with all stakeholders, including the police and Ministry of Defense, so that several joint drills are carried out each year. The scenarios for each drill are determined jointly according to current risk assessments.

### ***Research and evidence base***

In order to promote emergency preparedness, the MoH participates in various research projects, in collaboration with both local and international partners. In the last five years, the MoH has participated in the “GAP” project (guard, anticipation and prediction of health hazards), conducted under the EU’s Seventh Framework Programme for research and technological development, which is focused on developing a new approach to health risk prediction. The MoH is also involved in a bilateral project with partners from Germany with the aim of developing a tool for biological event preparedness evaluation.

The EDMD also collaborates with academic institutions in order to facilitate both the creation of evidence-based data regarding implemented policies and the creation of advanced tools and mechanisms for emergency management. Under this umbrella, students of disaster management master’s programmes from the Ben-Gurion University of the Negev and Tel Aviv University conduct academic studies; their results serve the MoH in applying the findings towards improvement of emergency preparedness.

The great challenge for implementation of research findings is the lack of funding sources. Although efforts are being made to identify viable sources, there is currently no long-term research planning.

### ***Recommendations on leadership and governance***

There are no major recommendations regarding leadership and governance, other than to suggest that additional effort might be invested to identify funding sources that will enable implementation of long-term research activities.

Emergency preparedness in Israel is a national priority: extensive efforts and resources are continuously invested to ensure readiness for all anticipated potential hazards. The MoH, in collaboration with numerous relevant stakeholders, has adopted the all-hazard approach to emergency management and sustains an active role in creating and maintaining a high level of preparedness of the health care systems for emergencies and disasters. The relevant components of emergency management such as risk reduction, mitigation, preparedness and response, training and evaluations are well established. Mechanisms for assuring emergency preparedness have been created on national and regional levels. Close collaboration is being maintained between private and public sectors, as well as between the civilian and military entities, so that vital resources are being used optimally.

The model of emergency preparedness is based on a top-down mode of operation. Central control and command is characteristic and all policies and decision-making processes are relayed from the MoH to the various health care facilities. National management policies are closely and frequently reviewed to ensure their appropriateness and their modification is disseminated to all concerned parties. Close partnerships are maintained between relevant stakeholders, including prehospital and hospital agencies, and their integrated function is based on national standards that are set to present a coordinated response. The existing personal acquaintance and comradeship, as well as the limited size of the country and its institutions, facilitate these close relations and flexibility.

## 2. Health workforce

Key element 2.1:	Human resources for health-sector emergency management
Essential attributes:	15. Development of human resources 16. Training and education

### **Human resources**

The MoH, in collaboration with the Ministry of Trade, Industry and Employment, is responsible for defining the human resources needs of the health care system for emergencies, as well as for planning mechanisms to overcome gaps. Standards for the various personnel employed in the health care institutions are defined, including required knowledge and competencies, based on recommendations made by expert committees created for this purpose by the SHA. A central computerized database of staff details the current status of available personnel in relation to updated needs assessments. The data are reviewed and updated annually to ensure relevance and timeliness. The database includes information regarding emergency medical systems, community health care institutions and hospital personnel.

Each year a designated civilian-military committee convenes to review medical personnel that by law are still required to serve in the reserve army, in order to decide whether they should be assigned during emergencies to military service or remain in the civilian health care system. Vital professions that are crucially needed in the civilian facilities are prioritized for civilian assignments. As there are no military hospitals in Israel, the civilian hospitals provide medical services to both civilian and military patients.

Designated plans are in place for recruitment of local and international volunteers – both individuals and organizations. Many of these volunteers are pre-trained for their missions; for example, high school or higher education students are trained as volunteers to reinforce hospitals during emergencies, acting as stretcher-bearers or in the ventilation support team, undertaking administrative tasks and additional functions. Coordinated plans were created with international organizations pledged to provide assistance to the state during emergencies, such as the American Physicians and Friends for Medicine in Israel. Orientation courses are conducted for these volunteers to acquaint them with the emergency health care system prior to the occurrence of a disaster. The mechanism and conduit for their activation has been set and their capacity to assist in a timely manner is tested from time to time.

### **Training and education**

The policy of training medical personnel for emergencies is delineated by the MoH: the components of the training programmes are based on needs assessment and risk analysis. The frequency and content of the programmes are dictated by the SHA and all medical facilities are required to abide by these directives. The directors of the various health care institutions are responsible for training their staff for emergencies, but the development of advanced training materials, including curricula, interactive software, instructive films and similar, is conducted by the MoH. Nucleus knowledge groups from the medical organizations are trained by the MoH and go on to serve as trainers in their individual organizations. The development and implementation of training programmes in each medical institution is assessed as part of the annual evaluation of emergency preparedness described in Section 1 above.

Various studies have shown that active hands-on training is a more effective method for training personnel than classroom learning, so the MoH has initiated clinical training programmes for medical teams with the Israel Center for Medical Simulation. These sessions include treatment

of various casualties such as those sustaining traumatic injuries, victims of chemical agents and patients suffering from communicable diseases. The patients are simulated by sophisticated computerized mannequins and their medical condition can improve or deteriorate according to the treatment administered. Training sessions can take place either in the Israel Center for Medical Simulation facility or in the participants' hospital.

Table-top simulation exercises are also carried out to enable extensive discussion regarding potential scenarios and alternative response models. This training technique is easily designed and implemented; it is efficient and very effective in exposing weaknesses and areas for improvement. Extensive use of the technique is made in Israel among different levels of agencies, from individual hospitals to systemic drills in which various emergency bodies participate.

The SHA also defines the framework and scope of drills carried out each year in the health care system, using different scenarios based on risk assessments and programme priorities. All scenarios are drilled, including conventional and non-conventional hazards. Many of the drills are "surprise" drills, carried out at an unannounced date in order to enable a realistic management of the emergency scenario. The administration of the medical facilities is notified of the quarter in which the drill will be initiated but not the specific month or day, resulting in both an incentive for the medical institution to train their staff and a true evaluation of readiness. Simulated patients are used in drills, usually based on soldiers or students. Each acute care hospital participates in at least one type of drill each year. Evaluations in the drills are completed by personnel from other hospitals (peer assessment) and therefore staff from both hospitals gain experience. At least one regional exercise is conducted each year in which all hospitals, community primary health clinics and public health services participate simultaneously.

Master's programmes in disaster management are delivered by three universities in the country, encompassing different components including emergency management, humanitarian aid, logistics, risk assessment and reduction, search and rescue, assessment of readiness, psychosocial support, quality assurance in emergency response and similar. One university offers postgraduate research degrees in the field of emergency preparedness and response, leading to master's and PhD theses and enriching the body of research in this field. Medical personnel are encouraged to participate in these programmes through eligibility to salary benefits. Experts from the field are frequently involved in these academic activities, enabling mutual collaboration between the two systems. Students are encouraged to conduct field research studies as part of their academic activities, and thus both systems maintain ongoing collaboration.

Most academic institutions that train medical professionals (such as medical and nursing schools) incorporate emergency management courses as a compulsory component of the teaching programme. These courses span from one day to two weeks and hands-on exercises are frequently conducted upon completion. A designated course on MCI management is on the curriculum for emergency medicine technician (paramedic) students at one university and for students of social work (psychosocial support) in another.

### ***Recommendations on health workforce***

The Israeli health care administration considers construction of a trained workforce and maintenance of knowledge and competencies among health care professionals to be one of its major challenges. Extensive efforts are invested in building capacity and sustaining the capabilities of medical personnel to manage emergencies. Considering the complexity of this task and the significant resources invested, the MoH might consider conducting studies to compare and analyse the effectiveness of each component of the training and exercise programmes for capacity building. Such information would facilitate adoption of the most cost-effective methodologies for contribution to retention of knowledge and skills over time.

### 3. Medical supplies, vaccines and technology

Key element 3.1:	Medical supplies and equipment for emergency response operations
Essential attributes:	17. Medical equipment and supplies for prehospital and hospital activities and other public health interventions 18. Pharmaceutical services 19. Laboratory services 20. Blood services

#### ***Medical supplies and pharmaceutical services***

The ability to respond effectively to emergencies relies on early preparedness of medical products, vaccines and technologies to facilitate their effective use for admitting and treating casualties and patients. The MoH determines the standards and scope of essential medical supplies and equipment for emergency operations, based on risk assessment and analysis. Designated committees of experts recommend to the SHA the types and extent of stockpiles deemed necessary to create and maintain an immediate response to potential risks.

The medical equipment, supplies and pharmaceuticals are purchased by the MoH and stored across a wide geographic area in order to enable rapid transport in an emergency to the admitting hospitals. A proportion of the equipment is allocated to hospitals in routine times; it is stored within emergency departments to facilitate an immediate response during an emergency and to expand surge capacity.

The MoH operates several warehouses for buffer and emergency stocks. The stockpiles are monitored on an ongoing basis to ensure appropriate immediate use. Medical supplies are periodically checked and rotated to ensure their use before expiry date, so the inventory is continually resupplied. A guideline has been established and agreements made between the MoH and logistics procurement organizations in order to minimize the need to dispose of items that have expired or are no longer suitable for medical use. A similar system is in place for the stockpiles provided by the MoH that are kept within the hospitals themselves. The MoH conducts annual inspections to verify that the rotation system is maintained and that only products for which there is insufficient use during routine times are returned for disposal.

The stockpiles cover the needs identified by risk and needs assessments, including stocks of antibiotics, antidotes for common hazardous materials, antitoxins, ventilation machines and other life support equipment, disposable equipment, medical and surgical items. Supplies and equipment required in pandemics, including antiviral drugs, personal protective equipment, vaccines, imaging and laboratory equipment are also stocked.

A distribution system, which includes a cold chain, has been created to ensure rapid delivery of supplies and equipment in the event of an emergency. Trucks needed for transporting the equipment are also available, including agreements with outsourcing companies that can provide reinforcement of transportation means.

Updated agreements and procedures have been created to facilitate exceptional procurement of medical supplies that are not stored as part of the regular stockpiles. The MoH operates a national centre for unique drugs that are not frequently used during routine times, and these are made available to medical facilities on a 24/7 basis as the need materializes. There is a mechanism for rapid procurement that enables purchase in cases when necessary supplies are not accessible in the country.



A contingency plan has been created to request reinforcement and/or rapid purchase of vital medical supplies or pharmaceuticals during emergencies. Partnerships have been signed between Israel and several other countries to ensure reciprocal aid in emergencies when equipment might be needed, as well as the mechanism for their transport from the source country to Israel. Contingency plans are also in place to ensure that several local or import companies maintain stocks of materials that can be rapidly manufactured during emergencies to provide additional stocks within a very short period of time.

Procedures for requesting, accepting and collaborating with international donors following an emergency are still being developed. This work is coordinated and led by NEMA and there is a need to complete the guidelines and disseminate knowledge to all relevant stakeholders.

### **Laboratory services**

Essential laboratory supplies and equipment for emergency operations are determined based on risk analyses. A chain of laboratories is available at national, regional and local levels, including referral laboratories for various potential risks. Agreements have been created with laboratories outside Israel for cases in which there is a lack of knowledge in the event of an emergency, including rapid training of local personnel to create capabilities in a very short time span. Sharing of information between laboratories is coordinated by the MoH and thus rapid dissemination of crucial information is ensured.

All laboratory supplies and equipment are periodically tested, both within the institutions and by the MoH. Procedures and mechanisms for exceptional procurement of laboratory supplies and equipment have been created and are tested from time to time.

Protocols for the safe transport of biological and environmental specimens for testing and/or confirming by national and international reference laboratories have been created; these are exercised periodically in national large-scale drills. Collection and shipping follow international standards. All laboratories have updated SOPs for operating during emergencies. These plans and their implementation are evaluated periodically and the staff participate in regional drills conducted as part of the training programme planned and executed by the MoH.

### **Blood services**

The standards for stocks of blood units and blood services have been determined based on risk analyses that take into consideration the potential for different types of emergency – both man-made and natural disasters. The scope of blood units is determined for two main levels: stocks maintained in each individual hospital and national stock stored in two main locations in the country, operated by the national blood bank run by MDA (the national EMS). The stocks of blood supplies are monitored continually and a daily report is distributed to the MoH.

Potential donors, especially organized units of both civilians and military personnel, have been identified and agreements created to facilitate rapid and exceptional collection of blood in times of need. Professional blood collectors have been trained, equipped and drilled; transportation, storage and distribution means have been prepared; and a mechanism for central control of blood collection, examination, sorting and distribution has been developed. Rigid safety procedures are maintained for treatment of blood and blood products, based on established guidelines.

The MoH maintains a stockpile of supplies and equipment to expand the capacity of both the national blood bank and local blood services. During emergencies, within the framework of the national operations centre, a blood forum is operated to monitor the stocks of blood units and products continuously and to prioritize their use. International agreements are in place with several international partners, ensuring the potential to receive external assistance at times of shortage. In

addition, to prevent blood shortages, alternative sheltered locations for the operation of the national blood bank have been identified.

**Recommendations on medical products, vaccines and technology**

Policies and regulations regarding receipt of international assistance and coordination with agencies that might be supportive in providing medical products, vaccines or equipment should be institutionalized.

**4. Health information**

Key element 4.1:	Information management systems for risk reduction and emergency preparedness programmes
Essential attributes:	21. Information system for risk assessment and emergency preparedness planning 22. National health information system 23. National and international information-sharing 24. Surveillance systems

**Risk assessment processes**

The national assessment of risk is an ongoing process which is conducted by three main bodies.

NEMA is responsible for preparing a national risk profile of security issues that might occur during peace or war times – both conventional and CBRN events. The results of the risk assessment are distributed to all government ministries, which are then required to prepare a sectoral risk assessment report aligned with the overall national programme, covering areas that are under their responsibility. The preparation of the national risk profile is performed by system analysis professionals, based on protocols and procedures developed to ensure in-depth collection and management of relevant information from numerous sources. The profile is reviewed periodically and updated as needed, in accordance with changes in the region.

The National Inter-Ministerial Committee for Earthquake Preparedness was given responsibility for preparing a national risk profile of natural disasters focusing on earthquakes, which are considered to be the most likely threat (among natural causes) to Israel. In order to do so, information from various sources was collected and analysed and the national risk defined, including references to forecasted casualties, damage to infrastructure, implications for the population, and so on. The risk assessment was formally adopted by the government and disseminated to all ministries to serve as the basis for developing a response. Discussions are currently taking place regarding the appropriateness of the risk profile: various experts have expressed their view that with the advancement of risk assessment methodologies, as well as lessons learned from earthquakes in different parts of the world and in the region, it may be that the present profile is too severe. As a result, the national risk profile for earthquakes is undergoing a process of re-evaluation.

The MoH is responsible for preparing a national risk profile of communicable and infectious diseases. This process is performed by experts from the MoH, advised by the epidemiological management team that serves as a professional advisory committee for the MoH and SHA, to prepare for and respond to exceptional biological events. The national risk profile for pandemics is prepared based on international models that were developed to take into consideration the population, mortality and morbidity rates, recovery and hospitalization rates, as well as additional relevant parameters. The risk assessment is disseminated to all medical institutions and relevant stakeholders and serves as a basis for building the national as well as institutional preparedness and response plans.

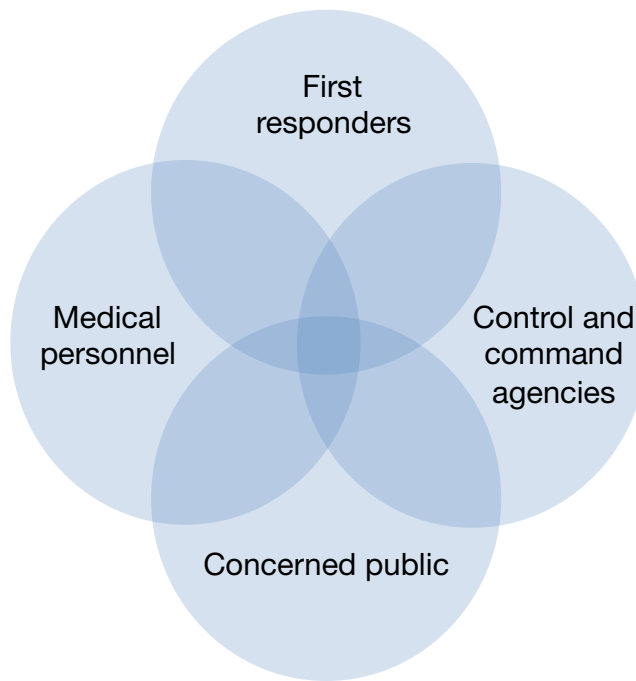


Overall coordination of risk assessments, national risk profiles and emergency preparedness planning is conducted by NEMA, which also prepares annual reports on the activities implemented by all agencies as part of emergency management programmes.

### **Information systems and information-sharing**

Several information systems have been developed and implemented in order to provide aggregated as well as disaggregated data for health managers. These systems are targeted to provide necessary information to the different entities involved in disaster management (see Fig. 8).

**Fig. 8. Target clients of information systems**



There are six key information systems.

### **EMS information support system**

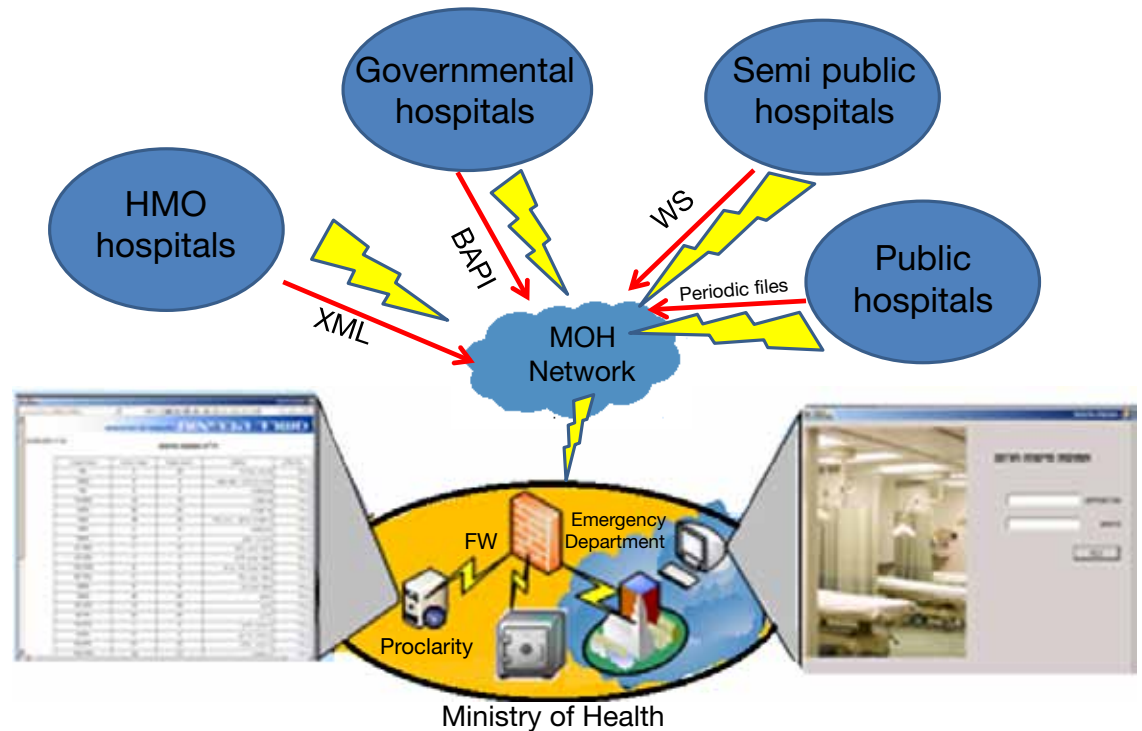
In order to provide optimal control to ambulances and mobile intensive care units, MDA operates a computerized command and control system that directs its fleet by means of satellite guidance. The ambulances' locations are monitored through a global positioning system (GPS) and the information is centralized in the EMS support system. This enables the dispatching centre to send out the nearest vehicle to the site of the incident and even direct the ambulance driver to the exact location while he is driving to the scene, thereby saving precious time. Incoming calls received in the local and regional dispatch centres are automatically connected to the system. All data concerning the event, such as extent of casualties; type of injuries; arrival of first responders on site according to time frames; availability of resources including evacuation vehicles, medical teams and equipment; accessible evacuation routes to the site of the event and to admitting hospitals; and evacuation destinations are integrated in the system, which is managed by the MDA dispatch and operations centre. Both the national operations centre and regional/local dispatch centres can access the information and accordingly use crucial resources effectively.

### **Admission Transfer and Discharge (ATD) system**

Effective management of the health care system during emergencies necessitates a real-time continuous flow of information on hospital capability and capacity to decision-makers. To facilitate

this, the ATD systems of all acute care hospitals in the country have been programmed to enable immediate operation of emergency mode upon notification of an emergency event or admittance of the first casualty. The systems are interfaced to the server of the MoH and specific data regarding occupancy of emergency departments and hospital beds are transferred online and can be accessed by the MoH (see Fig. 9).

**Fig. 9. Structure of ATD system: hospitalization data and admittance to emergency departments**



The system can receive information regarding unidentified as well as identified patients (registered according to casualty identity number or social security number). Management reports on surge capacity, occupancy levels, trends and gaps can also be monitored immediately (see Fig. 10).

**Web-based daily reports on critical services**

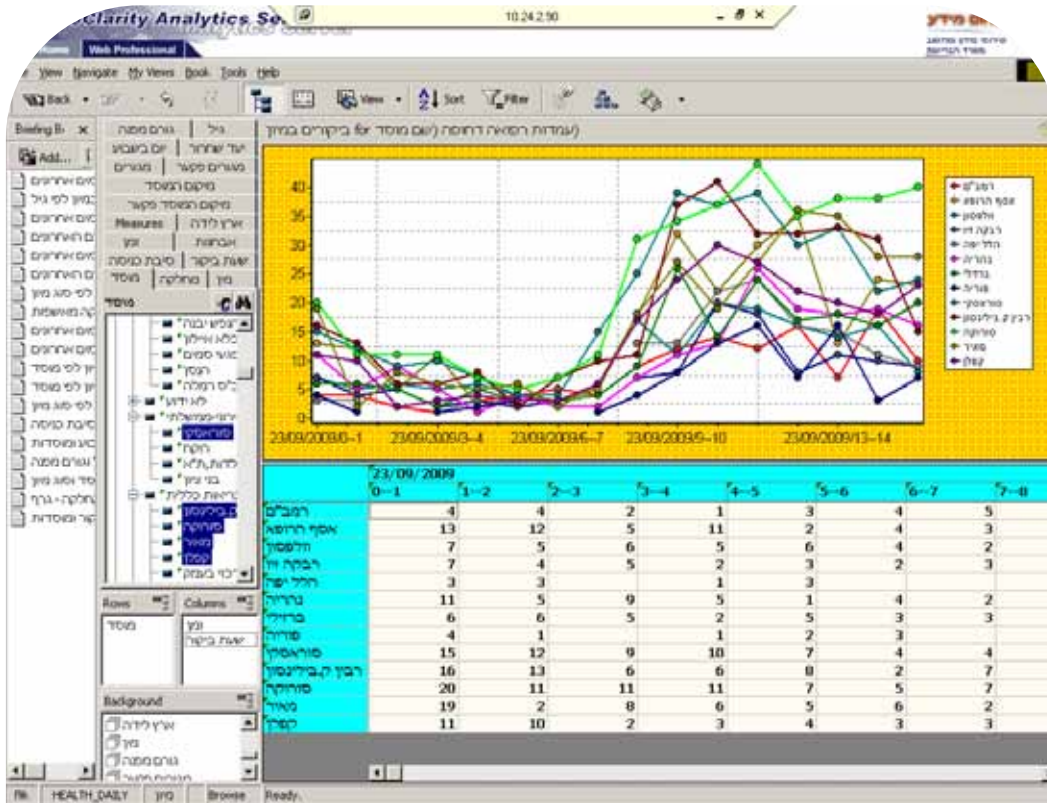
The online ATD systems do not include information on some critical infrastructure, so an additional web-based computerized system has been developed and is operational. The system is installed in all acute care hospitals, the MoH and the HFC. It incorporates information on ventilation capabilities, including the number of existing and available ventilation machines; number of patients ventilated within and outside intensive care units; surge capacity and occupancy levels of operating rooms; shortages of critical equipment; and manpower. At routine times, the information is relayed once a day, focusing mainly on bed occupancy of critical beds, ventilated patients and capabilities. During emergencies, the frequency increases to two or more daily reports. The information reported by hospitals is monitored by the management as well as by the operations centres of the MoH and the HFC.

**Report system for monitoring infectious diseases (RSMID)**

The MoH defines some infectious diseases as notifiable and updates the list of these periodically: at present there are approximately 60 diseases on this list. In compliance with this regulation,

primary care physicians, hospitals and laboratories report cases to the district health office. Each district health office submits computerized notification to the Epidemiology Division at the MoH. The RSMID computerized system was developed to facilitate national monitoring of such patients.

**Fig. 10. Management reports on trends in hospital bed occupancy (screen)**



**Geographic information system (GIS)**

A GIS is in place to enable continuous surveillance of available medical facilities. The system includes mapping of medical institutions and other relevant agencies and is targeted to provide information regarding the availability of medical and sanitation systems (i.e. water and sewerage infrastructures). The system has an automatic interface with the RSMID system, and once a week the data reported to the RSMID system are automatically transmitted to the GIS, facilitating detection and monitoring of patients according to risk areas. Although plans are in place, at present the system does not have the capacity to be used to monitor the spread of infectious diseases or follow-up of patients and suspected contacts. The system is also not yet able to be used for epidemiological investigations conducted by MoH staff.

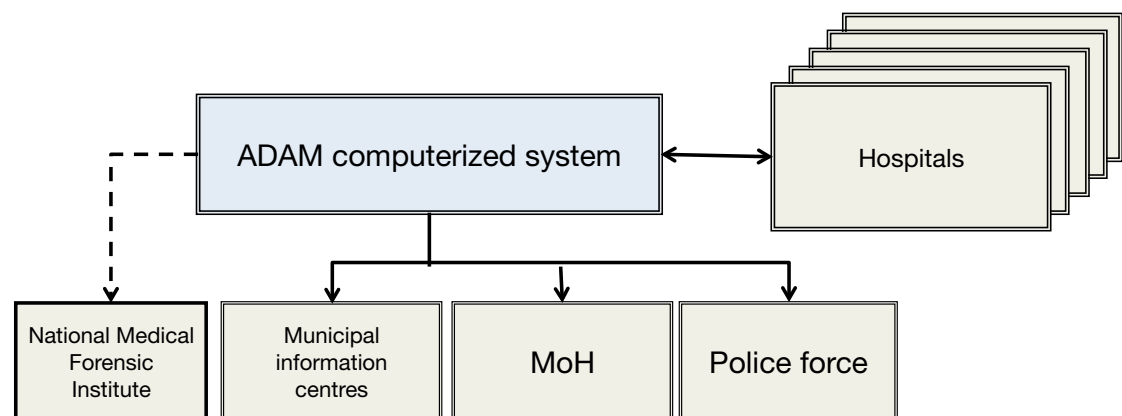
**ADAM information system**

Information available to the public on the whereabouts of casualties is a significant component of managing an emergency. In order to identify the location of each patient rapidly and to ensure accessibility of the information to the public, the MoH has developed a central information system called ADAM (“person” in Hebrew), which connects the information centres of all acute care hospitals (22). Immediately the patient is registered in the hospital, data on demographic information, severity of injury and location of the patient are automatically transferred to the ADAM system from the ATD hospital system. In the case of unidentified casualties, descriptive information – such as hair colour, eye colour, height and estimated age – is integrated into the system. Representatives of the information centres in all hospitals can access the information immediately and accordingly refer family members looking for relatives to the hospital in which the patient

is being treated. Information is also transmitted to the police force and the local municipality's emergency situation hub (see Fig. 11). In order to prevent a collapse of communication lines caused by an influx of calls, designated lines have been installed in the information centres and their numbers are publicly announced through the media in the event of an MCI. This system has been operated many times in the past decade and has proved effective.

Israel had to put in place some minor adaptations in order to implement the principles of IHR concerning reporting and communication. The system has now been tested and validated during outbreaks of avian flu, pandemic flu and others. A paragraph covering surveillance and communication with the IHR is an integral part of emergency SOPs, reports from points of entry and public health services. This has been reviewed several times during drills and table-top exercises.

**Fig. 11. Structure of ADAM system**



### **Surveillance systems**

There are two major national surveillance systems.

#### **Medical information support system for infectious disease outbreak of non-conventional origin (MISSION)**

MISSION was developed to facilitate surveillance for infectious diseases and is operated by the Israel Center for Disease Control (ICDC). The system is kept updated continuously, and analysis of the data is conducted on demand. MISSION is used to evaluate unusual events reported by physicians; for early detection and monitoring of influenza activity; to support epidemiological investigations; and to respond to reports of apparent or suspected clusters of disease. Following the detection of an outbreak, the system is used to provide early central identification of the outbreak, delineate the affected area, monitor the spread of the outbreak and provide information needed for risk communication.

MISSION accumulates information from numerous data sources on patient visits to community primary health services with flu-like illnesses or pneumonia; admissions to emergency departments; bed occupancy and use of ventilators; overall mortality in the community; and specific mortality from influenza and pneumonia. A sentinel network is in place for community clinics and hospitals to facilitate isolation of influenza viruses and this is also incorporated into comprehensive medical information support systems.

The head of the ICDC and representatives of veterinary, agricultural and environmental health services are all members of the epidemiological management team and collaborate through

exchange of information to enhance capability for rapid and effective detection and identification of a biological event.

**National trauma registry**

At present, nineteen hospitals participate in the national trauma registry, including all six level 1 trauma centres. Data are collected in each of the hospitals by trauma registrars and monitored by trauma coordinators, then entered into a computerized system and transmitted to a central database. The registry includes all casualties with traumatic injuries who have been hospitalized or died in the emergency department. The information collected includes demographic data, details of the external cause of the injury as well as type and severity, treatments administered, diagnostic and surgical procedures, length of stay, and outcome. Analysed information is disseminated to many users and decision-makers, including government ministries, hospitals and the National Road Authority, as well as to international organizations such as WHO, the Center for Disease Control and Prevention and additional agencies. A national report is issued every two to three years, distributed widely to decision-makers, academic libraries and other organizations interested in the impact of trauma injuries. An annual report is distributed to the reporting hospitals, presenting their data compared to the average at other medical facilities (23).

Key element 4.2:	Information management systems for emergency response and recovery
Essential attributes:	25. Rapid health needs assessment 26. Multisectoral initial rapid assessment (IRA) 27. Emergency reporting system

**Health needs assessment**

The mechanisms for carrying out IRAs of health needs in Israel are set up in accordance with guidelines and tools developed by the Red Cross, and have been implemented at both national and regional levels, coordinated by NEMA. Several national disaster response team courses have been implemented by MDA, which is the formal national Red Cross society, in collaboration with the MoH. Designated MDA staff have been trained to conduct comprehensive IRAs. In order to ensure the involvement of health care personnel in the process of IRA implementation, medical staff from the health funds, public health services, MoH and local councils participated in several courses focusing on medical aspects of the assessment process. To enhance the perception that effective emergency response can require both regional and cross-border collaboration, teams from both Israel and some of its neighbouring countries have participated in joint IRA training.

**Emergency reporting system**

NEMA is responsible for national coordination of emergency response and recovery processes, and for identifying and prioritizing resources to implement actions based on the results of IRAs. NEMA collates reports of the IRAs conducted by all teams and initiates response and recovery procedures on this basis. NEMA, in collaboration with the HFC, is responsible for issuing alerts to citizens, legal entities, administrative bodies, rescue services and other civil protection forces regarding risks and hazards. It also coordinates decision-making and information-sharing on IRAs.

Key element 4.3:	Risk communication
Essential attributes:	28. Strategies for risk communication with the public and the media 29. Strategies for risk communication with staff involved in emergency operations

### ***Risk communication with the public***

Risk communication strategies in Israel are based on ongoing risk assessment processes that encompass three main phases:

- pre-emergency time – provision of information targeted to increase population and community resilience and preparedness;
- during the emergency – provision of information to facilitate effective behaviour and strengthen the coping mechanisms of the population;
- following the emergency – provision of information to strengthen the process of recovery and rehabilitation.

Risk communication is coordinated by NEMA, in collaboration with the HFC and the IDF spokesperson, in order to facilitate uniformity and consistency of messages. All the relevant agencies assign and train spokespeople, mostly at the national level.

Several channels have been identified for the dissemination of information.

- Two major television broadcasting stations – the HFC assigns experts to appear on television and disseminate information that interests and/or is important to the public in times of emergency through agreements in place with the most popular stations. Designated officials proficient in the art of risk communication during conflicts have been identified and trained to act as official spokespeople in times of emergency, and they convey the information several times a day through these two channels.
- Official internet sites of formal bodies – the HFC, NEMA, government ministries including the MoH and additional formal bodies use their organizational web sites to upload relevant information and answers to frequently asked questions to enable the general population to access information concerning the emergency.
- The HFC information centre – the HFC operates a national information centre, staffed 24/7 by trained personnel to relay requested information to the public. The centre's contact details are widely publicized to ensure accessibility to all residents.
- Information centres of local municipalities – the major city councils operate information centres based on routine municipal call centres to disseminate essential information to the public, and maintain availability to respond to queries from the population.
- Information centres operated by the health funds – these are targeted to update the population on the availability of medical services and mechanisms to access medical assistance when required. They are based on call centres routinely operated by the health funds.

In order to ensure consistency of messages, the spokespeople of all emergency entities are briefed and coordinated by NEMA. Efforts are being invested in each institution to have one spokesperson whenever possible to ensure uniformity. Telecommunications equipment is prepared and its



survivability during emergencies promoted through a process of prioritization. These systems have been used in numerous emergencies and have proved to be effective and highly resilient.

Communication strategies include procedures targeted at minority and vulnerable populations; for example, the information broadcast is simultaneously translated to sign language so that it can be accessed by those suffering from hearing impairment. Public messages are also published in several common languages including Hebrew, Russian, Arabic and Amharic.

**Risk communication with staff**

The components of a risk communication strategy for health care staff are in place, including predefined coordination mechanisms, dissemination procedures, trained spokespeople and telecommunication equipment.

A periodic meeting of senior directors focusing on risk communication for first responders and other emergency organizations is conducted and its outputs are used to update and/or modify the strategy as needed.

A plan to operate a national information centre for medical professionals is in place and has been trained for and operated in real situations, to relay required information to health care responders.

**Recommendations on health information**

Several entities are involved in the risk assessment and risk reduction processes. Consideration might be given to nominating an entity to be responsible for overall coordination of the risk analysis for different types of emergency (man-made threats, natural disasters and infectious diseases) as well as development of preparedness and response plans. As such, the re-evaluation of the risk assessment of earthquakes might be extended to a comprehensive evaluation of all potential natural disaster risks relevant in the region.

The information systems already in place are comprehensive and cover many areas relevant to disaster preparedness and response. Nevertheless, in order to ensure their effective functioning during emergencies, it is recommended that all components of the web-based daily report on critical services be reported on a regular basis, to ensure familiarity among staff with both the accumulation and the reporting mechanisms.

Preparation of a cadre of risk communication experts to be activated during emergencies is highly recommended for all types of emergency, similar to the existing preparedness for security-related emergency scenarios.

**5. Health financing**

<b>Key element 5.1:</b>	<b>National and subnational strategies for financing health-sector emergency management</b>
Essential attributes:	30. Multisectoral mechanisms of financing emergency preparedness and management 31. Health-sector financing mechanisms

**Strategies for financing health-sector emergency management**

The funds for multisectoral preparedness for and management of emergencies are allocated by each government ministry, coordinated and monitored by the Ministry of Finance and the Office of the Prime Minister.

The MoH in general and the EDMD specifically are allocated funding targeted at promoting emergency preparedness from three main sources.

- An annual amount is allocated from the MoH's budget to the EDMD. This covers both ongoing operational costs and projects implemented to improve the level of preparedness of the Israeli health care system for emergencies. The SHA sets the priorities for implementation of the various projects.
- The Ministry of Defense allocates funds to the MoH targeted at creating and maintaining preparedness for non-conventional (CBRN) emergency scenarios.
- The National Inter-Ministerial Committee for Earthquake Preparedness allocates funds to the MoH to promote preparedness of the health care system for earthquakes.

The health-sector financing mechanisms include a budget for a risk reduction programme. The funds allocated to the MoH are prioritized according to the needs of all health care institutions, regardless of their ownership (government, health fund, public or private). All hospitals and community primary care facilities operate under the responsibility and coordination of the MoH for emergency preparedness and response, so their needs for emergency preparedness are financed by this ministry. Existing and developing needs are reviewed every year, and the long-term plan is accordingly modified and approved.

The funds allocated to medical institutions are targeted to cover all components of emergency preparedness, including:

- installation of structural and non-structural protection measures;
- construction of necessary infrastructure such as decontamination sites for non-conventional events, helipads, water reservoirs, oxygen tanks, and so on;
- procurement of medical and other equipment required to expand surge capacity;
- initiation and implementation of training and education programmes and exercises.

In times of emergency there is a mechanism for contingency funding that facilitates the rapid allocation of funds necessary for immediate implementation of activities that elevate emergency management. This mechanism has proved effective in various emergencies, such as the Lebanon crisis (2006) and the Gaza conflict (2008-2009) when it was used for rapid strengthening of medical facilities' shelters and protective measures, and during the H1N1 pandemic when it was used for purchasing vaccines.

In order to facilitate rapid funding during emergencies, a contingency plan was established by the MoH including a list of gaps and prioritized requirements. This comprehensive plan was presented to the Ministries of Finance and Defense in 2009, and serves as a "shelf plan" to be activated at times of need. Communication and coordination mechanisms are in place to allow direct access of the directors of the MoH to senior government decision-makers, including those in the Office of the Prime Minister.

National financing mechanisms have been established for rapid reimbursement and financing in case of loss or damage to facilities, both private and public.

### ***Recommendations on health financing***

The government of Israel is highly committed to emergency preparedness and response, and this is clearly displayed by the allocation of substantial funding to promote readiness for various risks.



Nevertheless, economic constraints are expected to impact on this domain, resulting in a continual decrease in funds. It is therefore recommended that mechanisms be found to ensure funding for research, and that sustainability, cost-effectiveness and different alternatives for stockpiling be proposed as research areas.

## 6. Service delivery

Key element 6.1:	Response capacity and capability
Essential attributes:	32. Subnational health-sector emergency response plans 33. Surge capacity for subnational health-sector response

### ***Subnational response plans***

At the national level, health care system emergency preparedness is controlled and coordinated under the authority of the MoH. As a result, preparedness of the various agencies that make up the subnational health sector is generic, and similar preparedness measures are clearly visible among the different agencies. Subnational emergency response plans are in place in all health care facilities, including the EMS, health funds, district health offices and hospitals. All are based on the national policy developed and disseminated by the MoH. The plans clearly define the mechanisms for activation, coordination, command and control; delineate the available resources that will be deployed to provide the emergency response; and are continuously updated. They are evaluated periodically by the MoH, which conducts routine assessments of the emergency preparedness of all health care institutions for emergencies. They are also tested in local, regional and national exercises initiated and implemented by the MoH.

The lessons learned in all institutions are reported to the MoH and are then disseminated to all relevant institutions, either by direct correspondence or via the web site. Based on these findings, national policies and SOPs are modified and disseminated to the key stakeholders. Comprehensive lessons were learned in the last decade, resulting from the activation and operation of the health care system during the numerous MCIs and emergency situations in Israel. Following these emergency scenarios, structured AARs were conducted and advisory ad-hoc committees studied the details and recommended modifications where necessary. The SHA was presented with this evidence and, following its approval, the modifications were implemented.

### ***Surge capacity***

Expansion of EMS capacity is achieved via an automatic response from neighbouring districts, which send two basic life support ambulances and one acute life support ambulance to an event immediately upon declaration of an MCI, even before a request is made. Following a needs assessment, MDA's district operations centre activates additional evacuation resources. Another method of expanding EMS surge capacity is the allocation of ambulances to off-duty staff; thus, when they report to a scene during an emergency, they are already equipped with evacuation resources needed to manage the event. Motorcycles are allocated to EMS personnel for their personal use, and these are used to ensure rapid arrival at the scene. Equipment parcels are allocated to medical personnel to be stored in their cars so that they can be used when needed.

Expansion of surge capacity of hospitals is achieved through pre-designation of admitting sites outside emergency departments, which are equipped with the necessary infrastructure and equipment; plans for rapid evacuation of the emergency department; storing of reinforcing equipment such as personal protection equipment, ventilation machines and other life-saving equipment in close proximity of the admitting sites; preparedness of pager systems for the rapid summoning of personnel; and activation of an operations centre that manages and controls effective utilization of resources and provision of assistance to overcome shortages. All hospitals in

Israel maintain a surge capacity for MCIs of 20% of their routine bed capacity, of which two-thirds are for light casualties and one-third for severe and moderate casualties. Plans for surge capacity for ongoing emergencies such as conflicts or pandemic situations are also in place, allowing for an expansion of hospitalization capacity by up to 60% of routine capacity, which is achieved through preparation of dining rooms, halls and other spaces as admittance and hospitalization sites.

In order to facilitate surge capacity for different emergency situations, the MoH has purchased the necessary equipment and materials to reinforce crucial resources, and has developed the following mechanisms for their rapid mobilization:

- allocation of resources to medical facilities in routine times to ensure immediate availability for use during an emergency;
- storing resources within warehouses located in the medical facilities themselves, and approving their use during an emergency;
- maintaining stockpiles in regional warehouses operated by the MoH, which can be distributed very rapidly to the facilities requiring reinforcement in an emergency.

These buffer stocks include essential medicines and medical supplies, personal protective equipment, laboratory consumables, life-saving machines, and so on. The MoH also has the jurisdiction and capability to mobilize personnel rapidly from one facility to another, or to direct secondary relocation of patients from facilities with high occupancy levels to those with more capacity.

There is close collaboration between the civilian and the military medical systems. The IDF has a fully equipped field hospital that can be made available if needed. Aerial evacuation of casualties is provided by the Air Force: both evacuation of casualties from the scene to hospitals and secondary relocation of patients between hospitals.

Hospital networking is maintained continuously, through joint information-sharing as well as coordination of the MoH and the HFC.

Dispatching patients to other countries has not been considered necessary, though some agreements have been made that facilitate collaboration during emergencies. Implementation of such collaborative measures during emergencies, if needed, would most probably be made by the government, NEMA and/or the Ministry of Foreign Affairs.

Key element 6.2:	EMS system and mass casualty management
Essential attributes:	34. Management of prehospital medical operations 35. Management of situations involving mass fatalities and missing persons 36. Capacity for mass casualty management

***Prehospital medical operations***

The Israeli Police Force is the agency responsible for commanding and controlling the site of an MCI. According to the 2005 modification of the Police Ordinance, the force is authorized to command and coordinate all emergency operations on site, including the activities of first responders. The first responders deployed on the scene of an emergency – including police, EMS, search and rescue, military forces (if activated) and environmental protection agency – work in a coordinated manner to provide a comprehensive and effective response.

EMS services in Israel are provided by MDA, which is the major medical organization on site and therefore, in most cases, manages medical activities at the scene. Military medical agencies as well as private ambulances may join MDA to assist in managing the situation. The senior MDA official present on site is the commander of all medical forces operating at the site of the event. In order to assist in coping with emergencies, the Director-General of the MoH has authorized the Chief Medical Officer of the HFC to alert hospitals during MCIs and to coordinate secondary relocation of casualties from one hospital to another.

A standardized triage system is in place for both MCIs and mega-MCIs (events with more than 500 casualties), as well as for non-conventional scenarios. All MDA personnel and volunteers are trained and drilled in using the triage systems. They are also provided with a pocket instruction manual that depicts the triage algorithms that should be used in the different events.

Operations centres to monitor and command activities during emergencies are run by various organizations.

- MDA operates 24/7 district and national operations centres to control evacuation resources, define evacuation destinations and inform hospitals regarding patients that are referred to them.
- The HFC operates a 24/7 control centre to facilitate transfer of information to regional hospitals and MoH.
- A national medical operations centre is activated by the MoH within 30 minutes of the onset of an emergency and is then operated continuously until the emergency has subsided, to monitor the control and command of medical operations and supply logistics support to all admitting medical organizations.
- Admitting hospitals operate an operations centre to manage hospitals' emergency response, assimilate information regarding the status of treating the patients and manage communication with external bodies.

Preparedness for prehospital management of patients with epidemic diseases and victims of chemical, biological and radiological incidents has been developed. Policies and SOPs are in place and coordination between the different agencies has been set to ensure a joint response. Periodic training programmes and drills are conducted, including all-inclusive, cross-organizational national exercises.

### ***Management of mass fatalities and missing persons***

The system for managing situations resulting in mass fatalities and missing persons is adequate, and the role of the different agencies involved has been defined. Mechanisms for identifying victims have been developed and include several elements such as collection of personal goods to facilitate the identification process; photographing all casualties upon arrival at hospitals or the forensic institute with a digital camera; and forensic measures. Responsibility for identification of all victims and missing persons comes under the jurisdiction of the police, as does informing the public about the dead. The National Forensic Institute, operated jointly by the Ministry of Internal Security and MoH, is equipped and prepared to carry out the task of casualty identification. As the National Forensic Institute has only limited capacity to store corpses, additional storage spaces have been identified in different locations.

Designated identification teams have been trained by the police to assist in the identification process during emergencies. The identification teams are augmented by a special volunteer agency, ZAKA, whose members are trained and have extensive experience of collecting the

remains of victims during emergencies. The identification teams can also be deployed to assist in international disasters, should they be needed, as was the case following the 2004 tsunami.

**Mass casualty management**

The health system’s capacity and capability for response to MCIs and other similar crises are very well developed and have frequently been tested in both exercises and real events. Strategic planning for such major incidents is the responsibility of the MoH, which can activate the system and provide coordinated surge capacity by deploying MDA, and, if necessary, military reinforcement.

MDA has effective plans for dispatch, on-site management, transportation and evacuation adaptable to various emergency scenarios (24). These plans include the simultaneous management of day-to-day medical needs, in parallel with emergency management, through allocation of designated personnel and communication lines (during the event itself). MDA operates local, regional and national operations centres that can immediately deploy reinforcement of resources to the affected area. Joint communication means are operated that enable information-sharing and, based on the situation report disseminated, effective utilization of available resources can be implemented rapidly.

All acute care hospitals are equipped with large quantities of equipment for resuscitation and life-saving procedures to facilitate surge capacity to admit mass casualties evacuated by bystanders or EMS.

The role of the EMS system in identifying and reporting unusual public health events has been defined. The MoH develops and disseminates national policies for potential emergency scenarios, and accordingly, coordinates the institutional SOPs prepared by the different components of the emergency management system. All medical and interface agencies – including the EMS, police and hospitals – participate in joint district exercises that include preparatory table-top exercises and full-scale drills. As a result of these measures, the level of coordination between agencies is very high.

Key element 6.3:	Management of hospitals in MCIs
Essential attributes:	37. Hospital emergency preparedness programme 38. Hospital plans for emergency response and recovery

**Hospital emergency plans**

Israel maintains a national trauma system that consists of six level 1 trauma centres spread across the country and fifteen level 2 trauma centres, while the remaining acute care hospitals also maintain trauma capabilities. A national trauma plan is in place, defining care of the various injured patients; protocols for casualty evacuation; locations and capabilities of all hospitals; and priorities for rehabilitation. One element that has been recognized as needing improvement is the capacity to treat burns victims.

The components of an emergency preparedness and response programme – including planning, training, exercises, information management and communication, and development of response and contingency plans – exist in all acute care hospitals. Ensuring the creation and sustainability of emergency preparedness in all the hospitals is the responsibility of the MoH; therefore the EDMD constantly monitors the level of preparedness of all hospitals and ensures that they maintain state-of-the-art readiness for all potential emergencies.

All hospitals have assigned emergency committees consisting of physicians, nurses and administrative and support staff, whose responsibility it is to create and monitor institutional capacity for emergency preparedness and response. They each also have an official who is in charge of emergency preparedness and response. At most hospitals the members of the emergency committee and the official in charge of overall preparedness are not performing these duties full-time, but do so as a task additional to their routine position.

Funds allocated to building emergency preparedness are allocated from two main sources.

- Activities and resources needed to maintain MCI preparedness are mostly funded by the institutions themselves, and are considered to be covered by the payments made for hospitalization of patients.
- Activities and resources needed to create and maintain preparedness for all other types of emergency scenarios are funded by the MoH; these funds are allocated to all acute care hospitals, regardless of their ownership (public or private).

Health facilities are periodically evaluated by an assessment team from the MoH and the HFC. The findings of these evaluations are disseminated to the senior management of the MoH, who conduct ongoing monitoring of the correction of gaps found in the evaluations, to ensure a continual process of improvement. The evaluations are aimed at encouraging ongoing improvement of emergency preparedness and response, by identifying elements that should be improved and monitoring the effective implementation of lessons learned. Evaluations encompass all elements relevant to emergency preparedness including policies, SOPs, infrastructure and equipment, knowledge and capabilities of staff, training and drills. Although the hospital receives a grade that reflects its level of preparedness and response to emergencies, this element does not constitute a formal requirement for accreditation.

The structural, non-structural and functional safety of hospitals are assessed by the MoH in coordination with the HFC. A long-term plan has been set to improve hospital safety, and strengthening of structural and non-structural elements in numerous hospitals has been implemented as part of this plan. Construction is being implemented in several hospitals at present, targeted to expand sheltered spaces significantly. For example, one of the country's level 1 medical centres is constructing a new building that will include 2000 underground sheltered beds. Nevertheless, many hospitals still do not have all the necessary protective measures in place to ensure proper functioning during either armed conflicts or natural disasters.

### ***Continuity of essential health programmes and services***

The SOPs in place in hospitals and other medical facilities pertain to the need to deploy organizational teams as assessors of structural, non-structural and functional safety following any emergency incident. These teams are built around logistics and engineering professionals employed in the different health care facilities. However, many of these professionals have not been trained specifically for this mission and may find it challenging.

Procedures are in place to ensure back-up of critical resources in all acute care hospitals. There are reservoirs of water, generators, stockpiles of gas and other crucial resources in all facilities, as well as in regional and national locations. In addition, all vital elements are controlled and coordinated in emergencies by NEMA, which can prioritize their allocation to all vital facilities, especially hospitals. The MoH is a member of the highest authority in NEMA and can represent the needs of the different medical facilities. All hospitals and other medical facilities, as well as the companies that provide services to facilitate their ongoing function, have been formally recognized and accredited as "vital facilities"; they are thus accorded high priority for reinforcement of all vital elements that might not

be sufficient in an emergency. Taking into consideration the sheltered infrastructure available in each facility, regional and national plans have been developed to identify potential gaps and ensure their provision through alternative facilities.

Key element 6.4:	Continuity of essential health programmes and services
Essential attributes:	39. Continuous delivery of essential health and hospital services 40. Prevention and control of communicable diseases and immunization 41. Mother and child health care and reproductive health 42. Mental health and psychosocial support 43. Environmental health 44. Chronic and noncommunicable diseases 45. Nutrition and food safety 46. Primary health care 47. Health services for displaced populations

Local health administrations, coordinated and professionally directed by the MoH, deploy teams to assess water quality, sanitation and the risk of communicable diseases during emergencies. Mechanisms have been developed to ensure availability of adequate amounts of safe water for both service providers and the affected population. A National Water Committee monitors preparedness, and controls and prioritizes water utilization during disasters. Procedures are in place for the safe disposal of medical and non-medical waste in disasters.

The surveillance systems operated during routine times continue to function in crises. SOPs are in place to facilitate their reinforcement following detection that an irregular event is occurring. Special immunization programmes have been developed and approved by national authorities, ensuring capacity for rapid immunization of the total Israeli population within four days, should the need arise. Military-civilian collaboration is required to facilitate this mission, and the required mechanisms, equipment, procedures and training programmes have been developed.

The public health laboratories have the capacity to provide laboratory support through their national stations and can also be reinforced by several hospital-based laboratories, to ensure ongoing hospital continuity.

Mechanisms have been developed to provide continued delivery of core components of reproductive health programmes, including delivery of care for newborn and obstetric patients in emergencies.

Mental health and psychosocial support mechanisms for emergencies have been developed based on community services supported by national reinforcements. As part of the plan, resilience programmes are operated in routine times in many of the local municipalities, and are augmented during emergencies by pre-designed acute stress reaction centres spread throughout the country.

Access to primary health care as well as essential medicines and medical services during emergencies has been ensured via coordination of the MoH. The health funds provide these services and medicines for all patients during emergencies, regardless of their insurance status (each resident in Israel belongs to one of the four health funds and usually receives medical care from the same insurer). All clinics operate as unified medical facilities, providing care to all patients. This is targeted to provide greater flexibility so that each individual can access care from the facility that is most accessible during an emergency.

Regular food supplies may be impaired during emergencies, due to transportation problems, people being afraid to come out of sheltered surroundings or temporary lack of services by the regular providers. As a result the MoH, in collaboration with local councils, has developed a designated procedure to ensure provision of food supply under supervision of safety conditions.

Management of lifelines (shelter, food and water) for internally displaced or other crisis-affected populations is the responsibility of NEMA and the local councils. The MoH and district health authorities collaborate with NEMA to provide public health services, and the regional services of the health funds provide necessary primary health services. A mechanism is in place to deploy mobile or temporary teams to send crucial medical services to the location of the displaced population. The district health authorities are also responsible for ongoing monitoring of population health status, as well as for ensuring adequate sanitary and personal hygiene facilities in the temporary settlement.

Key element 6.5:	Logistics and operational support functions in emergencies
Essential attributes:	48. Emergency telecommunications 49. Temporary health facilities 50. Logistics 51. Service delivery support function

**Logistics and operational support functions**

Rapid transmission of information in emergencies enables rapid preparedness of essential resources. Several joint communication systems have therefore been installed to facilitate ongoing data transfer during the management of MCIs:

- SAVE network, which is a designated point-to-point line connecting all first responders including the police, fire brigades and MDA;
- radio communication, which connects all general hospitals, the HFC, MDA, the Air Force and the Medical Corps;
- designated point-to-point telephone lines and radio equipment, installed between the MDA district operations centres and emergency departments of general hospitals;
- satellite telephones, allocated to all hospitals, the HFC and MDA to be used in case of the collapse of alternative communication lines;
- pager systems, installed in the MoH operations centres and in all emergency departments of acute care hospitals, enabling the transfer of information from MDA upon occurrence of an emergency.

Staff of the various emergency organizations are trained in the use of these telecommunications to ensure adequate use during emergencies.

Guidelines and procedures exist for the establishment of temporary health facilities, but the MoH's view is that these will not be required for deployment since, based on risk assessments, measures have been implemented to expand surge capacity of the regular facilities. If necessary, the national stockpiles in place for use in events requiring reinforcement of existing facilities could be used to deploy temporary health facilities.

Deployment of a field hospital is planned and prepared for by the IDF: capacity and capability have been fully prepared and all required logistics and resources for its independent utilization are in



place. The utility of such a field hospital has been displayed in several humanitarian aid missions, including that following the 2010 Haiti earthquake.

Emergency logistics and support functions have been set and are available. NEMA and the different ministries, including the MoH in collaboration with the IDF, can provide well-equipped back-up services. The logistics system in place includes tracking, monitoring and reporting of components, and routine evaluations are conducted by the MoH to ensure that health care staff are trained in the use of the logistics systems in emergencies. Logistics support and resources can be reinforced during emergencies. Agreements are in place between the MoH and the routine agencies responsible for logistics support, to ensure their ongoing and even expanded services during emergencies. Similarly, continuity of lifelines in health care facilities is also planned for emergencies, through the provision of reservoirs and stockpiles, as well as contractual agreements with suppliers.

### ***Recommendations on service delivery***

Ensuring high-level and sustainable emergency preparedness is a complex challenge that necessitates extensive ongoing efforts. In spite of the substantial funding involved, the MoH is encouraged to review the possibility of establishing standardized positions in each health facility for staff with exclusive responsibility for emergency coordination (rather than in addition to other tasks). These officials would serve as the basis for the deployment of active emergency committees and might contribute significantly to the promotion and effectiveness of emergency preparedness and response.

In order to motivate all health care management teams to maintain a high level of emergency preparedness, an accreditation programme is recommended, into which the evaluation process already implemented in Israel would be integrated.

It is recommended that training programmes for teams from the various health care facilities should be planned and implemented to ensure capacity and capability of health care institutions for rapid independent evaluation of damage following a disaster. It is anticipated that national or regional experts in damage assessment might be delayed in being deployed following emergencies; therefore, trained personnel could facilitate the initial assessment and accordingly make a decision as to whether it is safe to continue provision of medical services in the infrastructure or whether evacuation of the building is required.

Plans to augment capacity to treat burns victims during and following an emergency are recommended. Although capacity to treat burns victims during routine times is not cost-effective, consideration of potential emergency needs necessitates the formulation of a plan to expand surge capacity in this unique specialty.



# Concluding remarks

The capacity of Israel's health sector for crisis management was evaluated according to the benchmarks and indicators of the WHO toolkit for assessing health-system capacity for crisis management (see Annex 3). Findings were based on documentary research, interviews and personal acquaintance of the evaluators with the status of the health care system.

Israel has proved its capacity for effective crisis preparedness and response during numerous emergencies that have occurred in the last decades. Israel implements a model for emergency preparedness based on five main components:

- comprehensive contingency planning
- command of operations
- central control
- continuous capacity building
- coordination and cooperation between all relevant stakeholders.

In order to maintain readiness and preparedness for all potential hazards it conducts frequent risk assessments to prioritize threats, develops policies and SOPs, assimilates learning lessons from drills and emergencies, and keeps on constant alert for the evolution of a potential emergency. This continuous ongoing readiness and preparedness for emergencies facilitates the ongoing sustainability of a high level of crisis preparedness.

The strong commitment of the MoH to crisis preparedness is reflected well in its institutionalized structure of emergency preparedness, the active involvement of the senior administration in both preparedness and response operations, and the extensive measures and resources that have been invested in ensuring capacity for effective response to all potential emergency scenarios. Considering its limited resources, in-depth and ongoing mechanisms are in place to ensure full collaboration between all stakeholders: military and civilian, private and public. It would seem that coordination between the military and civilian systems stems from three main reasons:

- limited resources, which require that all agencies work together to create an optimal response to potential threats;
- characteristics of the Israeli society, in which there is frequent transfer of officials from the civilian to the military system and vice versa, which facilitates their ability to work together;
- the creation of continuous joint mechanisms such as the SHA, through which coordinated activity is implemented in routine times as well as during emergencies.

The central national control characteristic of emergency preparedness and response in Israel enables the most senior and experienced experts to be involved in the planning process, thereby facilitating the capacity of field organizations to create their institutional readiness. This contributes to creation of a uniform terminology in managing emergency events and building of a coordinated unified response.

Although the emergency response system has a strong legal framework, it would seem that collaboration between all parties and the motivation to contribute towards maintenance of a high

level of emergency preparedness are based on strong personal as well as institutional commitment towards assuring this high level of readiness. It is evident that close relations are continually maintained between the different participating entities involved in emergency preparedness and response, and this personal and professional acquaintance strengthens the capacity for a joint and coordinated response. The frequent joint training programmes and exercises, including peer evaluations; the involvement of all stakeholders in the planning process and in AARs; and the ongoing communication between entities and officials contribute to the improvement of emergency preparedness, as well as to the commitment to sustain a high level of readiness that is the key to successful and effective emergency response.

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# Annex 1.

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# Annex 2.

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# Annex 3. Structure of the WHO toolkit for assessing health-system capacity for crisis management

WHO health-system function	Key components	Essential attributes
1. Leadership and governance	1.1 Legal framework for national multisectoral emergency management	1. Laws, policies, plans and procedures relevant to national multisectoral emergency management
		2. National structure for multisectoral emergency management and coordination
	1.2 Legal framework for health-sector emergency management	3. Laws, policies, plans and procedures relevant to health-sector emergency management
		4. Structure for health-sector emergency management and coordination
		5. Regulation of external health-related emergency assistance
	1.3 National institutional framework for multisectoral emergency management	6. National committee for multisectoral emergency management
		7. National operational entity for multisectoral emergency management
	1.4 National institutional framework for health-sector emergency management	8. National committee for health-sector emergency management
		9. National operational entity for health-sector emergency management

WHO health-system function	Key components	Essential attributes
	1.5 Components of national programme on health-sector emergency management	10. Mechanisms of coordination and partnership-building
		11. National health-sector programme on risk reduction
		12. Multisectoral and health-sector programmes on emergency preparedness
		13. National health-sector plan for emergency response and recovery
		14. Research and evidence base
2. Health workforce	2.1 Human resources for health-sector emergency management	15. Development of human resources
3. Medical products, vaccines and technology	3.1 Medical supplies and equipment for emergency response operations	16. Training and education
		17. Medical equipment and supplies for prehospital and hospital (including temporary health facilities) activities and other public health interventions
		18. Pharmaceutical services
		19. Laboratory services
4. Health information	4.1 Information management systems for risk reduction and emergency preparedness programmes	20. Blood services
		21. Information system for risk assessment and emergency preparedness planning
		22. National health information system
		23. National and international information-sharing
		24. Surveillance systems

WHO health-system function	Key components	Essential attributes
	4.2 Information management systems for emergency response and recovery	25. Rapid health needs assessment
		26. Multisectoral IRA
		27. Emergency reporting system
	4.3 Risk communication	28. Strategies for risk communication with the public and the media
		29. Strategies for risk communication with staff involved in emergency operations
5. Health financing	5.1 National and subnational strategies for financing health-sector emergency management	30. Multisectoral mechanisms of financing emergency preparedness and management
		31. Health-sector financing mechanisms
6. Service delivery	6.1 Response capacity and capability	32. Subnational health-sector emergency response plans
		33. Surge capacity for subnational health-sector response
		34. Management of prehospital medical operations
	6.2 EMS system and mass casualty management	35. Management of situations involving mass fatalities and missing persons
		36. Capacity for mass casualty management
	6.3 Management of hospitals in MCIs	37. Hospital emergency preparedness programme
		38. Hospital plans for emergency response and recovery



WHO health-system function	Key components	Essential attributes
	6.4 Continuity of essential health programmes and services	39. Continuous delivery of essential health and hospital services 40. Prevention and control of communicable diseases and immunization 41. Mother and child health care and reproductive health 42. Mental health and psychosocial support 43. Environmental health 44. Chronic and noncommunicable diseases 45. Nutrition and food safety 46. Primary health care 47. Health services for displaced populations
	6.5 Logistics and operational support functions in emergencies	48. Emergency telecommunications 49. Temporary health facilities 50. Logistics 51. Service delivery support function

The World Health Organization (WHO) is a specialized agency of the United Nations created in 1948 with the primary responsibility for international health matters and public health. The WHO Regional Office for Europe is one of six regional offices throughout the world, each with its own programme geared to the particular health conditions of the countries it serves.

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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  
WHO Director-General

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