

Emergency Medical Services Systems in the European Union

Report of an assessment project co-ordinated by the
World Health Organization

Address requests about publications of the WHO Regional Office for Europe to:

Publications
 WHO Regional Office for Europe
 Scherfigsvej 8
 DK-2100 Copenhagen Ø, Denmark

Alternatively, complete an online request form for documentation, health information, or for permission to quote or translate, on the Regional Office web site (<http://www.euro.who.int/pubrequest>).

Photographic contributions

By Courtesy of:

- ⌘ Falck Danmark A/S' Archive (Denmark)
- ❖ Omaggio a Montisola di Fiorello Turla, edizioni Civiltà Bresciane 2002 (Italy)
- ◆ Ordine dei Medici Chirurghi e degli Odontoiatri della Provincia di Latina (Italy)
- Arxiu Històric de la Fundació Privada Hospital de la Santa Creu i Sant Pau (Spain)
- Muzeum Zamku i Szpitala Wojskowego na Ujazdowie (Poland)
- ◆ Peter Higginbotham's Private Archives (United Kingdom)
- St Bartholomew's Hospital Archives (United Kingdom)

© World Health Organization 2008

All rights reserved. The Regional Office for Europe of the World Health Organization welcomes requests for permission to reproduce or translate its publications, in part or in full.

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

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

The mention of specific companies or of certain educational institutions does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by the World Health Organization to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either express or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the World Health Organization be liable for damages arising from its use. The views expressed by authors, editors, or expert groups do not necessarily represent the decisions or the stated policy of the World Health Organization.

Emergency Medical Services Systems in the European Union

Report of an assessment project co-ordinated by the
World Health Organization

List of contributors



List of contributors

This report is published by the Regional Office for Europe of the World Health Organization. It is the result of a concerted process with the participation of all following contributors listed according to their role and in alphabetical order.

National Representatives

AUSTRIA

Reinhild Strauss
Head of Department III/A1,
Infectious Diseases, Health Threats, Crises
Ministry of Health

BELGIUM

Jean Bernard Gillet
Chairman, Federal Council for Medical Emergency Care
Ministry of Public Health

BULGARIA

Ivian Benishev
Chief of "Emergency medical services" Department
"Medical activities" Directorate - Ministry of Health

CYPRUS

Andreas Polynikis
Chief Medical Officer
Ministry of Health

CZECH REPUBLIC

Dana Hlavackova
Director
Crisis Preparedness Department
Ministry of Health

DENMARK

Freddy K. Lippert
Head of Office and Advisor for the Danish National Board
of Health & Medical Director of Emergency Medicine and
Emergency Medical Services in the Capital Region of Den-
mark

ESTONIA

Marek Seer
Head of Emergency Care Unit
Health Care Board

FINLAND

Tom Silfvast
Senior Medical Officer, Health Department
Ministry of Social Affairs and Health

FRANCE

Isabey Bénédicte
Chargée de mission urgences et périnatalité
Ministère de Santé

GERMANY

Hans Lemke
Medical Director of Emergency Medical Systems
Dortmund Firebrigade
Trauma-Surgery Department
Klinikum Dortmund

GREECE

Panos Efstathiou
Commander of the National Health Operation Centre
Hellenic Ministry of Health & Social Solidarity

HUNGARY

Imre Engelbrecht
Deputy Head of Department
Health Policy Department
Ministry of Health

IRELAND

Gavin Maguire
Head of Emergency Management - Health Service
The Health Services Executive

ITALY

Francesco Enrichens
Director, Surgery Department, Trauma and Orthopaedic
Centre, Torino
Regional Coordinator, Medical Emergency, Piedmont

LATVIA

Biruta Kleina
Head of Division of Coordination of Extraordinary Situations

Department of Health Care
Ministry of Health

LITHUANIA

Vytautas Gailius
Director
Health Emergency Situations Centre under the Ministry of
Health

LUXEMBOURG

Gérard Scharll
Médecin chef de service
Ministère de la Santé - Direction de la Santé

MALTA

Denis Vella Baldacchino
Director Primary Health
Ministry for Social Policy

NETHERLANDS

Cilie C. Alberda-Harmsen MA
Policy adviser Acute Care
Ministry of Health, Welfare and Sport
Curative Care and Integrated Care Division

POLAND

Michal Waszkiewicz
Head of Unit
Department of Health Policy
Ministry of Health

PORTUGAL

Isabel Santos
Head of the Emergency Medical Department
Portuguese National Institute for Emergency Medicine

ROMANIA

Raed Arafat
Under Secretary of State
President of the EMS Committees
Ministry of Health

SLOVAKIA

Andrea Smolkova
Head Doctor
National Dispatch Center for EMS Slovak Republic
Regional Office of Presov District

SLOVENIA

Andrej Žmavc
 Head of Emergency Medical Services, Celje
 Head of National Board of EM at Ministry of Health

SPAIN

José Javier García del Águila
 Manager of the EMS in Almería EPES-061
 EPES - Public Utility for Health Emergencies
 Regional Government of Andalusia

SWEDEN

Jonas Holst
 Medical director
 Unit of Emergency Preparedness - National Board of Health and Welfare

UNITED KINGDOM

Penelope Bevan
 Director of Emergency Preparedness
 Department of Health

National Contributors**AUSTRIA**

Robert Muchl
 Head of Department III/A1
 Federal Ministry of Health, Family and Youth, BMGFJ – III/A/1 (Infectious Diseases, Health Threats, Crisis Management), Austria

HUNGARY

Gabor Gobl
 Adviser
 Hungarian National Ambulance and Emergency Service

LITHUANIA

Vladas Mireckas
 Head of Planning and Control Division
 Health Emergency Situations Centre, Ministry of Health, Lithuania

NETHERLANDS

Peter J. Wognum
 Advisor/project manager patientsafety
 Health Care Inspectorate

POLAND

Przemyslaw Klaman
 Head of Division
 European Union Division, Department of International Cooperation
 Ministry of Health

PORTUGAL

Nelson Pereira
 Former Medical Services Director
 Portuguese National Institute for Emergency Medicine

SLOVAKIA

Patrícia Eftimová
 Head of Department of Education, Science and Research
 National Dispatch Center for EMS Slovak Republic

Technical contributors

Raed Arafat
 Under Secretary of State
 President of the EMS Committees
 Ministry of Health

Francesco Della Corte
 Chair, Department of Anesthesia, Intensive Care and Critical Emergency Medicine
 Azienda Integrata Universitaria Ospedaliera "Maggiore della Carità"
 University of Eastern Piedmont, Novara, Italy

Viliam Dobiáš
 Associate Professor and Medical Director
 Life Star Emergency Ltd. Prehospital Emergency Medical Services
 Constantine the Philosopher University, Nitra, Slovakia

Francisco Epelde
Short Stay Unit Coordinator Emergency Service
Hospital Universitari Parc Tauli. Universitat Autònoma de
Barcelona, Sabadell, Spain

Alberto Giudiceandrea
Consultant General Surgeon
S. Anna General Hospital - Brescia, Italy

Pierluigi Ingrassia
PhD Student
Research Centre in Emergency and Disaster Medicine and
Informatics applied to medical practice
(C. R. I. M. E. D. I. M.)
University of Eastern Piedmont, Novara, Italy

Per Kulling
Seconded national expert
European Commission, Health Threats Unit -SANCO C/3

Roberta Petrino
Chair of professional education in EM, Department of Emer-

gency Medicine
Maggiore Hospital School of Medicine, Novara, Italy

Demetrios G. Pyrros
President-Elect
World Association for Disaster and Emergency Medicine
(WADEM)

Technical reviewers

Gautam G. Bodiwala
President of the IFEM
International Federation for Emergency Medicine

Herman Delooz
EM Disaster Medicine- Executive Committee Member
EuSEM and Professor of Emergency and Disaster Medicine
Free University of Brussels, Belgium

David J Williams
EuSEM Immediate Past President
European Society for Emergency Medicine

Publisher and co-ordinator of the project:

enrico Davoli
Emergency Medical Services Programme
Regional Office for Europe of the World Health Organization

Project Officer
Federica Righi

Communication and dissemination
Tania Calleja Reina

With the help of:
Eva Abelló, Ellinor Bengtsson, Maribel Gené Cases, Silvia Gilardi, Mina Lahlal, Alessandra Rollandoz, Oana Roman, Sebastián Sarrias Manresa.
Language editing: Breedá Hickey
Design and layout: Fco. Javier Rodríguez Ramos

The European Society for Emergency Medicine, represented by the President Gunnar Öhlen has supported the project offering important opportunities for disseminating the results on two occasions in international conferences.

Contents

Emergency Medical Services Systems in the European Union

Acronyms

Glossary

Abstract

1. Introduction

1.1 EMS systems

1.2 Objectives of the study

1.3 Description and methodology

1.4 Constraints and opportunities of the project

2. Legislation and financing of EMS

2.1 Legislation relating to the EMS System

2.2 Financing

2.3 Legislation regarding crisis preparedness and response

2.4 Conclusions

2.5 Recommendations

3. Out-of-hospital EMS

3.1 European emergency call number 112

3.2 Dispatch centres

3.3 Ambulance services

3.4 Coordination with other emergency services

3.5 Conclusions

3.6 Recommendations

4. In-hospital EMS

4.1 Triage system

4.2 I-H-EMS as a safety net

4.3 Referral network system

4.4 Quality of care

4.5 Social care

4.6 Conclusions

4.7 Recommendations

5. Education in EMS

5.1 Education and training in EM

5.2 EM as a recognized accredited specialty

5.3 Qualifications of EM providers

5.4 Conclusions

5.5 Recommendations

6. Crisis management and EMS systems

6.1 EMS in crisis management

6.2 Education and training in disaster management

6.3 International co-operation in disaster management

6.4 Patient safety in disaster management

6.5 Conclusions

6.6 Recommendations

Annexes

Annex 1: Recommendations

Annex 2: Questionnaire

Annex 3: Synopsis

Annex 4: Education

Annex 5: Application form

Emergency Medical Services Systems in the European Union DATA BOOK

Acronyms

Glossary

Abstract

Synopsis

Country Profiles

Austria

Belgium

Bulgaria

Cyprus

Czech Republic

Denmark

Estonia

Finland

France

Germany

Greece

Hungary

Ireland

Italy

Latvia

Lithuania

Luxembourg

Malta

Netherlands

Poland

Portugal

Romania

Slovakia

Slovenia

Spain

Sweden

United Kingdom

Matrix

Abbreviations

A&E	accident and emergency
ALS	advanced life support
BLS	basic life support
CPP	crisis preparedness plan
DC	dispatch centre
EC	European Commission
ED	emergency department
EED	European emergency data
EHS	emergency health services
EM	emergency medicine
EMS	emergency medical services
EU	European Union
EUMS	European Union of Medical Specialists (also named UEMS)
EuSEM	European Society of Emergency Medicine
GP	General Practitioner
ICC	incident command and control
ICU	intensive care unit
IN-H-EMS	in-hospital emergency medical services
MCI	mass casualty incident
MJC	Multidisciplinary Joint Committee
MoH	Ministry of Health
MS	Member State
NAS/NRC	National Academy of Sciences/National Research Council
NGO	non-governmental organization
NR	national representative
N/A	data not available
O-H-EMS	out-of-hospital emergency medical services
WHO	World Health Organization
WHO/EURO	World Health Organization Regional Office for Europe

List of Countries

AUT	Austria
BEL	Belgium
BUL	Bulgaria
CYP	Cyprus
CZH	Czech Republic
DEN	Denmark
EST	Estonia
FIN	Finland
FRA	France
DEU	Germany
GRE	Greece
HUN	Hungary
IRE	Ireland
ITA	Italy
LVA	Latvia
LTU	Lithuania
LUX	Luxembourg
MAT	Malta
NET	Netherlands
POL	Poland
POR	Portugal
ROM	Romania
SVK	Slovakia
SVN	Slovenia
SPA	Spain
SWE	Sweden
UNK	United Kingdom of Great Britain and Northern Ireland

Source:

The European Regional Office of the
World Health Organization.

A

Access

The ability of an individual or a defined population to obtain or receive appropriate health care. This involves the availability of programmes, services, facilities and records. Access can be influenced by such factors as finances (insufficient monetary resources); geography (distance to providers); education (lack of knowledge of services available); appropriateness and acceptability of service to individuals and the population; and sociological factors (discrimination, language or cultural barriers)¹.

Advanced Life Support (ALS)

A generic term for resuscitation efforts that extend beyond basic Cardio-Pulmonary resuscitation (CPR)².

Automated external defibrillator (AED)

A portable device to electronically assess a patient's cardiac rhythm and to shock if appropriate³.

Ambulance

Vehicle or craft intended to be crewed by a minimum of two appropriately trained staff for the provision of care and transport of at least one stretchered patient⁴.

Ambulance type A

Type A: patient transport ambulance

Road ambulance designed and equipped for the transport of patients who are not expected to become emergency patients.

Two types of patient transport ambulance exist:

Type A1: suitable for transport of a single patient;

Type A2: suitable for transport of one or more patient(s) (on stretcher(s) and/or chair(s))⁵.

Ambulance type B

Type B: emergency ambulance

Road ambulance designed and equipped for the transport, basic treatment and monitoring of patients⁶.

Ambulance type C

Type C: mobile intensive care unit

Road ambulance designed and equipped for the transport, advanced treatment and monitoring of patients⁷.

B

Basic Life Support (BLS)

Emergency medicine The constellation of emergency procedures needed to ensure a person's immediate survival, including Cardio-Pulmonary resuscitation (CPR), control of bleeding, treatment of shock and poisoning, stabilization of injuries and/or wounds, and basic first aid⁸.

C

Catchment area

Core definition: A geographic area defined and served by a health plan or a health care provider⁹.

Catchment population

The population served by a health facility.

The catchment population is the population in the catchment area¹⁰.

Crisis Preparedness Plan

The Crisis Preparedness Plan is the written document or map for medical crisis management generated by any appropriate authority or private organisation that clearly

details what needs to be done, how, when, and by whom—before and after the time an anticipated disastrous event occurs. It aims at providing policy for preparedness and response to both internal and external disaster situations that may affect staff, patients, visitors and the community. A crisis is any critical situation that causes a disruption on the equilibrium between the demand and the supply of medical services¹¹.

Crisis Response

A sum of decisions and actions taken during and after disaster, including immediate relief, rehabilitation, and reconstruction¹².

Co-payment

The specified portion (cost amount or percentage) that health insurance, or a service programme, may require a person to pay towards his or her medical bills or services¹³.

CPR

cardio-pulmonary resuscitation

D

Diagnosis Related Group

A prospective payment system used by Medicare and other insurers to classify illnesses according to diagnosis and treatment¹⁴.

Dispatch center

Dispatch centres collect the request for ambulance services by telephone handling and organize the response by coordinating movements and dispatch all available resources, cars and personnel. In other words, dispatch

centre is about getting the right resources, to the right patients, in the appropriate amount of time¹⁵.

E

Emergency medical service system (EMS system)

The arrangement of personnel. Facilities and equipment for the effective and coordinated delivery of EMS required in the prevention and management of incidents which occur either as a result of a medical emergency or of an accident, natural disaster or similar situation. EMS systems refer to the broad range of emergency care from the pre-hospital first responder to the intensive care unit setting¹⁶.

Emergency management (crisis management / disaster management)

A range of measures to manage risks to communities and the environment; the organisation and management of resources for dealing with all aspects of emergencies. Emergency management involves the plans, structures and arrangements which are established to bring together the normal endeavors of government, voluntary and private agencies in a comprehensive and coordinated way to deal with the whole spectrum of emergency needs including prevention, response, and recovery¹⁷.

Emergency Patient

Patient who through sickness, injury or other circumstances is in immediate or imminent danger to life unless emergency treatment and/or monitoring and suitable transport to diagnostic facilities or medical treatment is provided¹⁸.

F

First responder

(1) The first individual designated to provide medical assistance in an Emergency. The degree of training varies by jurisdiction but include a minimum first aid instructions on the airway management, cervical spine control, breathing assistance, circulation assistance, hemorrhage control, and basic patient movement skills (2) a term that may refer to the first bystander or witness to render assistance, no matter what their training¹⁹.

M

Medical dispatch center

Any agency that routinely accepts calls for emergency medical assistance from the public and/or that dispatches pre-hospital emergency medical personnel pursuant for such requests²⁰.

Minimum standard

Minimum standard A level of quality that all health plans and providers are required to meet in order to offer services to clients/customers²¹.

O

Out-of-hospital EMS (Synonymous Out-of-facility EMS)

Remote from medical facility. In the case of EMS it pertains to those components of the emergency health care delivery system that occur outside of the traditional medical setting (e.g., pre hospital care, transportation, and others)²².

P

Paramedic

A health professional certified to perform advanced life support procedures (e.g., intubation, defibrillation and administration of drugs under a physician's direction). Paramedics provide urgent care from an emergency vehicle or air service²³.

W

Wrist band

An identifying bracelet attached to a patient's wrist at the time of admission to a health care facility, which may be the only identifier used during a person's stay in a hospital²⁴.

References:

- 1, 13, 21 A Glossary of Terms for Community Health Care and Services for Older Persons. WHO, Centre for Health Development, 2004.
- 2, 8, 14, 23, 24 McGraw-Hill Concise Dictionary of Modern Medicine. 2002 by The McGraw-Hill Companies, Inc.
- 3, 16, 19, 20, 22 Kuehl, AE. (Ed). Prehospital Systems and Medical Oversight, 3rd edition. National Association of EMS Physicians, 2002.
- 4, 5, 6, 7, 18 Medical vehicles and their equipment - Road ambulances (EC Standard EN 1789:2007).
- 9 European Observatory on Health Care Systems, 2001.
- 10 PAHO glossary - Definitions and Terms in Implementation Research and Health Systems Research.
- 11 Davoli E. ed. A practical tool for the preparation of a hospital crisis preparedness plan, with special focus on pandemic influenza. WHO Regional Office for Europe, Copenhagen, 2006.
- 12 United Nations. Internationally agreed glossary of basic terms related to disaster management.
- 15 Pan American Health Organization, Emergency Medical Services Systems Development, 2003, 107, Washington D.C.
- 17 Health Disaster Management: Guidelines for Evaluation and Research in the "Utstein Style." Glossary of terms. Prehosp Disast Med 2002;17(Suppl 3):144-167.

■ Description and Methodology of the project

This document is the result of a project whose aim was to describe and assess emergency medical services (EMS) systems across the European Union (EU) and their links with national crisis management systems. Professional standards, organizational structures and coordination mechanisms vary widely across EU Member States. A comprehensive EMS review was considered necessary in order to understand this variety and to identify gaps and possible means to improve harmonization and standardization. The project was co-financed by the Directorate General for “Health & Consumers” of the European Commission and the World Health Organization (WHO) Regional Office for Europe.

The project aimed: (i) to develop a standardized template for use as a data collection tool in order to facilitate country comparisons and the compilation of an essential information package; (ii) to map current EMS preparedness within EU Member States including existing institutional, educational, operational and human resource capacity; and (iii) to collect data on existing crisis management mechanisms to manage health threats. Close collaboration with all 27 EU Member States was considered an important prerequisite for successful implementation of the project and WHO formally requested the appointment of a national representative (NR) from the Ministry of Health in each State. A group of EMS experts, with knowledge and expertise of the subject, was also selected. The first phase of the project involved the development of a standardized template to collect general information and data on EMS across EU Member States. NRs were requested to complete the questionnaire online and WHO supervised the completion of data gathering and ensured finalization. Data from the 27 countries were compared and matched with the aim of finding common features or possible gaps in the organization of EMS in EU Member States.

The group of experts and all 27 NRs met again in Lisbon, Portugal, in December 2007. This meeting provided an opportunity to review progress in data analysis and to agree the main conclusions from the study. Recommendations for improvements in the field of EMS were also discussed and voted on in Lisbon.

The objectives of the project were very ambitious and EU Member States and various stakeholders highlighted their concern in this regard. The difficulty of assessing EMS links with national crisis management systems in the absence of any previous EU-wide study of these national systems was raised. Another major limitation of the project is that all data have come from NRs appointed by Ministries of Health. This sometimes proved to be a constraint especially in those EU Member States where the organization and management of health-care provision are delegated to sub-national authorities. A problem was also encountered in the attempt to promote a standardized study, seeking comparable data using unique and common definitions. On the positive side, the project has followed a highly participatory methodology with reasonable levels of interest and motivation from the majority of participants; moreover the project utilized experts in the field of EMS to peer review the work carried out.

This book is divided into five chapters: legislation and financing; out-of-hospital EMS; in-hospital EMS; education in EMS; and crisis management and EMS systems.

The main result of the study has been to underline the importance of an organic and comprehensive set of rules and laws governing the organization and structure of a fundamental health care service and its integration within the whole health system. Given this finding, WHO Regional Office for Europe is investing resources to help all EU

Member States develop effective coordination mechanisms at a multisectoral level for crisis preparedness and response.

With regard to out-of-hospital EMS, two main concerns were raised by participants: (i) the need to develop performance indicators of an international standard. The application of these indicators to different EU EMS systems could provide the data necessary for benchmarking, comparison and cost-effective optimization of the system; and (ii) the need for greater awareness of 112 as the European emergency call number is necessary to ensure successful implementation, particularly in those countries that have not adopted 112 as the unique emergency call number as yet. The foremost value of EU Directive number (91/396/EEC) is its clear statement of the need to prevent misunderstandings and delays in accessing EMS for all EU citizens.

In considering in-hospital EMS settings, it is evident from the study that hospital-based services play a crucial role in Europe and the EMS system should be thoroughly evaluated for its effectiveness and quality, from the perspective of both public health and financing issues.

A key observation of the study is that the adoption by all EU countries of a common core curriculum, as the basis for an emergency medicine (EM) speciality, would be the most suitable way to meet the EU Doctor's Directive and assure free exchange of EM physicians between EU countries. The situation of other cadres of professional medical staff is more complicated: the role, competencies and educational requirements of nurses and paramedics or technicians are substantially different across countries, to the extent that achieving standardization and quality improvements are unrealistic at the present moment.

In conclusion, EMS systems in the EU still need to find their place in the mechanisms for disaster preparedness and response in many countries. Although rescue and first-line medical care to victims is the primary objective of all emergency services in a disaster, the role of EMS in the EU appears marginalized in the coordination and command framework. Preparedness planning is insufficient if simply carried out at the level of each health service. It should involve the whole EMS system at national or regional level, integrated into the whole health system and in full coordination with other emergency services. International agreements can be effective only if and when they are translated into practical protocols that have been tested and shared by all stakeholders.

Finally, the most important outcome of the project has been the formal creation of the European Inter-Ministerial Panel on Emergency Health Care, a group of experts in the field of EMS, appointed by all concerned Ministries of Health, that should meet on a regular basis and collaborate on exchanging and analysing information on EMS systems across all countries. The proposal to establish this "Panel" could be instrumental in developing and sustaining a continuous process of risk and crisis management at EU level.

Countries will face major challenges to protect their populations from an increasing number of potential health threats in the future. Preparedness and prevention will play a significant role in ensuring an efficient response to national and international crises. Emergency medical services (EMS) systems form an integral part of any public health care system: their primary function is to deliver emergency medical care in all emergencies, including disasters¹.

It is widely recognized that an effective disaster response is more dependent on the pre-existing local system than on external assistance². In the early stages of a health crisis, the ability to respond depends on the level of preparedness of the local community and health services. An efficient and well-structured EMS system ensures the achievement and maintenance of the skills necessary to deal with disasters, while disaster preparedness helps to identify organizational gaps. Professional standards, organizational structures and coordination mechanisms vary widely across European Union (EU) Member States. In order to understand this variety in EMS systems and to identify gaps and potential means to improve harmonization, standardization, and cross-border interoperability, a comprehensive EMS review was considered necessary. Very little research relating to EMS systems has been published, except as local or regional surveys, probably due to lack of knowledge of the system generally³.

This document is the result of a project whose principal aim was to describe and assess EMS systems across the EU and their links with national crisis management systems. The project was co-financed by the Directorate General for 'Health & Consumers' of the European

Commission (EC) and the World Health Organization Regional Office for Europe (WHO/EURO).

■ 1.1 EMS systems

According to the European Society for Emergency Medicine:

*“Emergency Medicine is a specialty based on the knowledge and skills required for the prevention, diagnosis and management of urgent and emergency aspects of illness and injury affecting patients of all age groups with a full spectrum of undifferentiated physical and behavioural disorders. It is a specialty in which time is critical. The practice of Emergency Medicine encompasses the pre-hospital and in-hospital triage, resuscitation, initial assessment and management of undifferentiated urgent and emergency cases until discharge or transfer to the care of another physician or health care professional. It also includes involvement in the development of pre-hospital and in-hospital emergency medical systems”*⁴.

More specifically, out-of-hospital emergency medical services (O-H-EMS), also known as pre-hospital EMS, typically refer to the delivery of medical care at the site of the adverse medical event. These complex systems include different services, from health-care posts or emergency points attended by medical staff, to a call centre (dispatch centre) that is able to answer emergency calls, provide medical advice to the caller and, if necessary, dispatch a mobile medical care unit. The latter includes a vehicle that is able to transport medical staff (car, motorbike, boat, etc) and equipment, or alternatively a vehicle that can adequately transport the pa-

1 Tang N, Kelen GD. Role of tactical EMS in support of public safety and the public health response to a hostile mass casualty incident. *Disaster Medicine and public health preparedness*, Sept 2007, 1(1 Suppl):S55-6.

2 Task Force on Quality Control in Disaster Management: the World Association for Disaster and Emergency Medicine. *Health disaster management: Guidelines for evaluation and research in the “Utstein Style”*. Response, relief, and recovery. *Prehospital and Disaster Medicine*, 2002, Vol.17 (Suppl 3):113-127.

3 Birnbaum ML. *Emergency medical services systems*. *Prehospital and Disaster Medicine*, Mar-Apr 2006, Vol. 21(2 Suppl 2):53-4.

4 European Society for Emergency Medicine EUSEM. Policy statements. (http://www.eusem.org/Pages/About_EuSEM/Policy_Statements/Policy_Statements.html, accessed 16 September 2008).

tient to a health-care facility (typically named “ambulance”: car, helicopter, airplane, boat etc). Ambulances are the means of transport most commonly used and the coordination and organization of all transport is usually carried out by one or more dispatch centres (DCs), which may receive calls from a bystander, a patient, a medical care institution or other emergency service (i.e. police or fire brigade) and provide directions to ambulances to reach the site of the emergency. In general, then, all actors and services involved in the provision of emergency medical care in an out-of-hospital setting are included in this definition.

In-hospital emergency medical services (IN-H-EMS) refer to all those subsets of medical institutions and hospitals that have the capacity to deliver uninterrupted emergency care on a 24 hours a day, 7 days a week basis. By definition, the medical institution should have the catering and bed capacity necessary to admit patients who need medical care for longer than 24 hours. All units, departments, wards etc. that provide continuous care should be considered part of an in-hospital medical service. For example, a neurosurgical clinic staffed by professionals (surgeons and nurses) and providing full-time (24 hours a day, 7 days a week) specialized care (diagnostics, operating theatre, etc.) should be considered a component of IN-H-EMS.

Thus, the complete set of out-of-hospital and in-hospital EMS constitutes the wider EMS system. In addition, a broader spectrum of services can contribute to providing, ameliorating and supporting EMS. For example, primary health-care services often share responsibilities with EMS, by directly delivering emergency care to patients. Conversely, EMS, either in-hospital or out-of-hospital, are often requested by patients to provide primary care. EMS also has an important role in public health and preventive care, either in times of disaster or during day-to-day work.

Thus a complete separation of distinct health services is impossible and the tendency is to consider health systems as a whole, within the framework of an organized set of “integrated health care”⁵.

Historically, EMS was principally identified as the “out of hospital transportation system” and rooted in the development of such services in the United States of America. The Pan American Health Organization/WHO has reviewed this concept in a recent publication:

“...the term EMS customarily refers to only the ambulance services component that responds to the scene of a medical or surgical emergency, stabilizes the victim of a sudden illness or injury by providing emergency medical treatment at the scene, and transports the patient to a medical facility for definitive treatment. The phrase “Emergency Medical Services System” here refers to a comprehensive integrated public safety and health care system model. It consists of mechanisms for accessing the system and reporting an emergency; pre-hospital service delivery and transport mechanisms; definitive, specialty, and rehabilitative care facilities; public education, participation, and prevention processes; educational programming and institutions; integrated medical and administrative direction and oversight organizations and processes; resource allocation and financing structures; coordinating the role of collaborating organizations; etc. The EMS System is part of a larger system, the Emergency Health Services System. The EHS System encompasses an even larger domain that includes the consequence management of disasters; unsafe housing, food, or water conditions; mental health effects of war, civil unrest, and terrorism; epidemiological infectious outbreaks in the community, and other health care issues that require swift resolve to maintain the health of the public. The EHS System is a subset of the public health care system”⁶.

5 Proceedings of WHO workshop on: “Basic highlights on hospital services masterplanning, with focus on integrated care”. WHO Regional Office for Europe, Barcelona, 2008.

6 Pan American Health Organization, Regional Office of the World Health Organization. Emergency medical services systems development: Lessons learned from the United States of America for developing countries. Washington, D. C., 2003.

■ 1.2 Objectives of the study

At present, no single region-wide EMS model exists for EU Member States. In general, the EMS status of a country depends on its peculiar geographic, political, cultural, linguistic, historical and medical setting⁷. Given this heterogeneity, it was considered important to collect data on various EMS components from EU Member States in order to allow comparisons, to observe the level of progress of EMS in different locations, and to simply disseminate data to health professionals and policy-makers. This point is especially important in times of crisis and disaster, where information flow between countries is vital for cross-border EMS interoperability and an effective coordinated crisis response.

The overall objective of the project is to improve EU Member States' understanding of EMS structures and organizational arrangements within the EU and their link to national crisis management systems. In particular, the project aimed to:

- (1) Develop a standardized template to be used as a data collection tool to allow country comparisons and the compilation of an essential information package.
- (2) Map current EMS preparedness within EU Member States including existing institutional, educational, operational and human resource capacity.
- (3) Collect data on existing crisis management mechanisms intended to manage health threats.

■ 1.3 Description and methodology

Close collaboration with the 27 EU Member States was considered a prerequisite for successful implementation of the project. Therefore, WHO formally requested the appointment of a national representative (NR) from the Ministries of Health in each State. All 27 NRs participated actively and contributed constructively to the project.

A group of EMS experts with knowledge and expertise on the subject was also selected. Efforts were made to respect the geographic spread of the project and to reflect national differences in conceiving and developing EMS.

The first phase of the project involved the development of a standardized template to collect general information and data on EMS across EU Member States. The template, initially proposed by WHO experts, was reviewed, discussed and finally approved at a dedicated workshop held in Bratislava, Slovakia in June 2007. This gave the project strategic momentum and the template became the key element from which all subsequent work evolved. For those EU Member States not represented in Bratislava, *ad hoc* missions were arranged and carried out, in order to involve them in the project and clarify issues in the proposed questionnaire. In general, participants showed a high level of interest in assessing EMS from its most basic elements such as patient care, specialty and academic requirements, information, management and financing systems, to more specific aspects such as EMS links and interrelations with the overall crisis management system. Following the Bratislava meeting and feedback from the NRs, the template was finalized in July 2007 (see Annex 2: Questionnaire). It is composed of five main sections with a total of 39 questions. A description of the sections is given in Table 1.1.

⁷ Bossaert LL. The complexity of comparing different EMS systems--a survey of EMS systems in Europe. *Annals of Emergency Medicine*, Jan 1993, 22(1):99-102.

Table 1.1 Description of sections in EMS data collection template

Legislation and financing	Main topics regulated by legislation; financing sources; how EMS providers are reimbursed for services provided; type of institution authorized to run EMS; co-payment.
Out-of-hospital emergency medical services	Public emergency number 112 and its links with emergency medical calls; dispatch centres' basic features; medical equipment of non-medical emergency vehicles; ambulance type distribution; triage protocols.
In-hospital emergency medical services	Access to the emergency department; triage protocols; quality performance.
Education	Specialty; qualification requirements for physicians, nurses and paramedics; professional board certifications.
The role of EMS in crisis management	Role of EMS in the national Crisis Preparedness Plan (CPP); international cooperation protocols in EMS; CPP in EMS legally binding; testing of CPP; leading institution in case of national crisis; EMS representative in the crisis management team; training in crisis management for EMS personnel and safety measures.

NRs were requested to complete the questionnaire online: this electronic tool rendered the collection of data easier and user-friendlier. On a daily basis, WHO supervised the completion of data and ensured finalization.

Data collection was finalized in October 2007. The data analysis that followed proved to be the most challenging aspect of the project. Some ambiguities in the questionnaire became evident and rendered the analysis complicated e.g. some data provided by the NRs were unclear, or in some cases, incoherent. To overcome this problem, a process of continuous communication was initiated with the NRs to clarify these ambiguities. As a result, a new simplified country profile was created containing a selection of the most relevant information and finally submitted for revision and approval to each NR.

Data from the 27 countries were compared and matched with the aim of finding common features or possible gaps in the organization of EMS in EU Member States. A report, containing recommendations for future improvements, was drafted.

A second workshop was held with all NRs in December 2007 and hosted by the Portuguese Presidency of the Council of the EU in Lisbon. The meeting provided an opportunity to review progress in data analysis and to agree conclusions for the final report. Through a process of ex-

tensive debate, potential misunderstandings were clarified and results validated. Recommendations for improvements in the field of EMS were also discussed and voted on. They are mentioned at the end of each chapter of this document and in a separate section (see Annex 1: Recommendations).

Subsequent to the discussions held in Lisbon, the report and conclusions of the project were finalized in the early months of 2008. The following chapters represent the final output of this extensive and demanding work and have emerged from collaboration between 27 NRs and WHO.

■ 1.4 Constraints and opportunities of the project

Given the time frame, project objectives were very ambitious and EU Member States and various stakeholders raised this concern. The difficulty of assessing EMS links with national crisis management systems in the absence of any previous EU-wide study of these national systems was highlighted. Therefore, instead of focusing mainly on EMS crisis preparedness and links with national crisis management systems, the project had to attempt to fill this information gap first. The report thus devotes much space to explaining the structure and organization of the European EMS system and reserves

only one chapter to the role of EMS within national crisis management systems.

Another major limitation of this process is that all data have come from NRs, appointed by Ministries of Health. This sometimes proved to be a constraint, especially in those EU Member States where the organization and management of health-care provision are delegated to sub-national authorities (federal states, regions, etc.); although NRs had the opportunity to consult with local stakeholders when any doubts arose. This fact must be taken into consideration when reading the document.

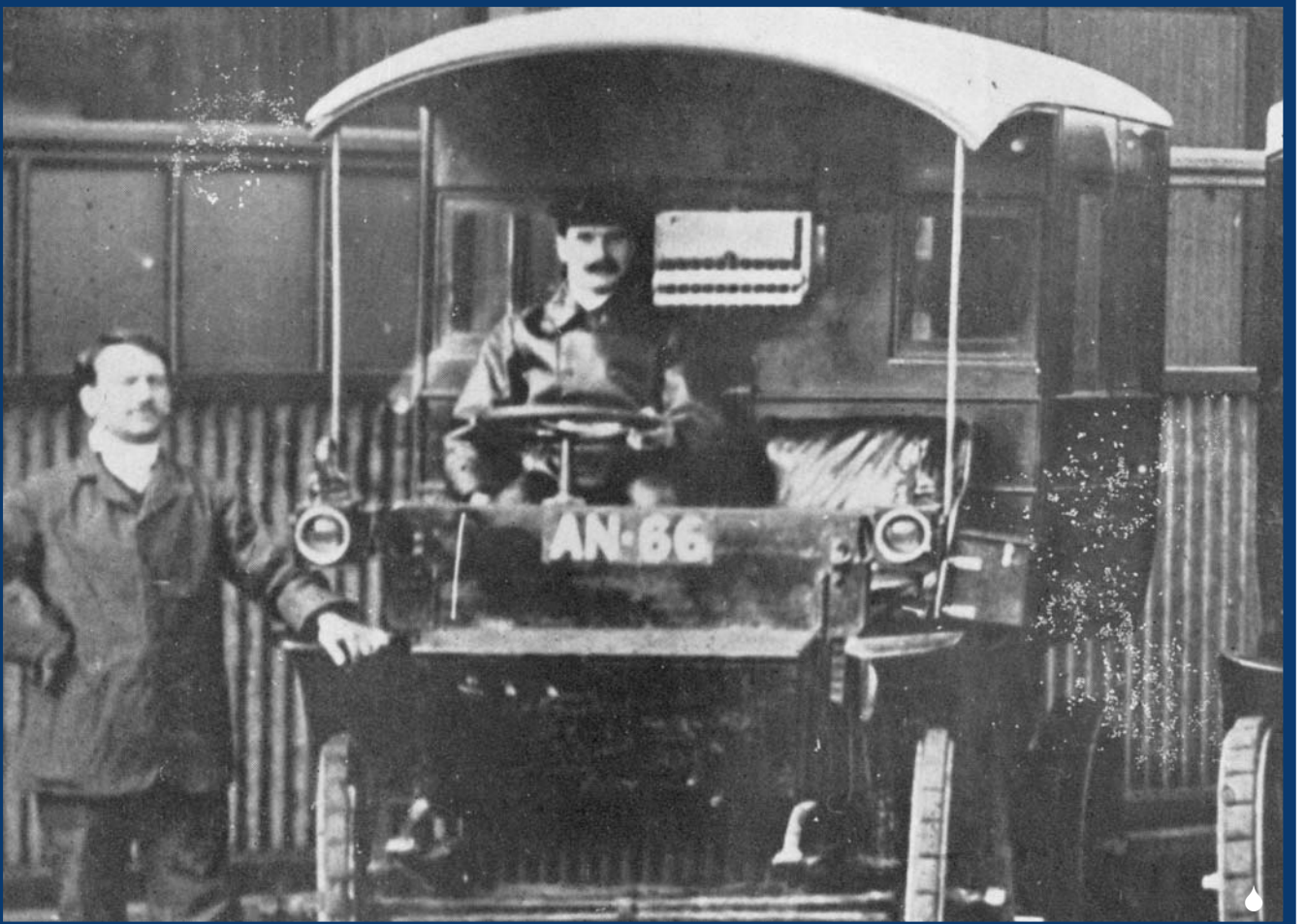
A constraint was also encountered in the attempt to promote a standardized study, seeking comparable data using unique and common definitions. Problems arose where concepts had different meanings in different countries and, in some cases, resulted in difficulties and misunderstandings. While this could have generated some incoherence in the data, the problem was overcome by further communication and clarification between WHO and the NRs.

On the positive side, the project has followed a highly participatory methodology with reasonable levels of interest and motivation from the majority of participants. Moreover, the project utilized experts in the field of EMS to peer review the work carried out.

An important element of the project has been its dissemination strategy as the project and its preliminary results have been repeatedly presented at major European conferences on emergency medicine (EM). Special attention has been given to European scientific societies of emergency medicine, whose representatives have always been invited as external observers.

The most important outcome of the project has been the creation of the European Inter-Ministerial Panel on Emergency Health Care, a group of experts in the field of EMS, appointed by all concerned Ministries of Health.

It is hoped that this group will continue to meet on a regular basis, constituting an important “political platform” that may provide the point of contact between policy decision-makers and EMS professionals in the EU.



Legislation and Financing of EMS

Legislation and Financing of EMS

The right to health is a basic human right, as enshrined by the WHO Constitution and in the majority of UN treaties and more recently by the Treaty⁸ establishing a Constitution for Europe⁹ (Article II-95 of the Charter of Fundamental Rights of the Union), which recognizes the right of each person to access health care and medical treatment. This right must be recognized in law by each Member State since legislation is necessary to underpin the health system.

In more specific terms, WHO has addressed the important role of emergency care in the field of public health at the World Health Assembly during its annual meeting in May 2007 and it recognizes:

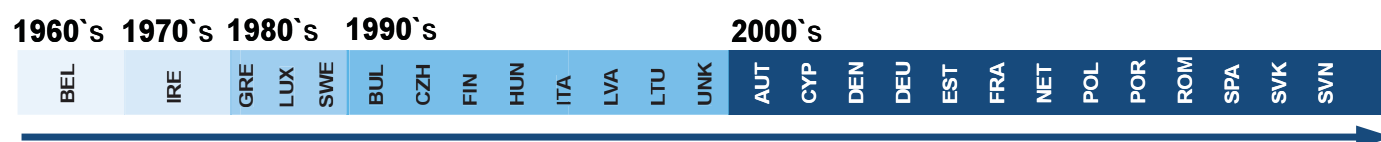
“...that improved organization and planning for provision of trauma and emergency care is an essential part of integrated health care delivery, plays an important role in preparedness for, and response to, mass-casualty incidents, and can lower mortality, reduce disability and prevent other adverse health outcomes arising from the burden of everyday injuries¹⁰...”

2.1 Legislation relating to the EMS System

Considering the relatively young history of EMS¹¹ and the development of EMS systems throughout Europe¹², it is not surprising that some countries do not yet have comprehensive laws specifically dealing with the establishment, organization and regulation of EMS. In addition, given the relationship that EMS shares with other emergency services (e.g. police, fire brigade, civil protection etc.), it might be more appropriate to consider a broader spectrum of legislative acts that involve the delivery of emergency medical care in different contexts: disasters, emergency care, prevention, primary care, etc.

The legislative framework of each EU Member State as reported by the NRs highlights substantial differences across EU countries. Nevertheless, all 27 EU Member States have legislation in place that regulates the EMS system. In approximately one third of the countries these laws were issued in the 1990s, while in half the countries, the laws are more recent and date from 2000 onwards. This reflects the fact that emergency care is an emerging discipline that has developed in the 1990s and 2000s.

Table 2.1 Decade during which EMS legislation was enacted (by EU country)



8 Constitution of the World Health Organization, 1946, Geneva; International Covenant on Economic, Social and Cultural Rights (ICESCR), 1966; Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), 1979; Convention on the Rights of the Child (CRC), 1989.

9 Treaty establishing a Constitution for Europe. Official Journal of the European Union, Vol 47, Dec.2004, C310.





10 World Health Assembly Resolution n. 60.22.

11 Arnold JL, Della Corte F. International emergency medicine: recent trends and future challenges. European Journal of Emergency Medicine, Sep 2003, 10(3):180-8.

12 Fleischmann T, Fulde G. Emergency medicine in modern Europe. Emergency Medicine Australasia. Aug 2007, 19(4):300-2.

EMS systems are regulated in all countries by a set of laws and regulations and typically contain the topics outlined in Table 2.2; topics that have been regularly discussed in the recent literature^{13 14}. The numbers in the table indicate the total of countries that have included the particular topic in their laws:

Table 2.2 EMS topics regulated by national laws

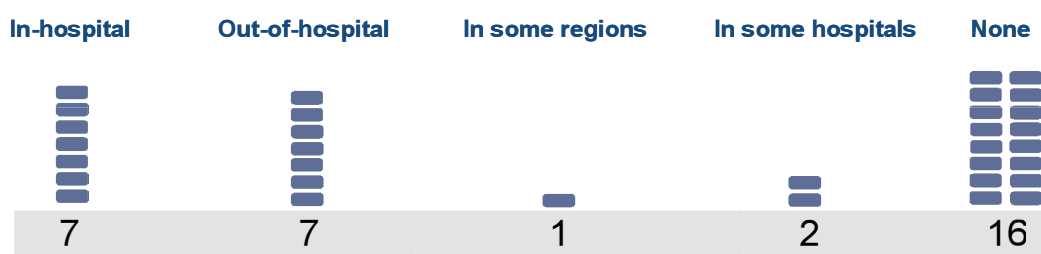
Free access for all to in-hospital care, including uninsured & unidentified persons	27	
Minimum standards of care & equipment, minimum requirements of qualification	23	
Financing mechanisms	24	
Required training for staff operating in EMS	21	

The legislative framework in the majority of EU Member States implies secured funding mechanisms for EMS (see Table 2.2). Similarly, more than two thirds of countries specify, within the legal framework, standards of care, equipment and professional qualification in EMS. In practical terms, the adoption and adherence to minimum standards could form the basis for effective harmonization of the quality of emergency care delivered throughout Europe.

Greater homogeneity in health-care quality, primarily in the field of emergency care, is important, given the increased and still-increasing mobility of citizens within EU borders. It is important to highlight that all EU NRs declared that their national law guarantees “free access to in-hospital emergency care for all”, including uninsured or unidentified persons.

However, there is a dissonance between these answers and those given to a later question on the use of co-payments. In reality, some countries or regions or even individual hospitals invoice patients for emergency care. This usually affects non-EU residents and, occasionally, persons from a “socially marginalized group”. However, co-payment for emergency care is waived in the event of (life-threatening) conditions.

Table 2.3 Request for co-payment fees waived in case of vital conditions



NB: multiple answers allowed

It is also important to highlight that the majority of countries envisage minimum standards of care and equipment as well as a set of minimum qualifications for EMS professionals. The actual implementation of these specific regulations may pose some difficulty and/or encounter delays.

13 Wallis LA, Guly HR. Improving care in accident and emergency departments. *British Medical Journal*, 2001, 323(7303);39-42.

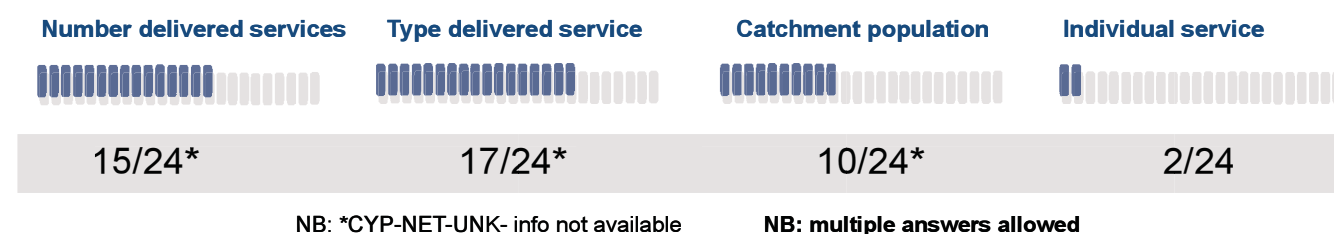
14 Report of the Physician Hospital Care Committee. Improving access to emergency care: Addressing system issues. Ontario Hospital Association, 2006.

2.2 Financing

As illustrated in Table 2.2, the financial mechanisms for emergency care are regulated by legislation in most EU Member States.

In most countries, EMS are purchased by the State or through a national health insurance scheme according to the number and type of services delivered. Payment systems rely mainly on classification of services e.g diagnosis-related groups. In ten countries, services are paid for according to a catchment population (mostly corresponding to a specified area or residency), that each EMS provider is requested to cover.

Table 2.4 Methods of purchase of EMS services by State or national insurance



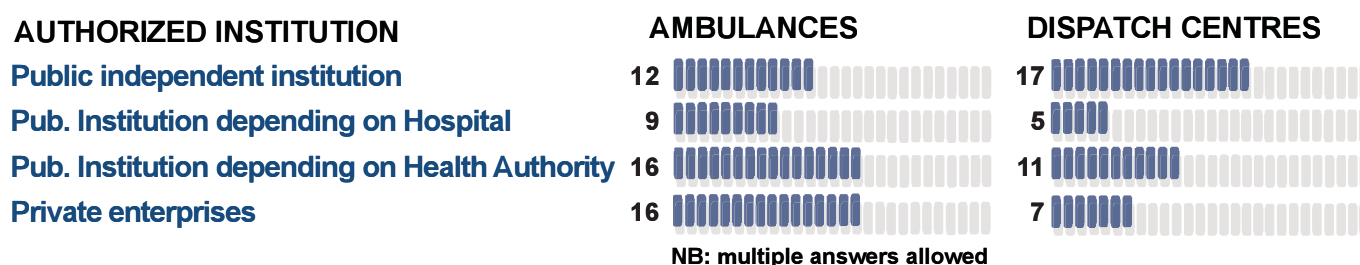
Emergency care is provided to all persons by EU Member States through the direct or indirect purchasing of services using various financing mechanisms, most commonly by pooling resources from the state budget and other sources (e.g. national health insurance institutions).

Table 2.5 Source of financing

Out-of-hospital				
State budget	Public sources	Private source	Mixed source	Other
19	11	4	7	2
(11/19 Countries with only "state budget") BUL, EST, GRE, HUN, IRE, ITA, LVA, LUX, MAT, POL, UNK		(3/11 Countries with only "public sources") DEN, POR, SWE		CYP, NTL
NB: multiple answers allowed				
In-hospital				
State budget	Public sources	Private source	Mixed source	Other
15	10	5	9	1
(9/15 Countries with only "state budget") BUL, GRE, HUN, ITA, LVA, LUX, MAT, POR, UNK		(6/10 Countries with only "public sources") EST, DEN, FRA, LTU, POL, SWE		
NB: multiple answers allowed				

In general, O-H-EMS are delivered by a mix of public and private institutions. It is interesting to note that DCs are mainly under public control while ambulance services may have a higher ratio of private providers.

Table 2.6 Institutions delivering out-of-hospital EMS



This finding most likely reflects the fact that EMS coordination is considered to be a key responsibility of public authorities, in particular the role of ambulance dispatch. Methods used to calculate the costs of purchasing services from EMS providers also vary considerably across EU Member States. Differences in financing and purchasing necessarily influence the organization and management of EMS. Hence, it can be surmised that differences could also arise between countries in terms of emergency care outcomes. However, lack of available data inhibits such a comparison.

Unsurprisingly, the political, financial and structural background influences the choices made by policy-makers when it comes to establishing EMS systems: *“In the absence of data, each system continues to evolve to suit the biases of those directing the system and the perceived needs and wants of the population, rather than evidence-based criteria”*¹⁵.

This heterogeneity is encountered not only between, but also within, countries: in Austria and Germany, for example, different federal states organize and delegate ambulance services differently. The same can be said of Italy, Spain, Sweden and the United Kingdom and others where the organization and management of health systems are delegated to regional authorities.





¹⁵ Nathens AB, Brunet FP, Maier RV. Development of trauma systems and effect on outcomes after injury. *Lancet*, 2004 May 29, 363(9423):1794-801.

2.3 Legislation regarding crisis preparedness and response

Health services, particularly O-H-EMS and I-H-EMS have an essential role to play in responding to the health effects of crises and natural and man-made disasters¹⁶. This role should be recognized, defined and adequately supported by all States, through ad hoc legislative frameworks that enable the EMS system to be responsive, efficient and useful in the event of a major disaster.

In general terms, most EU Member States mention disaster preparedness and response within the competencies of EMS in the legislation, including the specific role of DCs.

Table 2.7 Reference to disaster preparedness in EMS legislation (number of countries)

Reference to crisis/disaster management and crisis/disaster preparedness	24	
Organization of response and dispatch system	21	
Special budget for crisis preparedness	13	
Reserve budget for prompt crisis response	12	

This project has found that only 13 EU Member States have a special budget allocated to crisis/disaster preparedness while only 12 countries have a specific reserve budget to be promptly mobilized in the event of a crisis/disaster. Of these, 10 countries have funds allocated for both crisis/disaster preparedness and response. Regarding the budget for a swift response to a crisis, most States appear to assume that the Government will promptly mobilize state funds according to needs in all “crises”.

2.4 Conclusions

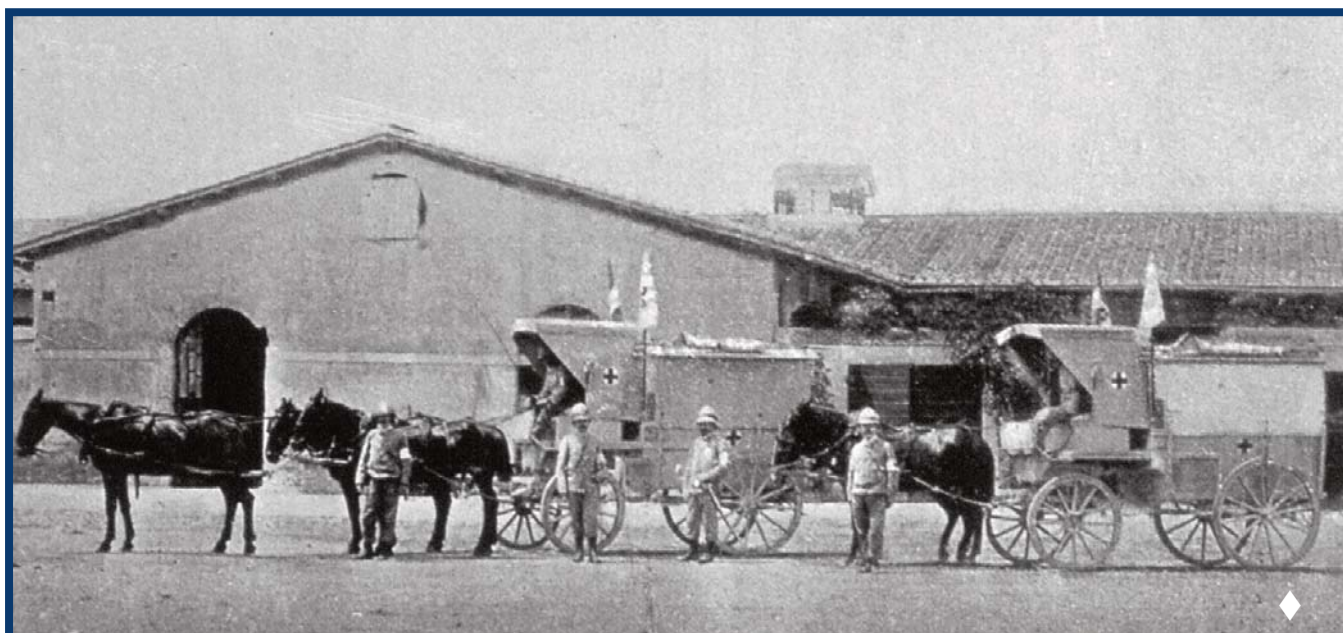
Whilst many EU Member States have legislatively supported the philosophy of provision of EMS, the results of the study highlight an apparent diversity in the provision of emergency care in different EU Member State. Financing, for instance, is very different from country to country: in some countries even from region to region. This diversity, on the one hand, is rooted in the cultural diversity and long-term development of the legislative systems and, on the other hand, by the structural organization of the health systems themselves. Nevertheless, this might not be a cause *per se* of major obstacles to creating uniformity throughout the EU.

The foremost purpose of the present investigation has been to underline the importance of an organic and comprehensive set of rules and laws that pay attention to the organization and structure of a fundamental health care service and its integration within the whole health system.

It should be remembered that the most effective tool to ensure uniformity and co-ordination, at the EU's disposal, is the issuance of directives for endorsement and implementation by Member States. Thus, the overall structure of the EMS system can be designed using the legislative framework as an effective means to achieve improvements and uniformity in the efficiency and effectiveness of EMS systems.

In this context, the WHO Regional Office for Europe is investing resources to help all EU Member States develop effective co-ordination mechanisms at a multisectoral level (within national and international settings) for crisis prepared-

¹⁶ Arnold LK, Smith J. International emergency medicine, an issue of emergency medicine clinics, 23-1. Elsevier, 2005.



ness and response, with a general recommendation to ensure a pre-determined and essential role for EMS within national mechanisms.

This project has invested a lot in putting together a core group of NRs, who are entitled to speak for their respective Member State from a political perspective with technical expertise. All NRs were appointed by the Ministry of Health of each State, upon the request of WHO Regional Office for Europe.

This group met three times before the publication of this report and has drafted and agreed all recommendations reported here. WHO wishes to take this opportunity to establish a formal “European Inter-Ministerial Panel on Emergency Health Care”, which can meet on a regular basis and collaborate on exchanging and analysing information on the structure, function and effectiveness of EMS systems across all countries. Its major objective is to contribute to strengthening and harmonizing emergency medical care in Europe.

Another important opportunity (and challenge) for this “panel” is to improve and refine agreements for mutual EMS systems collaboration between countries.

■ 2.5 Recommendations

Short-term recommendations:

Common European minimum standards in Emergency Medical Services should be introduced by a recognized and authoritative institution, namely on:

- Education of professionals.
- Equipment to be available for in-hospital emergency services and out-of-hospital emergency services.
- Inter-connectivity between dispatch centres across borders.

Long-term recommendations:

The European Commission or another recognized institution should introduce common European minimum standards, namely on:

- Inclusion of an Emergency Medical Services' representative in the national crisis management team.
- Creation of mechanisms to mobilize funds for Emergency Medical Services disaster preparedness and response.



Out-of-Hospital EMS

Out-of-Hospital EMS (O-H-EMS) covers a broad range of health services such as primary care personnel and facilities, first aid posts, volunteer organizations, private medical services etc. This study focuses mainly on DCs, which receive the initial request for ambulance services and organize the appropriate response, and on the organization and management of ambulance services that deliver on-site medical care and provide rapid transportation to health facilities. Both services are usually provided or at least coordinated and supervised by local, regional or national government and can be accessed through a national (or regional) public telephone number.



3.1 European emergency call number 112

The Treaty for the establishment of a Constitution for Europe considers the right of access to timely and appropriate medical care to be a human right (Article II-95).

This study did not include a direct question about access to O-H-EMS i.e. how this right of the patient is ensured for all. It was assumed that, in principle, an ambulance is dispatched on receipt of a call for immediate medical assistance. This report considers accessibility from a different perspective i.e. ease of activation of O-H-EMS.

EU directives, issued in 1991 and 2002, define the number 112 as the European emergency call number. The directives demand that each EU country ensures that citizens, apart from being able to call other emergency numbers, can activate an emergency response by calling 112. Article 26 of the Universal Service Directive deals with the single European emergency call number and provides for the following¹⁷:

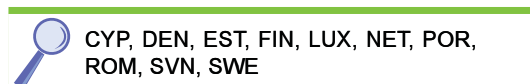
- 1) *Member States shall ensure that, in addition to any other national emergency call numbers specified by national regulatory authorities, all end-users of publicly available telephone services, including users of public pay telephones, are able to call the emergency services free of charge, by using the single European emergency call number 112.*
- 2) *Member States shall ensure that calls to the single European emergency call number 112 are appropriately answered and handled in a manner best suited to the national organization of emergency systems and within the technological possibilities of the networks.*
- 3) *Member States shall ensure that enterprises that operate public telephone networks make caller location information available to authorities handling emergencies, to the extent technically feasible, for all calls to the single European emergency call number 112.*
- 4) *Member States shall ensure that citizens are adequately informed about the existence and use of the single European emergency call number 112.*

¹⁷ Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communication networks and services. Dated 24 April 2002. Official Journal of the European Union, 2002, L(108):51.

All European countries have declared that citizens have access to emergency call number 112. This number was established by a Council Decision of 29 July 1991¹⁸ and later reinforced in 1998 through Directive 98/10/EC¹⁹ and then included in the Universal Service Directive in 2002²⁰. However, the apparent uniformity of 112 across European countries is misleading. First of all, in only 10 EU Member States has 112 become the unique number to call in the event of a medical emergency. In another two EU Member States, 112 is the only number to call in case of a medical emergency in some regions or federal states but not in all.

Table 3.1 Countries where 112 is the unique emergency call number

Countries where 112 is the only telephone number to call in case of medical emergencies **10**



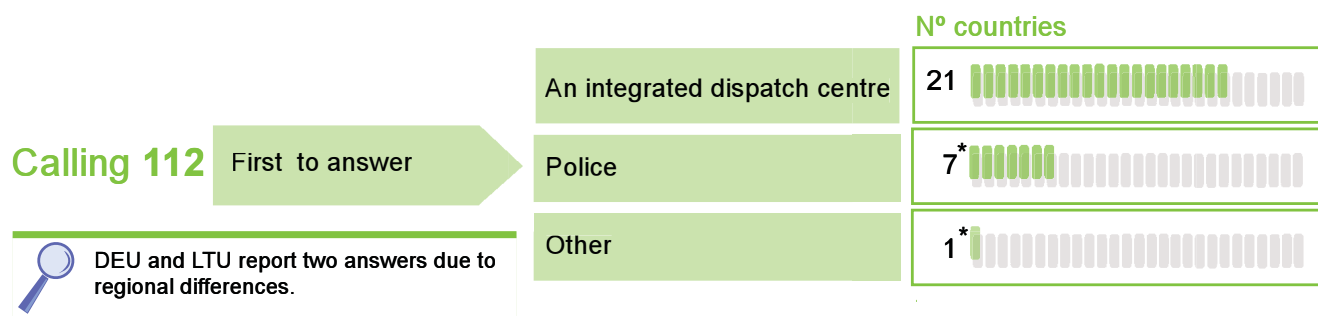
Countries where 112 is the only telephone number to call in case of medical emergencies in some regions or federal states **2**



One positive achievement, however, is that practically, whenever and wherever an individual currently dials 112 in Europe, the emergency call is answered, processed and responded to by the appropriate service(s), either medical, security or fire services, etc.

However, significant differences still exist between countries. An integrated DC, i.e. a centre that coordinates the dispatch of vehicles and personnel of at least two principal emergency management agencies (security services, EMS, fire brigade, etc.), was reported in 21 countries, although some of them have implemented this system only in some regions or municipalities (e.g. Romania, Latvia, Lithuania). In seven EU Member States, when an individual dials 112, security services take the call. Only Germany reported that, depending on the federal state, the 112 call is taken by either the fire brigade or the Red Cross (which is then responsible for delivering medical assistance).

Table 3.2 Who is first to answer 112 emergency call?



18 Council Decision of 29 July 1991 on the introduction of a single European emergency call number (91/396/EEC). Dated 6 August 1991. Official Journal of the European Union, 1991, L(217).

19 Directive 98/10/EC of the European Parliament and of the Council of 26 February 1998 on the application of open network provision (ONP) to voice telephony and on universal service for telecommunications in a competitive environment. Dated 1 April 1998. Official Journal of the European Union, 1998, L(101):24.

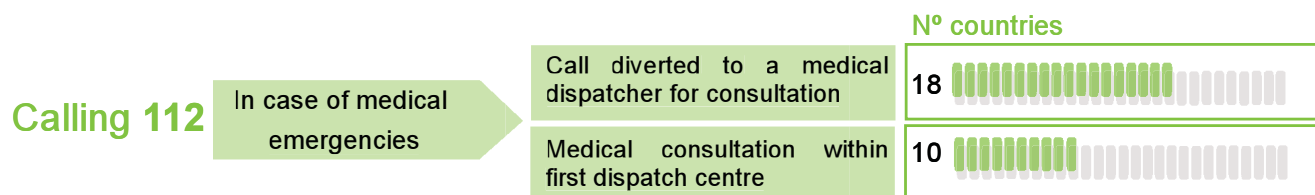
20 Directive 2002/22/EC (see footnote n°17).

An efficient emergency call centre is essential to avoid delays and to provide an effective service. A DC should be capable of rapidly identifying needs and promptly dispatching the appropriate services. It is well documented that the timeliness and quality of care provided by the EMS system has a significant influence on patient outcome²¹.

Within this project, two models were identified in EU Member States:

- the 112 centre where a medical consultation is immediately available within the centre itself; and
- the 112 centre that transfers the call to a second-line emergency DC when a medical consultation is required.

Table 3.3 Response models to 112 emergency call



Two thirds of countries in the EU operate DCs that transfer the call to another centre when a medical consultation is needed (see Table 3.3). This aspect requires further study, to establish whether diverting the call significantly delays response times or not.

This project confirms that Member States are in the process of implementing the EU Directive on access to the 112 emergency call number free of charge and without requiring an area code or prefix. Equally, it confirms that 112 is available free of charge from public payphones. The only exception is Spain, which reported that the health emergency number “061”, serving as the activation number for EMS in some regions, is not free of charge.

Table 3.4 Access to 112 emergency number



According to data collected by the EC in 2000, in the context of its regular Eurobarometer surveys, only 19.2% of the total European population could cite 112 as the number to call in the event of an emergency²² suggesting that EU citizens are unfamiliar with emergency number 112.

²¹ Dagher M, Lloyd R. Developing EMS quality assessment indicators. *Prehospital and Disaster Medicine*, 1992, 7(1):69-74.

²² Knowledge of the single European emergency call number 112. European Protection Agency. (http://ec.europa.eu/environment/civil/prote/112/112_knowledge_en.htm, accessed 16 September 2008).

More effort should be directed to enforcing point 4 of Directive 2002/22/EC²³, which urges greater action in educating the public and investment in social marketing of 112 as the unique European emergency call number. In recognition of the multicultural nature of present-day Europe²⁴, 24 countries can provide immediate translation into English, since this language is considered to be spoken or understood by most tourists in Europe. The language of resident minority populations is catered for by 44,4% of EU Member States. This is probably ensured more effectively if the language is officially recognized. Interestingly, the results of the Flash Eurobarometer on “The European Emergency Number 112” indicated that multilingual support was more often available for respondents who called 112 than those who called other national emergency numbers and perceived communication problems were half as frequent²⁵. Fewer communication problems are encountered where 112 is the main emergency call number.

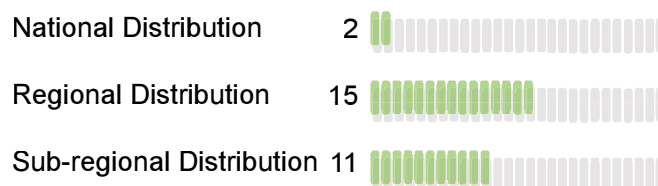


3.2 Dispatch centres

Dispatch centres (DC) receive telephone requests for ambulance services, provide medical advice on the telephone and organize the coordinated dispatch of appropriate resources (i.e. transport and personnel). In other words, the role of the DC is to get the right resources to the right patients in the appropriate amount of time²⁶.

Due to obvious geographical differences, the number and distribution of medical DCs across EU Member States varies. Region-based distribution was reported in 15 countries and subregion-based in 11 countries. At the time of this report, three EU Member States (Estonia, Luxembourg and Malta) have only one national emergency coordination centre due to their small geographical areas.

Table 3.5 Geographical distribution of dispatch centres



²³ Directive 2002/22/EC (see footnote 17)

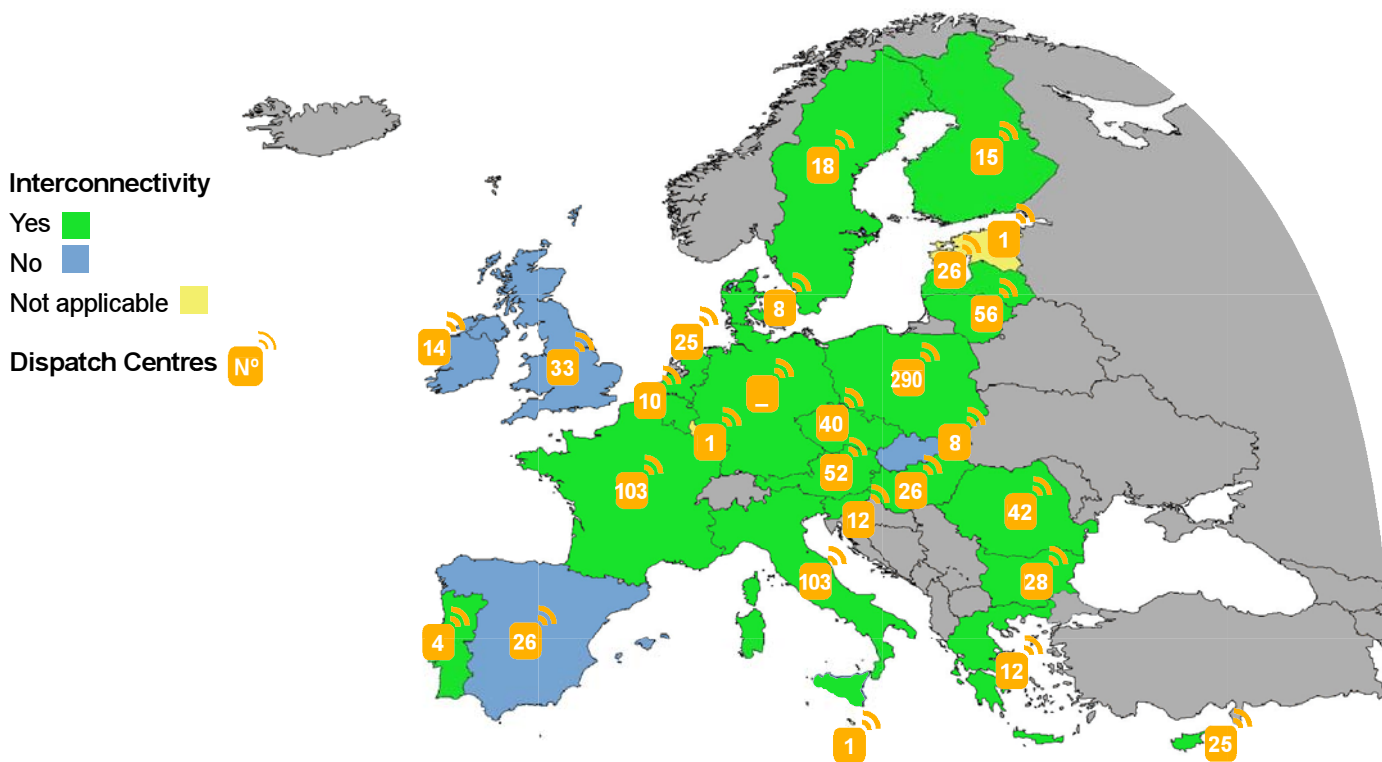
²⁴ Flash Eurobarometer 217: Intercultural dialogue in Europe. The Gallup Organization for the European Commission, December 2007 (http://ec.europa.eu/public_opinion/flash/fl_217_sum_en.pdf, accessed 16 September 2008).

²⁵The Gallup Organization. Flash Eurobarometer 228: The European emergency number 112. European Commission, February 2008. (http://ec.europa.eu/public_opinion/flash/fl_228_sum_en.pdf, accessed 16 September 2008).

²⁶ Pan American Health Organization, see footnote no.6.

The capacity to co-ordinate actions between one or more DCs within the same country or region (hereby named “interconnectivity”) was taken as an indicator of quality and effectiveness of the O-H-EMS^{27 28 29}. Institutionalized interconnectivity between DCs was identified in 20 countries.

Table 3.6 Total number of dispatch centres and interconnectivity



The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the World Health Organization.

27 Key CB. Operational issues in EMS. *Emergency Medicine Clinics of North America*. Nov 2002, 20(4):913-27.

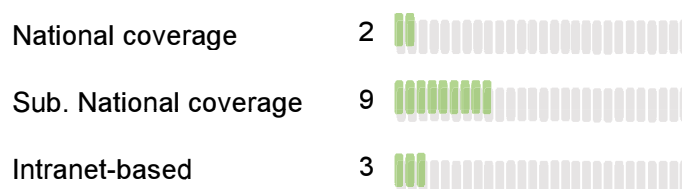
28 Koh HK et al. Implementing the cities readiness initiative: lessons learned from Boston. *Disaster Medicine and Public Health Preparedness*, Mar 2008, 2(1):40-9.

29 Pan American Health Organization. *Conclusions and recommendations of the meeting on evaluation of preparedness and response to hurricanes Georges and Mitch*, Washington, D.C., 1999, p37.

Of the seven countries that lack good links, one is planning to achieve interconnectivity in 2008, while the issue may be irrelevant for the two smaller island countries (Malta and Cyprus).

With increasingly sophisticated infrastructure, it is desirable that techniques and procedures that ensure cooperation and information-sharing between two or more neighbouring DCs be used more frequently³⁰. For instance, one objective is to display real-time up-to-date data on crucial information that, especially if transmitted electronically, can save work and time, and diminish potential errors. In the event of mass casualties or crises, the importance of this link becomes absolutely crucial^{31 32}. This study focused on real-time information about available intensive-care beds; the analysis shows that nine countries have institutionalized real-time information sharing available at subregional level and two at national level.

Table 3.7 Real-time update of intensive care beds



Although the use of information technology has increased in Europe³³ and technical developments in the field of medicine have benefited EMS^{34 35 36 37}, information on intensive-care bed availability is currently shared through a secured Internet connection in three countries only (Austria with the exception of two federal states, the Netherlands and United Kingdom).

30 Arnold JL et al. Information-sharing in out-of-hospital disaster response: The future role of information technology. *Prehospital and Disaster Medicine*, 2004,19(2):201–207.

31 Mathew D. Information technology and public health management of disasters - A model for South Asian countries. *Prehospital and Disaster Medicine*, 2000,15(3):s40.

32 Banks LL, Shah MB, Richards ME. Effective healthcare system response to consecutive Florida hurricanes. *American Journal of Disaster Medicine*, 2007 Nov-Dec, 2(6):285-95.

33 WHO Global Observatory for eHealth. Building foundations for eHealth in Europe. Geneva, World Health Organization, 2006 (<http://www.who.int/ehealth/resources/bf/full.pdf>, accessed 16 September 2008).

34 Chan J. Information technology and emergency medicine: Present and future. *Prehospital and Disaster Medicine*, 2001, 16(3):S118.

35 Ng BBL. Medical history in an emergency: Tapping information technology. *Prehospital and Disaster Medicine*, 2001, 16(3):S118–9.

36 Gossage JA et al. Mobile phones, in combination with a computer locator system, improve the response times of emergency medical services in central London. *Annals of the Royal College of Surgeons in England*, 2008 Mar, 90(2):113-6.

37 Latifi R et al. Telemedicine and telepresence for trauma and emergency care management. *Scandinavian Journal of Surgery*, 2007, 96(4):281-9.

3.3 Ambulance services

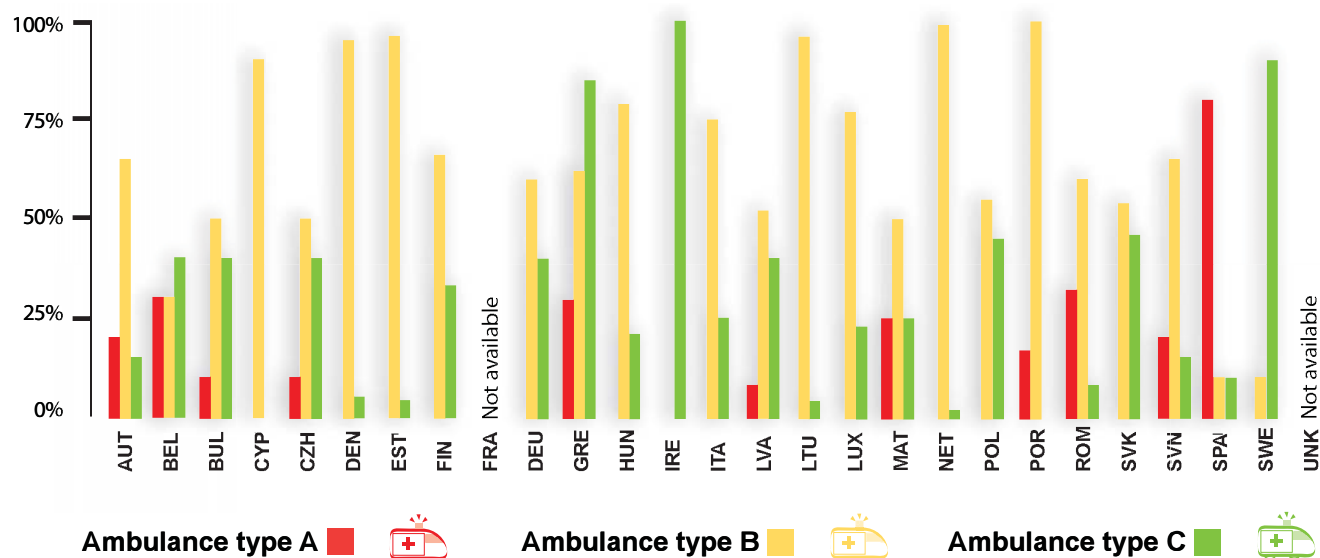
This study focused on ambulances only, with insufficient collection of data with regard to other means of transportation (helicopter, airplane, boats etc). In fact, the collection of complete and accurate information on the utilization of ambulances proved extremely difficult and the data may need further review.

According to the latest EU standards, road ambulances can be categorized into three types³⁸:

- Ambulance type A: patient transport ambulance. Road ambulance designed and equipped for the transport of patients who are not expected to become emergency patients.
- Ambulance type B: emergency ambulance. Road ambulance designed and equipped for the transport, basic treatment and monitoring of patients.
- Ambulance type C: mobile intensive care unit. Road ambulance designed and equipped for the transport, advanced treatment and monitoring of patients.

These three types of vehicles are used in O-H-EMS to different degrees in EU Member States. The assessment focused on the ratio between different types of ambulances. However, given the difficulty of obtaining this information, especially in countries where EMS is managed and regulated at subnational level (Italy, Spain, etc.) approximate data from 25 countries were supplied.

Table 3.8 Percentage of ambulance types by EU Member State



38 BSI. Medical vehicles and their equipment. Road ambulances. BS EN 1789:2007, June 2007.

In 14 countries, ambulance type A is no longer in use for EMS and may be used only for non-medical transport. It is worth mentioning that in order to make the best use of resources, a two-tier system has been set up in most European countries and consists of emergency medical technicians or nurses as the first tier, and mobile intensive-care units as the second tier. Those who provide advanced emergency care are often physicians or highly skilled health-care providers performing a wide range of interventions and procedures. The effectiveness of this advanced tier of care is as yet unproven. Evidence of the value of different emergency delivery models, such as tiered levels of response, economic effectiveness of type of EMS system, and deployment of different types of health-care providers, is either non-existent or inconclusive^{39 40}.

■ 3.4 Coordination with other emergency services

The value of integrating and coordinating emergency care amongst various agencies is an important factor to be considered. Security services (e.g. police, fire brigade and voluntary organizations) have been considered in this study as other actors, often involved in medical emergency response. Fire fighters have traditionally provided emergency medical care and are usually well equipped. In more than one country, fire fighters participate in delivering emergency medical care more than the other two groups. Police and fire fighters are very often the first professional witnesses of acute illness or injury, arriving before EMS personnel. It is important that these public officers be trained in the provision of basic life support (BLS) techniques and that there is training and close cooperation among professionals at the scene with regard to rescue from crash vehicles and safety at the scene. In Belgium and France, where the two emergency systems are frequently interwoven, fire fighters substitute ambulance services on a regular basis, so that the *pompiers* largely provide BLS.

There are no available studies on the added value that may be derived from integrating police and fire services in the provision of first aid or BLS. However, there is consensus that all mobile units of these services should be equipped with, at least, an automated external defibrillator⁴¹. At present only four countries equip their police cars with this life-saving device.

Table 3.9 Medical equipment available in non-EMS Emergency vehicles

	Police	Fire Brigade	Volunteers	Other
Cervical collars	2	16	9	3
Oxygen	1	16	7	3
Suction unit	1	9	7	2
Aut external defibrillator (AED)	4	12	8	4
Manual resuscitator	2	11	9	2
Other medical equipment	5	12	10	5
Functional co-ordination with EMS dispatch centre	13	18	8	5

39 Sasser S et al. Prehospital trauma care systems. Geneva, World Health Organization, 2005.

40 Fischer M et al. Comparison of the emergency medical services systems of Birmingham and Bonn: Process efficacy and cost effectiveness. *Anesthesiol Intensivmed Notfallmed Schmerzthe*, 2003 Oct, 38(10):630-42.

41 European Transport Safety Council. Reducing the severity of road injuries through post-impact care. Brussels, 1999.

■ 3.5 Conclusions

Greater awareness is necessary to ensure successful implementation of 112 as the European emergency call number, at least in the countries that did not adopt 112 as the unique emergency call number as yet. The foremost value of the EU Directive number (91/396/EEC) is its clear statement on the need to prevent misunderstandings and delays in accessing EMS, for all EU citizens. Despite the years that have already elapsed since the Directive was issued, full implementation is still incomplete: an indicator of the level of effort required for effective coordination within the EU. Efforts at integration of DCs for the different emergency agencies have commenced in most EU countries but optimization of this system is still a long way off, especially if broader coordination is desired: the distribution of DCs across populations and areas differs greatly between EU countries. No data are available as far as the optimal spread is concerned. Evidence-based criteria should be used to achieve interconnectivity and data sharing among DCs. Development of performance indicators for O-H-EMS and the application of these indicators to different systems could provide the data necessary for a cost-effective optimization of the system.

■ 3.6 Recommendations

Short-term recommendations:

A recognized and authoritative institution should:

- Provide a list of quality indicators concerning out-of-hospital Emergency Medical Services.
- Propose internationally recognized curricula of first aid for first responders such as fire brigade, volunteers and police.

All the Member States of the European Union should:

- Ensure effective coordination and response to avoid delay in case of medical emergencies.
- Improve access of minorities and foreigners to all Emergency Medical Services systems in Europe.
- Ensure emergency calls are dealt with by Emergency Medical Services, only with type B and C ambulances.
- Report on the percentage of patients (in the highest coding category) reached within eight minutes of receiving the emergency call.

Long-term recommendations:

A recognized and authoritative institution should:

- Pave the way for a common research strategy in the European Union strategic paper.

All the Member States of the European Union should:

- Improve systems to allow sharing of real-time information between medical services and dispatch centres.
- Place the activity of medical first responders, when dealing with medical emergencies, under the operative management of medical dispatching.



In-Hospital EMS






In-Hospital EMS

The emergency department (ED), sometimes called emergency room, emergency ward, accident & emergency department or casualty department is a hospital department that provides initial treatment to patients. Treatment can be given for a broad spectrum of illnesses and injuries, some of which may threaten the life or physiological functioning of the patient thus requiring immediate attention. For the purposes of this project, the definition of ED given in the WHO glossary has been adopted: “an area of the hospital permanently and specifically staffed and equipped to receive and treat emergency patients presenting with injuries and sudden illness”.

During the 20th century, EDs developed in response to an increased need for rapid assessment and management of critical illnesses. They usually provide a service that is open to the public 24 hours a day, 7 days a week.

In practically all EU countries, EDs are a legally-required component of hospitals although in Slovakia, Slovenia and Portugal, the WHO definition given above might not fit with the current reality in these countries. The creation of EDs is a trend that started in the 1990s and represents the most important change in recent years in the structure of hospitals and provision of health care in Europe.

Table 4.1 Presence of Emergency Departments by type of hospital

University	22	
Regional	23	
District	21	
General	18	
Private	7	

4.1 Triage system

Triage can be defined as “the sorting of patients into priority groups according to their needs and the resources available”

⁴². This standard procedure ensures the efficient use of available resources e.g. personnel, supplies, equipment, means of transportation and medical facilities; and thus affects the extent and quality of care delivered by the EMS system⁴³.

Within the EU, triage was first introduced in EDs, in an attempt to cope with rising demand for emergency services. In contrast, O-H-EMS still need to disseminate and strengthen this practice. Almost all EU Member States (24 out of 27) use triage protocols in their hospitals, while in 21 countries, the ambulance service also uses triage. In Romania, a national triage index was being developed at the time of the project. However, only 19 countries assert that triage protocols are used by DCs. This seems counter-intuitive, especially when we consider that most countries have reported that they use a multi-tier ambulance system, indicating that DCs should be able to dispatch more than one type of ambulance. If so, this highlights the need to prioritize patients more effectively. Detailed and specific guidelines and protocols can improve the quality of the DC response; medical actions should not be based solely on the personal judgement of the dispatcher⁴⁴.

⁴² Kennedy K et al. Triage: Techniques and applications in decision-making. *Annals of Emergency Medicine*, 1996; 28(2):136-144.

⁴³ Culley LL et al. Increasing the efficiency of emergency medical services by using criteria based dispatch. *Annals of Emergency Medicine*, 1994; 24(5):867-872.

⁴⁴ Dong SL et al. Emergency triage: comparing a novel computer triage program with standard triage. *Academic Emergency Medicine*, 2005 Jun, 12(6):502-7.

It is reported in the literature that the use of different triage scales within the same EMS system may pose a safety risk for patients⁴⁵. According to the results of this study, only in 11 EU Member States (41%) do triage guidelines for DCs follow national standards. In addition, it seems that each hospital or ED has developed its own protocol, without coordination and standardization within the country and with other EMS (i.e. O-H-EMS). Given the ever-increasing demands on the EMS system and referral of acute care patients between different hospitals, triage guidelines that are recognized and shared throughout the EMS system, especially in the in-hospital environment, could improve the referral network and increase the efficiency of the entire system^{46 47}.



New information and computer technology can help health-care providers to manage patient records at all levels. Computerized versions of some of the most popular triage protocols may modify health-care provider behaviour positively and significantly improve the evaluation and assignment of priority, although its clinical significance is still under discussion^{48 49}.

This assessment found that computerized triage systems in DCs are established in 13 EU Member States only, while the number is even smaller in the in-hospital setting. The low number (6 out of 27) of ambulance services capable of electronic recording of triage records is understandable, due to the differing environments in which ambulance crews operate.

Table 4.2 Triage protocol use

	Dispatch Centres	Ambulance Services	In-hospital
Use of triage protocols	19	21	24
Standardized at national level	11	17	9
Computerized recording	13	6	10

45 Göransson KE, Ehrenberg A, Ehnfors M. Triage in emergency departments: national survey. *Journal of Clinical Nursing*, 2005, 14(9):1067-74.

46 Reilly BM et al. Impact of a clinical decision rule on hospital triage of patients with suspected acute cardiac ischemia in the emergency department. *Journal of the American Medical Association*, 2002, 288:342-350.

47 Holroyd BR et al. Impact of a triage liaison physician on emergency department overcrowding and throughput: A randomized controlled trial. *Academic Emergency Medicine*, 2007, 14:702-708.

48 Levin S et al. The effects of computerized triage on nurse work behavior. In: *AMIA Annual Symposium Proceedings*, 2006,2005.

49 Dong SL et al. Reliability of computerized emergency triage. *Academic Emergency Medicine*, 2006 Mar, 13(3):269-75.

4.2 I-H-EMS as a safety net

Access to I-H-EMS is open, allowing users to walk in without referral or medical prescription. Specific identification documents or payments are usually not demanded, the aim being not to delay or hamper a patient's access to care for life-threatening conditions.

This attitude of acceptance and provision of medical care to any patient has resulted in an exponential increase in the utilization of this service, leading to overcrowding in EDs^{50 51}. This has been particularly evident over the last two decades during which time EU Member States have put in place mechanisms to control and/or contain the abuse of primary and secondary health-care services by the public.

These measures, aimed at containing inefficient and unnecessary expenditures in the health sector have often left EDs as the only (or the easiest) service that can be accessed by those citizens who, for whatever reasons, cannot access preventive, diagnostic and therapeutic services through the usual channels⁵². In some countries, EDs have become important entry points for those without other means of access to medical care^{53 54}.

A specific section of the questionnaire aimed to identify potential barriers to accessing I-H-EMS: this mostly referred to pre-conditions for receiving emergency care services at an ED. All countries answered that no limitation or pre-condition existed, although in some cases an identification document or a GP referral is a requirement for access. However, this was waived in the event of vital (life-threatening) conditions.

Table 4.3 Conditions to access Emergency Department waived in case of vital conditions

• Social security number	-	
• GP referral	2	
• Ambulance referral	-	
• Citizenship	-	
• Co-payment	-	
• Identification document	3	
• Others (please specify)	-	
• No limitation	27	

NB: Multiple answers allowed

50 Lombrail P et al. Another look at emergency room overcrowding: accessibility of the health services and quality of care. *International Journal for Quality in Health Care*, 1997 Jun; 9(3):225-35.

51 Bond K et al. Frequency, determinants and impact of overcrowding in emergency departments in Canada: a national survey. *Healthcare Quarterly*. 2007, 10(4):32-40.

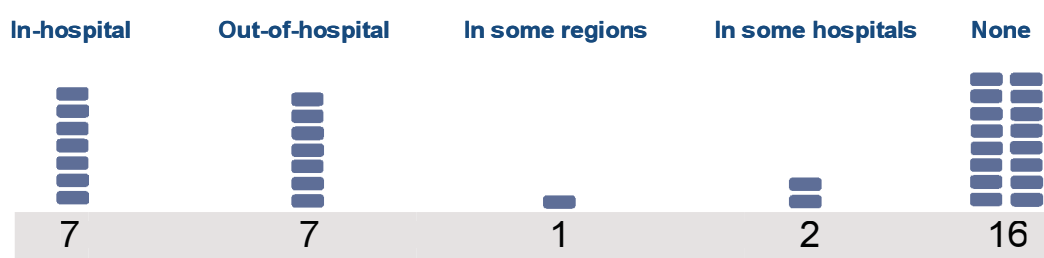
52 Gordon J. Emergency care as safety net. *Health Affairs (Project Hope)*, 2000 Mar-Apr, 19(2):277.

53 Pisarek W et al. Insured versus uninsured patients in the emergency room: is there a difference? *European Journal of Emergency Medicine*, 2003 Dec, 10(4):314-7.

54 Shah SM, Cook DG. Socio-economic determinants of casualty and NHS Direct use. *Journal of Public Health*, 2008 Mar; vol 30 (issue 1):pp 75-81.

It is worth noting that a similar question was also asked in a different section of the questionnaire, namely in the chapter analysing “Legislation and Financing”.

Table 4.4 Request for co-payment fees waived in event of vital conditions



NB: multiple answers allowed

In this particular instance, some EU Member States have noted that a form of payment (fees or co-payment) is necessary in order to access in-hospital and out-of-hospital EMS care.

Further investigation should be conducted to clarify this apparent discrepancy and to achieve a clearer understanding of the actual accessibility of “uninsured” or “not eligible” patients.

The World Health Organization Regional Office for Europe has recently developed a new research model to investigate the impact of migration on health systems. This aims to provide a comparison of utilization rates between migrant and native populations. It is expected that results will be published shortly.

4.3 Referral network system

The use of EMS systems by patients as a substitute for primary or secondary care services highlights the consequences of re-organizing out-of-hospital and primary care services without appropriate attention to the interface with secondary and tertiary care⁵⁵.

As Cooke reported:

“Overcrowding in emergency departments can be solved only by measures across the whole health community. In the pre-hospital phase, systems must be in place to avoid unnecessary attendance at the emergency department (for example, easy availability of urgent primary care, protocols for ambulance services to discharge patients to a variety of destinations, access to urgent specialist clinics). Some, however, have suggested that it is better to adapt the emergency department system and that creating new routes may increase total workload”⁵⁶.

Health sector administration in the EU has evolved from a centralized control system, in the main operated directly by MoHs, to a decentralized management by hospital trustees and Local Health Authorities who have taken over responsibility for the planning and management of all health services in a given area.

55 Chadler M et al. Impact of NHS walk-in centres on the workload of other local healthcare providers: time series analysis. *British Medical Journal*, 2003;326(7388):532.

56 Cooke M. Emergency medicine. Whole system is responsible for solving overcrowding of departments. *British Medical Journal*, 2002, 325(7360):389.

In addition, given increased population mobility, health facilities and services have become more entwined, with a higher degree of cooperation and exchange of patients and services.

This is particularly true in emergency care, where neighbouring EMS can cooperate to fill temporary or permanent gaps in service provisions: patients are easily transported from one hospital to another if adequate care is available in one only (e.g. neurosurgery, cardiovascular surgery, ICU, etc.), or when unanticipated patient flows necessitate extra resources and services.

Therefore, I-H-EMS have many reasons for establishing clear agreements and protocols of collaboration that define roles and responsibilities when providing diagnostic and therapeutic services to emergency patients. Such agreements could also allow ambulance crews to choose a hospital not simply according to the “nearest and fastest to reach” principle, but also to the appropriateness of care services available. Equally, ambulances could be diverted to other services and hospitals when/if overcrowding of I-H- EMS occurs^{57 58}.

In this project, 18 EU Member States stated that intra-hospital referral systems and mechanisms exist. Given the importance of this subject, it would be worthwhile to enrich this data, verifying the basis of the network, its legal framework, its effectiveness, etc. Without doubt, efforts to increase and spread the application and use of a referral network for the whole EMS system should be encouraged.

Table 4.5 In Emergency Departments, use or presence of

An established network for intra-hospital referral 18 

■ 4.4 Quality of care

“The challenge in large part remains to define quality-of-care measures that make sense in emergency care”⁵⁹. A lively debate on quality of care, its measurement, applications and effectiveness continues worldwide but little consensus has been reached to date. Even in the United States of America, where EMS have attained a certain degree of maturity, attempts at standardization of quality and performance measurements have failed to achieve an international dimension⁶⁰.

The main reason for this difficulty is the very nature of the EMS system itself: a horizontal structure that intersects with all other health-care services, from the primary to the tertiary sector, and involving several services, facilities and resources. The “fate” of each patient in EMS depends on the interaction of all these factors and thus, the assessment of quality of care in EMS is difficult if analysed only through the clinical outcomes of patients.

Standards and indicators of quality can vary: from the application of protocols and procedures, to the knowledge of EMS operators, to the use of morbidity and mortality rates, etc. One of the most typical indicators used in pre-hospital

57 Harrington DT et al. Transfer times to definitive care facilities are too long: a consequence of an immature trauma system. *Annals of Surgery*, 2005 Jun, 241(6):961-6, discussion 966-8.

58 Svenson J. Trauma systems and timing of patient transfer: are we improving? *American Journal of Emergency Medicine*, 2008 May, 26(4):465-8.

59 Feldman JA. Quality-of-care measures in emergency medicine: when will they come? What will they look like? *Academic Emergency Medicine*, Sep 2006, 13(9):980-2.

60 Graff Let al. Measuring and improving quality in emergency medicine. *Academic Emergency Medicine*, 2002, 9(11): 1091-1107.

EMS is ambulance response times and on-scene times. Nevertheless, even these indicators are questionable in their ability to express quality of care of EMS^{61 62}.

The following should be considered when developing indicators of quality:

- The geography of the area covered by the EMS system.
- The type and characteristics of the EMS system.
- The final impact of the EMS intervention on the overall health and well-being of the patient.
- The spectrum of medical conditions treated by EMS (trauma constitutes a minor part of the spectrum).
- Accessibility and user-friendliness.
- Patient satisfaction.

The dearth of objective process and outcome data presents difficulties in evaluating the advantages and disadvantages of any service model. In 2002, the EC funded a research project called the European Emergency Data Project (EED Project)⁶³ that aimed to develop a comprehensive list of indicators to enable the monitoring and evaluation of O-H-EMS in EU Member States. Five key indicators applicable to EMS clinical practice were identified (with a major focus on out-of-hospital services):

- 1) Unit hours (ELS+BLS+ALS) p.a./100 000 inhabitants (indicator of availability of organised EMS resources).
- 2) Response time (% within (480 sec) for highest priority p.a. (indicator of reliable access to organised EMS care).
- 3) Rate of highest priority responses p.a./100 000 inhabitants (indicator of demand/workload of organized EMS).
- 4) Rate of ALS interventions p.a./100 000 inhabitants (indicator of level of care of the EMS).
- 5) Rate of First Hour Quintet incidences p.a./100 000 inhabitants (indicator of those critical conditions on which EMS can have a significant impact on the outcome).

To date, however, consistent and homogeneous analysis remains elusive due to lack of data on out-of-hospital care. An added difficulty is the substantial differences in capacities and backgrounds that exist between the 27 EU Member States. The present assessment has touched on the issue of quality measurement using two simple questions and aims to verify the availability in each EU Member State of quality standards and systems of monitoring. Results indicate that national standards for performance of EDs are in place in 15 countries, while a set of quality monitoring indicators are collected and evaluated in 13 countries.

Table 4.6 In Emergency Departments, use or presence of

National standards of performance

15 

Quality monitoring system

13 

61 MacFarlane C, Benn CA. Evaluation of emergency medical services systems: a classification to assist in determination of indicators. *Emergency Medicine Journal*, 2003, 20(2):188–191.

62 Kuisma M et al. Customer satisfaction measurement in emergency medical services. *Academic Emergency Medicine*; Jul 2003; 10 (7):812-5.

63 Krafft T et al. Health monitoring and benchmarking of European EMS systems: Components, indicators, recommendations. European emergency data project EMS data-based health surveillance system. Project Report to Grant Agreement No. SPC.2002299 under the European Community Health Monitoring Programme 1997-2002.

(http://www.geographie.uni-muenchen.de/eed/assets/publications/eed_report_complete.pdf, accessed 16 September 2008).

4.5 Social care

EDs provide an essential public service characterized by relatively easy access and constant availability. In other words, EDs are required to see "all people at all times regardless of the problem"⁶⁴, even if this means assessing and treating patients for social problems that typically fall outside the remit of acute-care hospital services.

Many studies show that a percentage of patients admitted to EDs are more in need of social assistance than medical care and that if social care⁶⁵ is provided, some admissions could be avoided⁶⁶. Generally, social care is needed for disadvantaged people such as the elderly, migrants, homeless or victims of domestic violence.

Social workers can enhance effectiveness by improving the quality of communication and patients' satisfaction⁶⁷. However, no consensus has been reached on what constitutes adequate social care in EDs: more evidence is required⁶⁸. NRs responded that social workers are attending work shifts in EDs in seven countries out of 27, while eight countries out of 27 have a pilot project in place in selected hospitals.

Table 4.7 In Emergency Departments, use or presence of

Social workers



Studies conducted in Europe investigated the influence of cultural and ethnic factors on the doctor-patient relationship, including in EDs. They found that good communication and training of medical staff in intercultural competence are crucial to the relationship between the health services (and its operators) and patients, especially in emergency situations^{69 70}. Similarly, language and culture can also be an important obstacle to health-care provision. The use of interpreters and intercultural mediation in the health sector is intended to improve the interface between professionals and service users from different cultural and ethnic backgrounds and to solve any disputes between people from different cultures where language, culture, socioeconomic and personal circumstances could cause difficulties. This might eventually boost the quality of care, including patient satisfaction and performance.



64 Gordon JA. The hospital emergency department as a social welfare institution. *Annals of Emergency Medicine*, 1999, 33:321-5.

65 Wrenn K, Rice N. Social work services in an emergency department: An integral part of the health care safety net. *Academic Emergency Medicine*, 1994; 1:247-253.

66 University of Warwick. Initial evaluation of a pilot social worker attachment to emergency assessment unit and admission wards at Walsgrave Hospital. Summary Report, University Hospitals Coventry and Warwickshire NHS Trust, July 2001.

67 Bywaters P, McLeod E. Social care's impact on emergency medicine: A model to test. *Emergency Medicine Journal*, 2003, 20:134-137.

68 Gordon J. 1999. See footnote 54.

69 Babitsch B. et al. Doctor's perception of doctor-patient relationships in emergency departments: What roles do gender and ethnicity play? *BMC Health Services Research*, 2008, 8:82.

70 Nierkens V et al. The future of intercultural mediation in Belgium. *Patient Education and Counselling*, 2002, 46(4):253-9.

This issue is particularly relevant in most EU Member States where the phenomenon of immigration is on the rise^{71 71 73}. Of the 27 EU Member States participating in this assessment project, intercultural mediators and/or interpreters are present in seven countries (five of these are pilot projects). In some countries, interpreters are present in hospitals in areas with a high density of immigrants and foreign patients (e.g. Ireland).

Table 4.8 In Emergency Departments, use or presence of

Intercultural mediators



4.6 Conclusions

The establishment and re-modelling of EDs in EU hospitals has definitively altered the level of access to in-hospital health-care facilities and strengthened relationships between these institutions and patients and also with primary care providers. A negative result of this, however, can be the confusion of roles, with EMS often replacing primary health-care services, especially for people who lack “health literacy” and familiarity with the mechanisms and procedures of health-care systems. All health-care providers at the highest levels should address this lack of clarity regarding the role and capacity of EMS and the overlap with other health-care services. Overcrowding and misuse of EDs has led to the introduction and utilization of triage protocols throughout the whole EMS system to guarantee appropriate emergency care for patients with urgent needs. Networking between hospitals e.g. referring patients from a local or regional hospital ED to a tertiary facility for diagnostic and/or therapeutic reasons, is an important tool to improve quality and a successful outcome itself in the delivery of patient care. The concept of integrated health care is gaining increasing ground and the drive for better co-ordination and collaboration is evident in all areas of health care. *“In theory, a higher degree of this integration should promote increased quality and efficiency in the system, and thus cost-effectiveness. Nevertheless, specific research and evidence are still rare to support this assumption”*⁷⁴.

The horizontal integration of health care, introduced by EDs, has moved the focus of attention away from the medical practitioner, the medical specialties and the different health services to the real centre of care — the patient.

At the same time, the goal of ED care is to re-establish the patient’s “health and well-being”, and this involves attention to the whole patient, including his/her psychosocial needs. Psychosocial problems may be pre-existing or may be caused by sudden illness or injury.

It is evident that I-H-EMS play a crucial role in the current EU health-care system and it is therefore mandatory, in the interests of public health and its financing, that the EMS system be thoroughly evaluated for its effectiveness and quality.

71 Gerrish K et al. Bridging the language barrier: The use of interpreters in primary care nursing. *Health and Social Care in the Community*, 2004 Sep, 12(5):407-13.

72 Hudelson P. Improving patient-provider communication: Insights from interpreters. *Family Practice*, 2005 Jun; 22(3):311-6.

73 Flores G. The impact of medical interpreter services on the quality of health care: A systematic review. *Medical Care Research and Review*, 2005 Jun, 62(3):255-99.

74 Proceeding of a WHO workshop on: “Basic Highlights on Hospital Services Masterplanning, with focus on integrated care” WHO-EURO publication, 2008.

4.7 Recommendations

Long-term recommendations:

A recognized and authoritative institution should:

- Introduce European mechanisms of performance for hospital Emergency Departments.
- Set up quality monitoring systems especially for Emergency Departments.

All the Member States of the European Union should:

- Support the development of European protocol guidelines for most frequent emergency cases including triage.
- Review how the psychosocial needs of patients are detected and treated within Emergency Departments.
- Establish nationwide triage systems for patients at Dispatch Centres, ambulance and in-hospital level, to ensure proper and prompt access and equity in quality of care delivered.



Education in EMS

Education in EMS

Emergency medicine (EM) refers to medical care, including medical assessment, treatment, monitoring and transportation, provided to a person in an emergency. The objective of care is to provide stabilization, deliver medical care, protect life and prevent further occurrences, while delivering first-line medical care. The definition of EM provided by the International Federation for Emergency Medicine is:

*“Emergency medicine is a field of practice based on the knowledge and skills required for the prevention, diagnosis and management of acute and urgent aspects of illness and injury affecting patients of all age groups with a full spectrum of episodic undifferentiated physical and behavioural disorders; it further encompasses an understanding of the development of pre-hospital and in-hospital emergency medical systems and the skills necessary for this development”*⁷⁵.

The European Society for Emergency Medicine (EuSEM) re-defines the subject with some additions:

*“Emergency Medicine is a specialty based on the knowledge and skills required for the prevention, diagnosis and management of urgent and emergency aspects of illness and injury affecting patients of all age groups with a full spectrum of undifferentiated physical and behavioural disorders. It is a specialty in which time is critical. The practice of Emergency Medicine encompasses the pre-hospital and in-hospital triage, resuscitation, initial assessment and management of undifferentiated urgent and emergency cases until discharge or transfer to the care of another physician or health care professional. It also includes involvement in the development of pre-hospital and in-hospital emergency medical systems”*⁷⁶.

In practice, all professionals providing emergency care (i.e. physicians, nurses and paramedics) must possess a broad knowledge base and advanced skills often including surgical procedures, trauma resuscitation, advanced cardiac life support and advanced airway management.

Therefore, EM and nursing encompass all fields of medicine including acute medicine, anaesthesiology and the surgical specialties. EM involves the delivery of care in: the out-of-hospital environment, in the in-hospital environment and provides the interface between the community and the hospital.

5.1 Education and training in EM

The aim of EM is to apply the most experienced and appropriate knowledge and expertise available as soon as possible and in the most cost-effective manner, with the aim of returning patients to their previous health status. A comprehensive and integrated emergency care system that meets a country's needs requires that EM practitioners possess a body of specific knowledge, skills and attitudes.

EM education and training is well established in the EU but varies widely between individual EU Member States. At undergraduate level, EM is a mandatory medical school subject in 16 countries.

Table 5.1 University Studies

Emergency medicine courses are part of the curriculum at medical school 16

⁷⁵ International Federation for Emergency Medicine (<http://www.ifem.cc/index.html>, accessed 16 September 2008).

⁷⁶ Council of the European Society for Emergency Medicine. Manifesto for emergency medicine in Europe. *European Journal of Emergency Medicine*, 1998, 5:1–2.

At postgraduate level, emergency care providers, such as physicians, nurses and paramedics, receive specialist education and training in programmes offered by government agencies, universities, private training institutions or as part of continuing professional education.

Table 5.2 Location of postgraduate training in emergency medicine

	Physicians	Nurses	Paramedics
University-based	10	6	3
Government-based	6	6	9
Private	3	4	2

European bodies that can recognize specialty training include national medical or nursing associations, colleges of medicine and Ministries of Health. Results from this project indicate that 21 countries report board certification or similar accreditation for physicians while 12 countries also award nurses. A survey conducted in 2003 highlighted a similar lack of uniformity in EMS education worldwide⁷⁷.

Table 5.3 Training and certification in Emergency Medicine

Follows a nationally approved curriculum	20	
Provides certification for physicians from a professional board/college	21	
Provides certification for nurses from a professional board/college	14	

In seven EU Member States, the content of most EMS education programmes is not driven by national guidelines. National standards can assist countries in developing and refining their scopes of practice and licensure requirements for EM personnel. This would encourage greater consistency both within individual countries and between EU countries.

5.2 EM as a recognized accredited specialty

Although EM is one of the youngest medical specialties in the world⁷⁸, it is gaining global acceptance⁷⁹. EM had its beginnings in the United States of America in the early 1960s, when four physicians in Alexandria, Virginia, gathered together and formed the first group dedicated to providing care in an ED. It became known as the Alexandria Plan. Almost 20 years later, on 21 September 1979, the American Board of Emergency Medicine was recognized as a conjoint specialty. In 1989, EM became a primary specialty in the House of Medicine of USA.

In Europe, EM is developing rapidly, although this development follows a different path in each Member State. The United

77 Arnold J et al. A survey of emergency medicine in 36 countries. *Journal of the Canadian Association of Emergency Physicians*; 2001, 3:2.

78 Halpern P, Waisman Y, Steiner IP. Development of the specialty of emergency medicine in Israel: Comparison with the UK and US models. *Emergency Medicine Journal*, 2004,21:533–536.

79 Bodiwala GG. Emergency medicine: A global specialty. *Emergency Medicine Australasia*, 2007, 19(4):287-8.

Whilst EM is granted specialty status at national level in many European countries 74%; as late as 2001 only two countries (Ireland and United Kingdom) had registered the fact and formally recognized EM, under the EU Doctors' Directive 2001/19/EC⁸³. In 2005, with the accession of 10 new EU Member States, seven countries (i.e. Czech Republic, Hungary, Ireland, Malta, Poland, Slovakia together with the United Kingdom⁸⁴) had officially registered EM as a specialty with a five-year minimum training programme.

Table 5.5 University Studies

Emergency medicine specialization is recognized by law

19 

Dissemination of the concept of EM has been undertaken by several European and international institutions. Worldwide, 54 countries have an official medical specialization in EM. Reasons for this increasing phenomenon lie in three main factors:

- the achievement of a large body of specific knowledge that requires indepth studies;
- the development of complex and advanced technologies for diagnosis and treatment in emergencies; and
- a perceived need of the health services community that requires specific EM competencies and responsiveness to emergencies.

Many national and international medical organizations have attempted to define a core curriculum for EM providers⁸⁵⁸⁶⁸⁷⁸⁸. The European Society for Emergency Medicine established a dedicated task force with the aim of defining a European curriculum in EM. The group, composed of representatives from 17 National Societies of Emergency Medicine, affiliated to the European Federation, has submitted a proposal for a core curriculum in EM to the Multi-disciplinary Joint Committee (MJC) of the European Union of Medical Specialists (UEMS). The document defines the core competencies, the body of knowledge and the structure of a 5-year training programme for Emergency Physicians. The MJC has approved the final draft of this proposed curriculum, which has been sent to all UEMS medical specialty sections, prior to consideration by the Council of UEMS.

83 Directive 2001/19/EC of the European Parliament and of the Council of 14 May 2001. Dated 31 July 2001. Official Journal of the European Union, 206, p1–51.

84 Directive 2005/36/EC of the European Parliament and the Council of 7 September 2005 on the recognition of professional qualifications. Dated 30 Sept 2005. Official Journal of the European Union L 255/22.

85 Task Force of the European Society for EM (EuSEM). EuSEM core curriculum for emergency medicine. *European Journal of Emergency Medicine*, 2002; 9:308-14.

86 Nolan JP et al. European Resuscitation Council Guidelines for Resuscitation 2005. Section 4. Adult advanced life support. *Resuscitation*, 2005, 67S1:S39—S86.

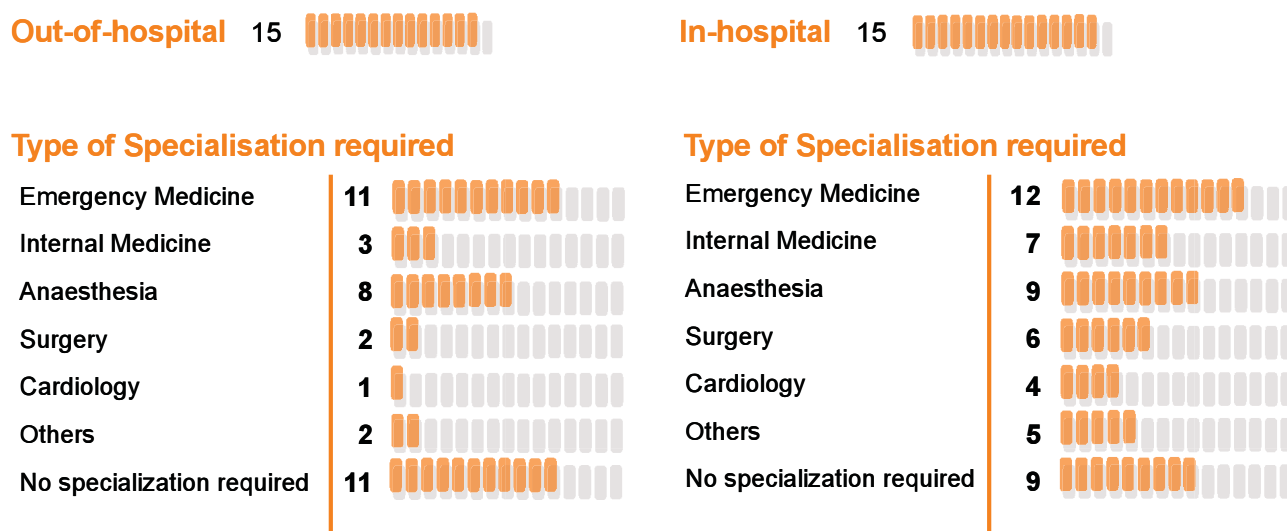
87 Accreditation Council for Graduate Medical Education. ACGME Outcome Project; 2006. (<http://www.acgme.org/Outcome/>, accessed 16 September 2008).

88 Verdile VP et al. Model curriculum in emergency medical services for emergency medicine residency programs. *Academic. Emergency. Medicine*, 1996, 3:716–722.

5.3 Qualifications of EM providers

The training required to work in EMS varies greatly across Europe. Many countries (15) require EMS physicians (both out-of-hospital and in-hospital) to be a specialist in at least one or more medical areas (e.g. intensive care, anaesthesiology, EM or emergency surgery, traumatology, cardiology, general internal medicine, etc.).

Table 5.6 Required specializations for EMS physicians



Within the framework of this project, an attempt was made to analyse the categories of education for professionals involved in EM. However, this research highlighted, once again, the remarkable differences in the education systems of the EU and a sound analysis and summary of all medical cadres and their past education was found to be practically impossible.

Progress in pursuing uniformity of education within the EU has been promoted in recent years. All EU Ministries of Education proposed to establish a uniform and harmonized system of higher education. The initiative known as the “Bologna process”⁸⁹ establishes important common objectives, such as the adoption of a common framework of readable and comparable degrees and the introduction of undergraduate and postgraduate levels in all countries, with first degree courses no shorter than three years⁹⁰. The Bologna Declaration of June 1999 put into motion a series of reforms to enable compatibility and comparability in European higher education.

Unfortunately this initiative is still very much in its early stages: Project NRs encountered major difficulties in categorizing the curricula of EMS professionals (physicians, nurses, paramedics, technicians, etc.).

The wide variety of results obtained demonstrates that the system for EMS education and training in Europe is going through a difficult, and possibly long, evolutionary phase. Thus, this topic does not form part of the analysis, due to the vast differences and lack of uniformity encountered.

⁸⁹ The Bologna process. Towards the European higher education area. European Commission (http://ec.europa.eu/education/policies/educ/bologna/bologna_en.html, accessed 16 September 2008).

⁹⁰ The Bologna Declaration on the European space for higher education: an explanation. Confederation of EU Rectors’ Conferences and the Association of European Universities (CRE). (<http://ec.europa.eu/education/policies/educ/bologna/bologna.pdf>, accessed 16 September 2008).

5.4 Conclusions

One of the main findings of this study is the lack of uniformity, as far as training in and accreditation of specialists in EM is concerned. The adoption by all EU countries of a common core curriculum, as the basis for the specialty, is the most suitable way to fulfil the EU Doctor's Directive and assure free exchange of EM physicians between EU countries.

It is comprehensible that the relatively young age of this medical discipline requires a longer period to achieve full maturity. Nevertheless, universities and medical schools in many Member States underestimate the importance of inserting formal courses in EM at the undergraduate level. Any medical doctor, whatever specialty he/she will choose to follow, could conceivably encounter a major accident or an individual medical emergency at any time: basic and simple knowledge can make a difference to the life of a patient, as demonstrated by the huge number of lay volunteers attending "first-aid" courses.

The situation of paramedical staff is even more complicated and heterogeneous than that of EM physicians in all Member States. The role, competencies and educational requirements of nurses and "paramedics" (in those countries where such a cadre has been introduced) are substantially different across countries, to the extent that achieving standardization and quality improvements are unrealistic at the present moment. This aspect merits greater attention, since non-medical staff play a crucial role in delivering emergency care to patients, as well as in participating and organizing the rescue and care of victims of major disasters.



5.5 Recommendations

Short-term recommendations:

All the Member States of the European Union should:

- Extend and regulate specialization in Emergency Medicine for doctors, in line with European Union directive 2006/100/EC.
- Introduce and regulate specialization in Emergency Medicine for nurses.
- Include in the pre-graduate curricula of medical and nursing schools a mandatory teaching course on emergency and disaster medicine.
- Endorse continuous training for non-medical medical Emergency Medical Services' providers.
- Regulate the utilization of non-medical professionals and volunteers responding to a medical situation in out-of-hospital settings and provide lay volunteers with appropriate training.



Crisis management and EMS systems

Crisis management and EMS systems

Crisis is defined in this study as any situation where the health services receive such a rush of new patients that it strains available resources to the limit. A “critical situation” can be described as the equilibrium between the demand and the supply of medical care. This occurs when the health care service receives an unusually large amount of new patients in a relatively short period of time, a rush that overwhelms the capacity to meet needs if exceptional measures are not implemented.

The term crisis is alternatively used in the literature with other expressions of similar meaning such as:

- The term “mass casualty incident” (MCI). This is particularly used in literature from the United States of America. It implies a high number of patients requiring medical assistance at once. However, it disregards the ratio between supply and demand, which is a two-dimensional relationship.
- “Disaster” is a widely-used term. It refers to an event that causes disruption and destruction of services and infrastructure, not excluding the health services themselves, which might be subject to structural damage, hampering its functionality.
- The word “emergency” (“a sudden unforeseen crisis that requires immediate action”, ©Wordnet 2.0 by Princeton University) is also common in medical terminology, although it highlights the urgency of the medical problem and its need for immediate attention. The use of the term “emergency” indicates the lack of time available to react and can be misleading. Furthermore, the term “emergency” is widely referred to in the medical glossary for clinical cases that need immediate action (i.e. life-threatening situations). Therefore, both out-of-hospital and in-hospital the use of the term “emergency” may be biased by emphasizing the acute medical care itself, rather than the whole organization and mobilization of hospital and extra hospital resources that facilitate an appropriate response⁹¹.

6.1 EMS in crisis management

The Centre for Research on Epidemiology of Disasters has estimated from its database that crises and/or disasters are affecting more and more people, with a resultant increase in associated economic costs. Three European countries (Belgium, France and the Netherlands) rank among the top 10 countries most stricken by disasters⁹².

Review studies have shown that an effective disaster response is more dependent upon the pre-existing local system than upon outside help⁹³.

The chief components of emergency services include the fields of security, medical care, shelter, logistics, rescue, telecommunication, public information etc. Major incidents may require most, if not all, emergency services available and, depending on their size, they may involve the services at a national or supranational scale.



91 Davoli E. A practical tool for the preparation of a hospital crisis preparedness plan, with special focus on pandemic influenza, WHO Regional Office for Europe, 2007

92 Hoyois P et al. Annual disaster statistical review: Numbers and trends 2006. Centre for Research on Epidemiology of Disasters (CRED) - Université Catholique de Louvain - École de Santé Publique, Brussels, May 2007.

93 Pan American Health Organization/World Health Organization. Evaluation of Preparedness and Response to Hurricanes Georges and Mitch: Conclusions and Recommendations. Prehospital and Disaster Medicine, 1999; 14(2):53-65.

The EMS system is a key component in crisis, disaster, and public health emergency preparedness and response. By assuming responsibility for providing medical care to all victims of a disaster, the EMS system becomes a primary actor and should be integrated into the crisis management decision-making process, as well as into all preparedness activities. Nevertheless, the role of the EMS system is sometimes subordinated to priorities of organization and logistics, when EMS could better serve the needs of patients/victims.

This study has investigated the formal role played by EMS in the national crisis management system by ascertaining if EMS are an integral part of the higher level of the Incident Command and Control (ICC) structure of each State. Less than half the countries have incorporated a specific representative of this essential emergency function at their highest layer of decision-making.

Table 6.1 Role of EMS

EMS representative is part of the national crisis management team 12 

However, a majority of countries have a legal and structural framework in crisis management and response that assigns a specific role to EMS in the national or subnational Crisis Preparedness Plan.

Table 6.2 Role of EMS

Role of EMS in the National crisis management Plan specified by law 23 

Role of EMS in Regional/Provincial crisis management plan 24 

Ireland, for instance, has no legislation that specifically deals with the role of EMS in crisis management. Nevertheless, generic plans, either at regional or local level, are in place.

It is advised that poorly-implemented regulations and a lack of adequate legislation may seriously hamper relief efforts in a crisis⁹⁴.

6.2 Education and training in disaster management

Increased awareness of natural and man-made disasters poses fresh challenges for the international medical community. There is growing interest in and dedication by many medical professionals to what is generally called disaster medicine. Consensus is also growing around the need to provide more educational resources for this branch of medicine⁹⁵.

94 Lunetta P. et al. International collaboration in mass disasters involving foreign nationals within the EU: Medico-legal investigation of Finnish victims of the Milan Linate airport SAS SK 686 aircraft accident on 8 October 2001. *International Journal of Legal Medicine*, 2003 Aug, 117(4):204-10.

95 De Boer J. An introduction to disaster medicine in Europe. *Journal of Emergency Medicine*, 1995, (2):211-6.

In particular, a need for “a global database of expertise, institutes, and course materials could be established for use in curriculum development”⁹⁶.

The very nature of crises or disasters is that they overwhelm existing infrastructure in the affected area. When societal systems are disrupted and overwhelmed, chaos can ensue. Directing rescue operations in health services requires the ability to shift services into a higher gear while maintaining tight control of all resources; rapid coordination of different sectors; and the empowerment of a well-defined chain of command and control. The need for these specific capabilities and more general managerial capacities form the basis for the increasing demand in specialized training in disaster management. Professional and other personnel operating in EMS can take advantage of the nature of their work to acquire and retain important skills, know-how and experience in the management of critical situations, which may in turn prove useful in times of crisis. However, education and training are crucial: sharing of experiences and the consolidation of appropriate attitudes and skills are important factors in crisis management, due to the unpredictability and extreme variability of crises. Although formal education in disaster management is still limited in Europe, as depicted by the provisional results of the assessment (see Annex 4: Education), the majority of Member States recommend, or even render mandatory, specific training in crisis management for EMS personnel.

Table 6.3 Role of EMS

Specific training in crisis/disaster management for EMS personnel

20



An important issue to consider is the quest for a new curriculum to be developed according to recognized international standards⁹⁷. In this respect, it should be noted that the American Board of Physician Specialties has established a Board of Certification for a new specialty, specifically named “Disaster Medicine”. In the European context, it might be premature to consider such an opportunity while there are still difficulties in harmonizing and recognizing the different EM curricula in EU Member States. It is more appropriate for now to increase the knowledge and coordination among the institutions offering such training in Europe. An example is given by the European Master in Disaster Medicine established in 2002 through a joint initiative of the Free University of Brussels and the University of Eastern Piedmont.

Disaster medicine educational database

National Representatives have started identifying relevant institutions and courses available in their countries. A list has been compiled for all countries and can be found in Annex 4: Education. This list is a provisional and first attempt to create an open database of educational resources on Disaster Medicine in the EU.

The reader can contribute to this by sending the completed application form (also available at www.euro.who.int/emerg-services) with details of the proposed educational institution to the WHO – EMS programme (see Annex 5: application form). The EMS programme office of WHO/EURO will check the accuracy of the information and will seek validation from the National Representative, member of the European Inter-Ministerial Panel on Emergency Health Care. This list will then be periodically updated.





96 Murray V, Clifford J. Disaster health education and training: A pilot questionnaire to understand current status. *Prehospital and Disaster Medicine*. 2006, 21(3):156-167.

97 Archer F, Seynaeve G. International standards and guidelines for education and training to reduce the consequences of events that may threaten the health status of a community. A report of an Open International WADDEM Meeting, Brussels, Belgium, 29-31 October, 2004. *Prehospital and Disaster Medicine*, 2004, 22(2):120-30.

Emergency preparedness gains real value and effectiveness only if plans are tested and drilled on a regular basis. Drills and exercises represent the critical bridge between education and response. Exercises document the knowledge, skills and abilities that are likely to be needed during a given response to a disaster or MCI. Many studies have addressed the effectiveness of disaster drills in training health providers to respond to an MCI. They provide the opportunity to anticipate operational difficulties and find remedies to solve them with the aim of testing and implementing procedures, planning and response to disasters. The ability to identify specific points of strength and weakness of a medical response to a major emergency is an important step toward optimizing system performance⁹⁸.

Almost all countries legally bind hospitals and O-H-EMS to have preparedness plans for managing disaster and crisis events. Nevertheless, not all are compelled to test the plan. Many are recommended to perform an annual test.

Table 6.4 Legal requirement on EMS to develop and test disaster preparedness plans

	Out-of-hospital	In-hospital
Required by law	24 	22 
Obligatory regular testing	21 	18 

In the Netherlands, a national program ('Zirop') has been established with the objective of testing preparedness plans. It also develops and delivers a continuous system of education and support to update the hospital plan itself.

6.3 International co-operation in disaster management

Critical events may require coordinated action between two or more countries, depending on the scale of the incident or its proximity to national borders. The international community has made many efforts to create an environment that allows the intervention of foreign and/or international agencies and institutions in any country affected by a disaster^{99 100}.

Protocols of agreement between neighbouring countries can be more specific than international standards or conventions, listing operational details, information on procedures and mechanisms for prompt and effective inter-country communication and collaboration.

In the present study, most countries claim to have cross-border agreements with single agencies or on the occasion of specific events (e.g. Italy, The Netherlands), but only 18 countries have ratified an international agreement.

Table 6.5 International cooperation

International co-operation protocols in EMS	18 
--	--

98 Cook L. Hospital disaster drill game: a strategy for teaching disaster protocols to hospital staff. *Journal of Emergency Nursing*, 1990, 16(4):269-73.









99 World Health Organization. Revision of the international health regulations. Geneva, 2005.

100 International Federation of Red Cross. Guidelines for the domestic facilitation and regulation of international relief and initial recovery assistance, Geneva, Nov 2007.

However, NRs question the extent to which these agreements are known in general, and in particular, who is responsible for what function in times of crises. This raises questions about the level of integration and homogeneity in cross-border cooperation agreements.

The 27 EU Member States also exhibit vast differences with regard to the structure of ICC, but this should not affect inter-country communication and information flows. Table 6.6 illustrates the variety of institutions that take the lead in ICC across the EU.

Table 6.6 Lead institutions in event of national crisis

Cabinet Office	Firemen	Civil Protection	MoH-EMS	M. Interior	M. Defence	Others	PM Office
1	1	5+1*	1	12	3	2	1
							



* Including BUL: Ministry of State Policy for Disasters and Accidents.



Given this diversity, it is of great importance that international agreements and protocols have operational manuals that clarify all procedures for mutual collaboration. While this information may be sensitive and should be handled accordingly, it should, nevertheless, be at-hand in the event of a major crisis. Without prearranged mutual aid and coordination agreements, events that deplete and exhaust community resources jeopardize the health and safety of not only the victims directly affected by the disaster, but also the communities and health systems of bordering countries.

6.4 Patient safety in disaster management

This study looked at two simple safety measures. The correct identification of victims and the provision of appropriate psychological services have been taken as indicators of patient safety, a theme that should not be neglected in crisis management. Crises and disasters can provoke specific emotional reactions that produce a variety of different psychological responses, affecting not only those victims directly involved in the disaster but also relatives, co-workers, rescuers, body handlers, bystanders.

However, despite recent efforts at awareness raising in the health sector, many countries still lack the mechanisms for providing stress management and counselling following a disaster. According to the results of this study, only 70% of EU Member States have stress management systems in place for victims and rescuers.

Table 6.7 Patient safety measures envisaged in emergency plans

Matching the patient with medical records (e.g. wrist bands)	23	
Stress management system (for patients, staff, relatives)	19	

Victim identification using simple procedures that ensure the correct recording of names, history and actions taken or to be taken is a primary concern for EMS in all situations. Obviously, the risk of inaccuracies is exponentially higher in a MCI, which by definition presents a high concentration of patients in need of emergency care.

In the survey, 85% of countries envisage a procedure for early identification of victims that match related medical records.

■ 6.5 Conclusions

Too often, co-ordination and command in situations of crisis are haphazard, with much improvisation. Mistakes and misunderstandings are common if communication lines are not pre-set and the different roles of stakeholders have not been clearly defined at a preparatory stage.

The EMS system still needs to find its definitive position in the mechanisms of disaster preparedness and response in many countries. Although rescue and first-line medical care to victims is the primary objective of all emergency services in a disaster, the role of EMS in the EU appears marginalized in the coordination and command framework. In this respect, health personnel should be encouraged to undertake specific training in disaster management, although the offer for such education is still very limited within the EU (see Annex 4: Education).

Planning and testing safety and relief measures and procedures before a disaster strikes is certainly of great value. However, a broader approach is strongly recommended: preparedness planning is insufficient if simply carried at the level of each health service. It should involve the whole EMS system at a national or regional level, integrated into the whole health system and in full coordination with other emergency services (police, fire brigade, civil protection, volunteers, etc)¹⁰¹.

International agreements are part of this preparatory phase and should be an integral part of all crisis preparedness planning. They are useful in the event of major disasters that require the intervention of more than one State, but they can be effective only if and when these agreements are translated into practical protocols, tested and shared by all stakeholders.

Most EU countries have addressed the issue of international collaboration, but it is unclear to what extent the actual implementation of these collaborations has been realised. The proposal for establishing an "European Inter-Ministerial Panel on Emergency Health Care" could be instrumental in starting and sustaining a continuous process of risk and crisis management at the EU level. It could also, conceivably, address the misassumption, frequently encountered in international cooperation, that crisis management is the preserve of civil protection only e.g. an EC co-ordination body has been located in the Directorate General for Environment.






101 Davoli E. ed. A practical tool for the preparation of a hospital crisis preparedness plan, with special focus on pandemic influenza. WHO Regional Office for Europe, Copenhagen, 2006.

6.6 Recommendations

Short-term recommendations:

All the Member States of the European Union should:

- Review and discuss operational strategic and tactical cross-border procedures.
- Provide a definition of minimum core of competencies for health workers in crisis management.
- Provide and expand the dissemination of education on disaster management to all health workers involved in Emergency Medical Services.
- Ensure that Dispatch Centres, ambulances and hospital emergency departments test regularly their crisis preparedness plan.
- Enhance cooperation and coordination mechanisms at the European Union level.

- Recommendations 
- Questionnaire 
- Synopsis 
- Education 
- Application form 

ANNEXES



Legislation and financing of EMS 

Out-of-hospital EMS 

In-hospital EMS 

Education in EMS 

Crisis management and EMS systems 

RECOMMENDATIONS



Recommendations for improvements in the field of EMS discussed and approved by the 27 Member States during the workshop held in Lisbon, 3-4 December 2007.

Recommendations

Legislation and financing of EMS

Short-term recommendations:

Common European minimum standards in Emergency Medical Services should be introduced by a recognized and authoritative institution, namely on:

- Education of professionals.
- Equipment to be available for in-hospital emergency services and out-of-hospital emergency services.
- Inter-connectivity between dispatch centres across borders.

Long-term recommendations:

The European Commission or another recognized institution should introduce common European minimum standards, namely on:

- Inclusion of an Emergency Medical Services' representative in the national crisis management team.
- Creation of mechanisms to mobilize funds for Emergency Medical Services disaster preparedness and response.

Out-of-hospital EMS

Short-term recommendations:

A recognized and authoritative institution should:

- Provide a list of quality indicators concerning out-of-hospital Emergency Medical Services.
- Propose internationally recognized curricula of first aid for first responders such as fire brigade, volunteers and police.

All the Member States of the European Union should:

- Ensure effective coordination and response to avoid delay in case of medical emergencies.
- Improve access of minorities and foreigners to all Emergency Medical Services systems in Europe.
- Ensure emergency calls are dealt with by Emergency Medical Services, only with type B and C ambulances.
- Report on the percentage of patients (in the highest coding category) reached within eight minutes of receiving the emergency call.

Long-term recommendations:

A recognized and authoritative institution should:

- Pave the way for a common research strategy in the European Union strategic paper.

All the Member States of the European Union should:

- Improve systems to allow sharing of real-time information between medical services and dispatch centres.
- Place the activity of medical first responders, when dealing with medical emergencies, under the operative management of medical dispatching.

In-hospital EMS

Long-term recommendations:

A recognized and authoritative institution should:

- Introduce European mechanisms of performance for hospital Emergency Departments.
- Set up quality monitoring systems especially for Emergency Departments.

All the Member States of the European Union should:

- Support the development of European protocol guidelines for most frequent emergency cases including triage.
- Review how the psychosocial needs of patients are detected and treated within Emergency Departments.
- Establish nationwide triage systems for patients at Dispatch Centres, ambulance and in-hospital level, to ensure proper and prompt access and equity in quality of care delivered.

Education in EMS

Short-term recommendations:

All the Member States of the European Union should:

- Extend and regulate specialization in Emergency Medicine for doctors, in line with European Union directive 2006/100/EC.
- Introduce and regulate specialization in Emergency Medicine for nurses.
- Include in the pre-graduate curricula of medical and nursing schools a mandatory teaching course on emergency and disaster medicine.
- Endorse continuous training for non-medical medical Emergency Medical Services' providers.
- Regulate the utilization of non-medical professionals and volunteers responding to a medical situation in out-of-hospital settings and provide lay volunteers with appropriate training.

Crisis management and EMS systems

Short-term recommendations:

All the Member States of the European Union should:

- Review and discuss operational strategic and tactical cross-border procedures.
- Provide a definition of minimum core of competencies for health workers in crisis management.
- Provide and expand the dissemination of education on disaster management to all health workers involved in Emergency Medical Services.
- Ensure that Dispatch Centres, ambulances and hospital emergency departments test regularly their crisis preparedness plan.
- Enhance cooperation and coordination mechanisms at the European Union level.

Legislation and financing of EMS



Out-of-hospital EMS



In-hospital EMS



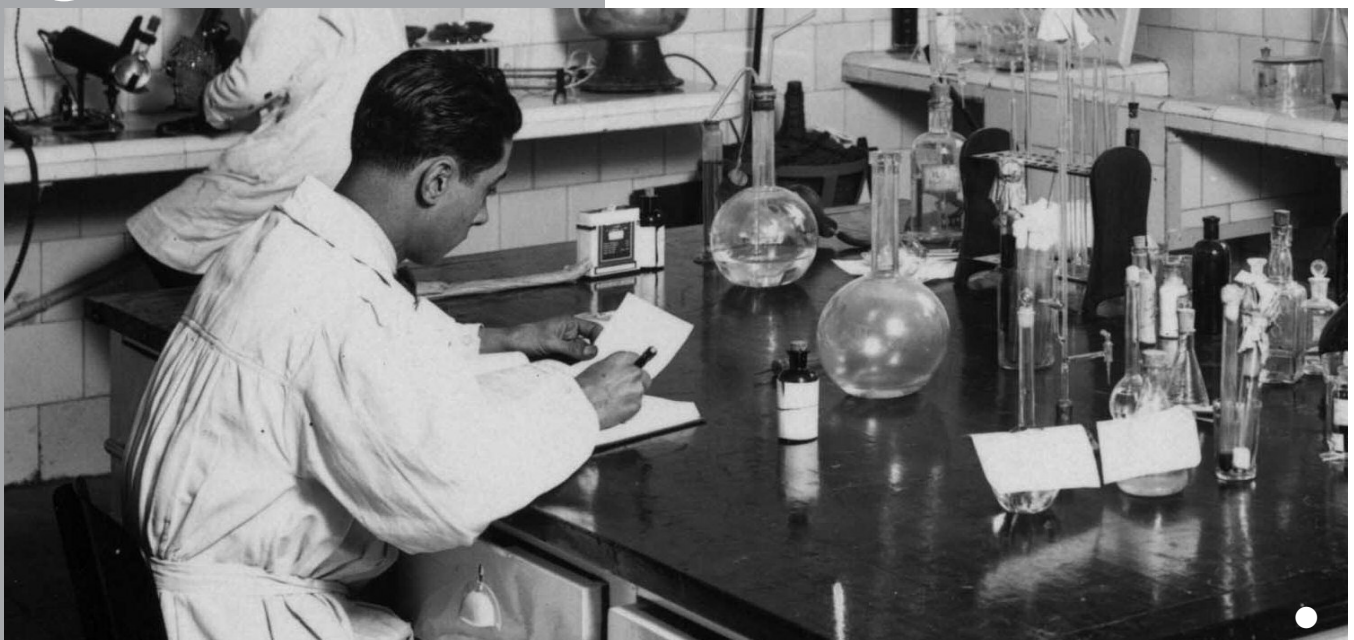
Education in EMS



Crisis management and EMS systems



QUESTIONNAIRE



Standardized template for data collection to allow country comparisons and the compilations an essential information package.

Legislation and financing of EMS

Legislation and financing of EMS

Question 1: Main EMS law

Comment

Legislative framework regulating the most important topics about the functioning and organization of the Emergency Medical Services System.

TITLE

REFERENCE NUMBER

Aproximate date of issue

- 80s
 90s
 2000 - 2007

Is there an electronic version?

- yes no

Question 2: Please, indicate further laws, if any

Comment:

Legislative framework regulating the most important topics about the functioning and organization of the Emergency Medical Services System.

TITLE

REFERENCE NUMBER

Aproximate date of issue

- 80s
 90s
 2000 - 2007

Is there an electronic version?

- yes no

Question 3: Main topics of law

- | | | |
|--|------------------------------|-----------------------------|
| Minimum standards of care, minimum standards of equipment, minimal requirements of qualification | <input type="checkbox"/> yes | <input type="checkbox"/> no |
| Guaranteed free access to everybody for in-hospital emergency care, including uninsured and unidentified persons | <input type="checkbox"/> yes | <input type="checkbox"/> no |
| Reference to crisis/disaster management and crisis/disaster preparedness | <input type="checkbox"/> yes | <input type="checkbox"/> no |
| Financing mechanisms | <input type="checkbox"/> yes | <input type="checkbox"/> no |
| Required training for staff operating in EMS | <input type="checkbox"/> yes | <input type="checkbox"/> no |
| Organization of response and dispatch system | <input type="checkbox"/> yes | <input type="checkbox"/> no |

Question 4: Co-payment fees required to access

- Out-of-hospital services
 In-hospital services
 Occasionally in some regions
 Occasionally in some hospitals
 Not required

Question 5: Budget for crisis response

5.1 Does EMS have, at any level, a special budget for crisis/disaster?

- yes no

5.2 Does EMS have a reserve budget for prompt mobilization to be used in case of disaster/crisis?

- yes no

Question 6: Ambulance providers

Public enterprises	Independent institutions	<input type="checkbox"/>
	Institution depending on hospitals	<input type="checkbox"/>
	Institution depending on Health Authorities	<input type="checkbox"/>
Private enterprises		<input type="checkbox"/>

Question 7: How are the emergency services purchased?

By state or national insurance	number of services	<input type="checkbox"/>
	type of services	<input type="checkbox"/>
	catchment population	<input type="checkbox"/>
By individual	direct insurance	<input type="checkbox"/>
	for individual service	<input type="checkbox"/>

Question 8: Dispatch centre providers

Public enterprises	Independent institution	<input type="checkbox"/>
	Institution depending on hospitals	<input type="checkbox"/>
	Institution depending on Health Authorities	<input type="checkbox"/>
Private enterprises		<input type="checkbox"/>

Question 9: Sources of financing EMS**How is the EMS system financed?**

	Out-of-Hospital	In-Hospital
State budget	<input type="checkbox"/>	<input type="checkbox"/>
Public sources	<input type="checkbox"/>	<input type="checkbox"/>
Private sources	<input type="checkbox"/>	<input type="checkbox"/>
Mixed sources	<input type="checkbox"/>	<input type="checkbox"/>
Other sources	<input type="checkbox"/>	<input type="checkbox"/>

Out-of-Hospital EMS

Out-of-hospital EMS

Question 1 : Access to the emergency telephone number

- 1.1 Does your country have one or more telephone numbers to access emergency medical system? one more
- 1.2 In case you have one number, is it 112? yes no
- 1.3 In case you have two or more numbers, is 112 one of them? yes no
- 1.4 Concerning 112:
When dialling it for medical emergencies, do you transfer the caller to a medical dispatcher? yes no
- If not, then do the dispatchers have access to a medical dispatcher for consultation? yes no
- 1.5 Concerning other numbers:
When dialling them, are they diverted to 112 dispatch / call centre? yes no
- When dialling them, are they diverted directly to medical dispatch? yes no

Question 2: Access to the European emergency number

By dialing 112 in your country, the telephone call is diverted to:

- Police
- Medical emergencies
- All emergencies
- Other (please specify)
- No diversion at all

Question 3: Telephone access to the emergency system

- 3.1 Is calling 112 or other emergency numbers free of charge? yes no
- 3.2 When calling 112, do you need to dial a regional/area code? yes no
- 3.3 Can the emergency numbers handle calls in English? yes no
- 3.4 Do emergency numbers cover languages spoken by resident minorities in the country?" yes no

Question 4: Dispatch centre

4.1 Please indicate the total number of medical dispatch centres for medical emergency calls in your country

- 4.2 Are they covering on a: national level
 regional level
 sub-regional level
- 4.3 Are the medical dispatch centres functionally connected between each other? yes no

Question 5: Triage in dispatch centres

- 5.1 Is there any written triage system at dispatch centres for the out-of-hospital emergencies? yes no
- 5.2 Do triage protocols in dispatch centres follow national standards or does each dispatch centre have its own triage protocols? national dispatch
- 5.3 Is the triage system computerized, if it exists? yes no

Question 6: Update of ICU beds**6.1 Do all dispatch centres have a real-time update of free intensive care beds?**

- Yes, at national level
- Yes, at regional/local level
- No, they don't

6.2 Is this information presented real-time through internet connection?**Question 7: First response****7.1 Can your medical dispatch centre send as first responders for basic life support / AED using vehicles other than ambulances (fire engines, police cars, etc.)?**

- Fire departments Police Volunteers Others (please specify) No

7.2 Are the following parts of your EMS systems for basic and advanced life support using their own ambulances?

- Fire departments Police Volunteers Others (please specify) No

Question 8: Equipment of first responders**Specify the medical equipment of the first responders if there is any**

	Police	Fire Brigades	Volunteers	Others
Cervical collars	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oxygen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Suction unit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Automated External Defibrillator (AED)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manual resuscitator (bag valve mask)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other medical equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Question 9: Which type of ambulance cars are used in your country? Indicate the percentage of each type of ambulance car available in your country.

	yes	no	%
Ambulance type A (medical transport non-emergency)	<input type="checkbox"/>	<input type="checkbox"/>	_____
Ambulance type B (equipped for basic life support)	<input type="checkbox"/>	<input type="checkbox"/>	_____
Ambulance type C (mobile ICU)	<input type="checkbox"/>	<input type="checkbox"/>	_____

Question 10: Out-of-hospital triage

- 10.1 Are there any written triage protocols at out-of-hospital level?** yes no
- 10.2 Do out-of-hospital triage protocols follow national standards or does each out-of-hospital company have its own triage protocols?** national out-of-hospital company
- 10.3 Are the triage protocols computerized, if they exist?** yes no

In-Hospital EMS

In-hospital EMS

Question 1: Location of Emergency Departments

- University hospitals (services of a hospital with education and research)
- Regional hospitals
- District hospitals
- General hospitals
- Private hospitals

Question 2: For access to Emergency Department

What are the requirements in order to be able to access the Emergency Department?

- Social security number
- GP referral
- Ambulance referral
- Citizenship
- Co-payment
- Identification document
- Others (please specify)
- No limitation. Every patient will receive necessary medical assistance regardless of all the above

<input type="checkbox"/> yes	<input type="checkbox"/> no
<input type="checkbox"/> yes	<input type="checkbox"/> no
<input type="checkbox"/> yes	<input type="checkbox"/> no
<input type="checkbox"/> yes	<input type="checkbox"/> no
<input type="checkbox"/> yes	<input type="checkbox"/> no
<input type="checkbox"/> yes	<input type="checkbox"/> no
<input type="checkbox"/> yes	<input type="checkbox"/> no

Question 3: Procedure for patients without an identification document

The patient cannot be treated

The patient will be treated just like any other patient, and afterwards his name will be notified to the authorities or relatives

Question 4: In-hospital triage

4.1 Is there any triage system at the reception area of hospital emergency departments/units etc?

 yes no

4.2 Do triage protocols in in-hospital services follow national standards or does each hospital have its own triage protocols?

 National Hospital

4.3 Is the triage system computerized, if it exists?

 yes no

Question 5: Referral network

5.1 Is there a network (system) that defines the direct referral from all emergency care departments/units/rooms to specialty departments?

 yes no

Question 6: Quality of care

6.1 Are there any National Standards of Performance for Emergency Departments? yes no

6.2 Is there any quality monitoring system (collection and evaluation of indicators)? yes no

Question 7: Link to social care

7.1 Do the national ED standards include, on a regular basis, the presence of social workers?

 yes no pilot projects in some EDs

7.2 Do the national ED standards include the presence of intercultural mediators (like translators, etc.) or any provisions on how to deal with foreign patients and immigrants?

 yes no pilot projects in some EDs

Education in EMS

Question 1: Emergency physician

1.1 Is emergency care a mandatory course (exam) in medical school curricula?

yes no

1.2 Is emergency care for physicians currently an accredited specialty?

yes no

How long is the emergency care residency training?

up to 3 years up to 6 years

1.3 Has emergency care been a specialty in the past? Since the...

70s 80s 90s 00s

Question 2: Emergency physician

Is there a legal requirement for doctors working in EMS to have a specialization in:

	out-of-hospital	in-hospital
Emergency care	<input type="checkbox"/>	<input type="checkbox"/>
Internal medicine	<input type="checkbox"/>	<input type="checkbox"/>
Anaesthesia	<input type="checkbox"/>	<input type="checkbox"/>
Surgery	<input type="checkbox"/>	<input type="checkbox"/>
Cardiology	<input type="checkbox"/>	<input type="checkbox"/>
Others (please specify)	<input type="checkbox"/>	<input type="checkbox"/>
No specialization is required	<input type="checkbox"/>	<input type="checkbox"/>

Question 3: Post-graduate education

3.1 If you have post-graduate training in emergency medicine, it is:

	Physician	Nurse	Paramedic	Amb. Personnel
University-based	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Government-based	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Private	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
As part of professional education	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.2 Could you please provide the name of main institutions (private or public) providing such type of training?

1 Name of institution	website
2 Name of institution	website
3 Name of institution	website
4 Name of institution	website

Question 4: Non-medical qualifications

Definition	Qualification	Duration	Institution in charge of education	Continuous education
Call taker				
Dispatcher				
Ambulance crew				
Ambulance driver				
Emergency medical technical Paramedic				

Question 5: Medical qualification

Definition	Qualification	Duration	Institution in charge of education	Continuous education
Nurse				
Emergency nurse				
Physician				
Acute care physician				
Emergency physician				
Disaster medicine director				

Question 6: Legal requirements or other formal regulations to work in:

	Personnel	Drivers	Nurses	Paramedics	Doctors
Dispatch centre	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ambulance type A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ambulance type B	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ambulance type C (MICU)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Department	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Question 7: National standard in Emergency Medicine Education

7.1 Do training programmes follow a nationally approved curriculum in EM? yes no

7.2 Do you have a National/Regional Board Certification in emergency care?

yes no
 yes no
 yes no
 yes no

physician nurse paramedic Amb personnel

Crisis management and EMS systems

Crisis Management and EMS systems

Question 1: Role of EMS crisis management

Is there a law stipulating the role of emergency care in the national plan in case of crisis/disasters?

yes no

Are there also sub-national plans?

regional/provincial

yes no

local

yes no

Question 2: International collaboration

Do you have international cooperation protocols with other countries?

yes no

Which countries?

Question 3: Leadership in crisis management

3.1 Where is the national operational crisis centre located?

Police

Fire brigade

Civil protection

EMS

Ministry of Interior

Ministry of Defence

Other (please specify)

3.2 Is any EMS representative part of the national crisis management team?

yes no

Question 4: Crisis Preparedness Plan for EMS

4.1 Are hospitals legally required to have a crisis preparedness plan?

Are hospital managers required to test the plan?

yes no

Are hospitals legally required to have an internal disaster and evacuation plan?

yes no

How often does the regulation envisage testing the plan?

yes no

Are hospital managers required to train staff?

yes no

4.2 Are out-of-hospital emergency systems legally required to have a crisis preparedness plan?

Are out-of-hospital managers required to test the plan?

yes no

Are out-of-hospital managers required to train staff?

yes no

Do you test the collaboration between hospital and out-of-hospital services for disaster plans?

yes no

Is there a law that binds EMS to having a crisis preparedness plan?

yes no

Question 5: Crisis management training

5.1 Is there specific training for Emergency Care personnel in crisis management and disaster response?

yes no

5.2 Could you please provide the name of main institutions (private or public) providing such type of training?

1 Name of institution	website
2 Name of institution	website
3 Name of institution	website
4 Name of institution	website

Question 6: Patient safety measures

Are there any safety measures, which can be provided to the victims during a crisis situation?

Matching the patient with medical records (example: wrist bands and/or triage cards)

yes no

Do you have critical incident stress management systems in place for staff, patients and relatives?

yes no

Legislation and financing of EMS



Out-of-hospital EMS



In-hospital EMS



Education in EMS



Crisis management and EMS systems



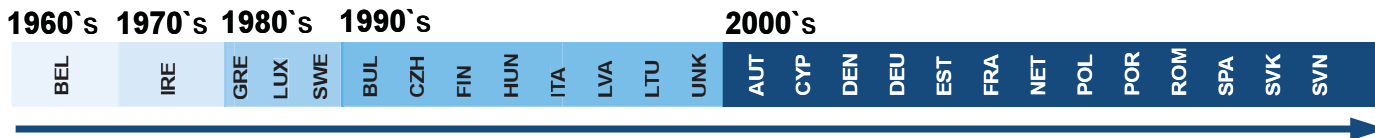
SYNOPSIS



The following synopsis shows with graphics and summaries the results of the study divided into the five main topics: Legislation and Financing of EMS, Out-of-Hospital EMS, In-Hospital EMS, Education in EMS and Crisis management and EMS systems.

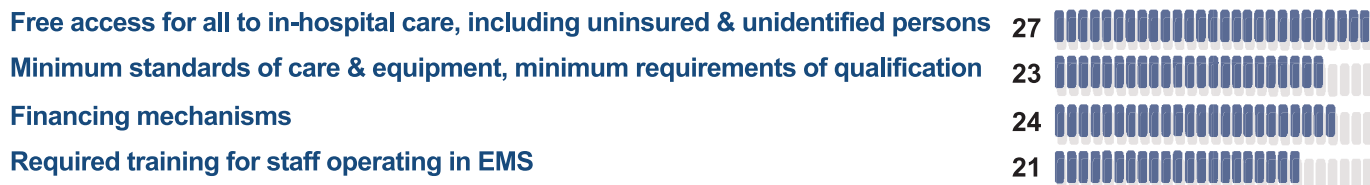
Legislation and Financing on EMS

DECADES OF LAWS

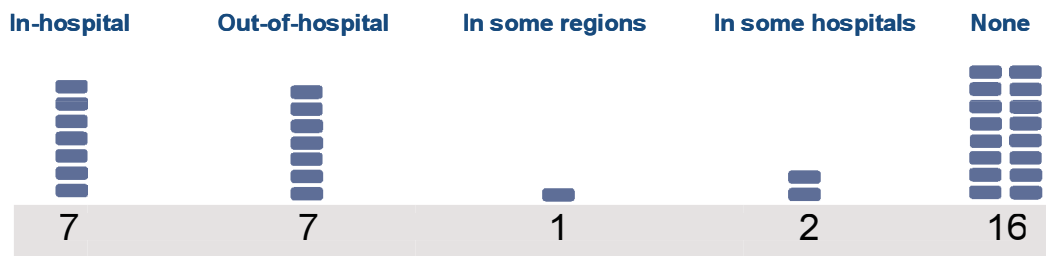


* MAT missing

EMS TOPICS REGULATED BY NATIONAL LAWS

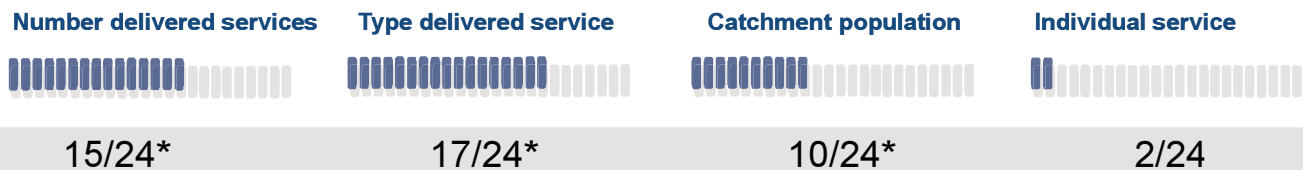


Request for co-payment fees waived in case of vital conditions



NB: multiple answers allowed

METHODS OF PURCHASE OF EMS SERVICES BY STATE OR NATIONAL INSURANCES



NB: *CYP-NET-UNK- info not available

NB: multiple answers allowed

SOURCE OF FINANCING

Out-of-hospital



(11/19 Countries with only "state budget") (3/11 Countries with only "public sources")
 BUL, EST, GRE, HUN, IRE, ITA, DEN, POR, SWE
 LVA, LUX, MAT, POL, UNK

CYP, NTL

NB: multiple answers allowed

In-hospital



(9/15 Countries with only "state budget") (6/10 Countries with only "public sources")
 BUL, GRE, HUN, ITA, LVA, LUX, EST, DEN, FRA, LTU, POL, SWE
 MAT, POR, UNK

NB: multiple answers allowed

INSTITUTIONS DELIVERING O-H-EMS

AUTHORIZED INSTITUTION

Public independent institution

Pub. Institution depending on Hospital

Pub. Institution depending on Health Authority

Private enterprises

AMBULANCES

12

9

16

16

DISPATCH CENTRES

17

5

11

7

NB: multiple answers allowed

EMS AND CRISIS MANAGEMENT TOPICS REGULATED BY NATIONAL LAWS

Reference to crisis/disaster management and crisis/disaster preparedness

24

Organization of response and dispatch system

21

Special budget for crisis preparedness

13

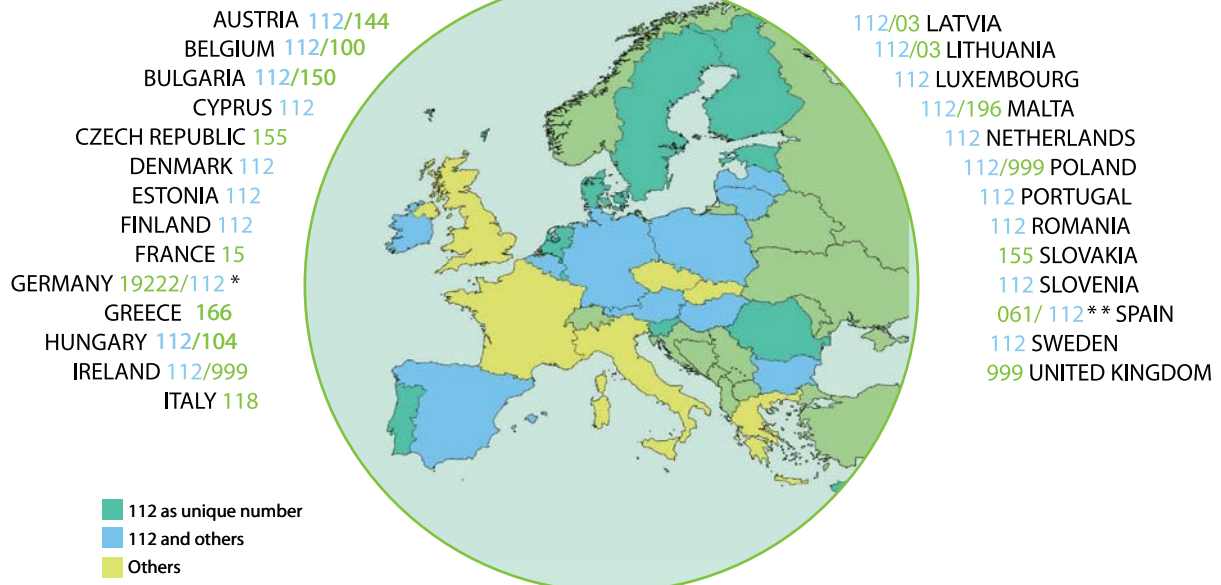
Reserve budget for prompt crisis response

12

Out-of-hospital EMS

EMERGENCY NUMBER

National telephone number for medical emergencies



The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the World Health Organization.

* It varies according to the federal states.
 ** In 8 of the Spanish regions (and in the towns of Ceuta and Melilla) there is one separate dispatch centre for health emergencies (061) and an integrated dispatch centre (112). In the other 9 regions there is only one integrated dispatch centre (112).

Countries where 112 is the only telephone number to call in case of medical emergencies **10**

CYP, DEN, EST, FIN, LUX, NET, POR, ROM, SVN, SWE

Countries where 112 is the only telephone number to call in case of medical emergencies in some regions or federal states **2**

DEU, SPA

DISPATCH CENTRES

Calling 112 First to answer

DEU and LTU report two answers due to regional differences.

An integrated dispatch centre

Police

Other

N° countries



Calling 112 In case of medical emergencies

Call diverted to a medical dispatcher for consultation

Medical consultation within first dispatch centre

N° countries



Access to 112 emergency number

Free of charge



Free of area code



English generally spoken during calls

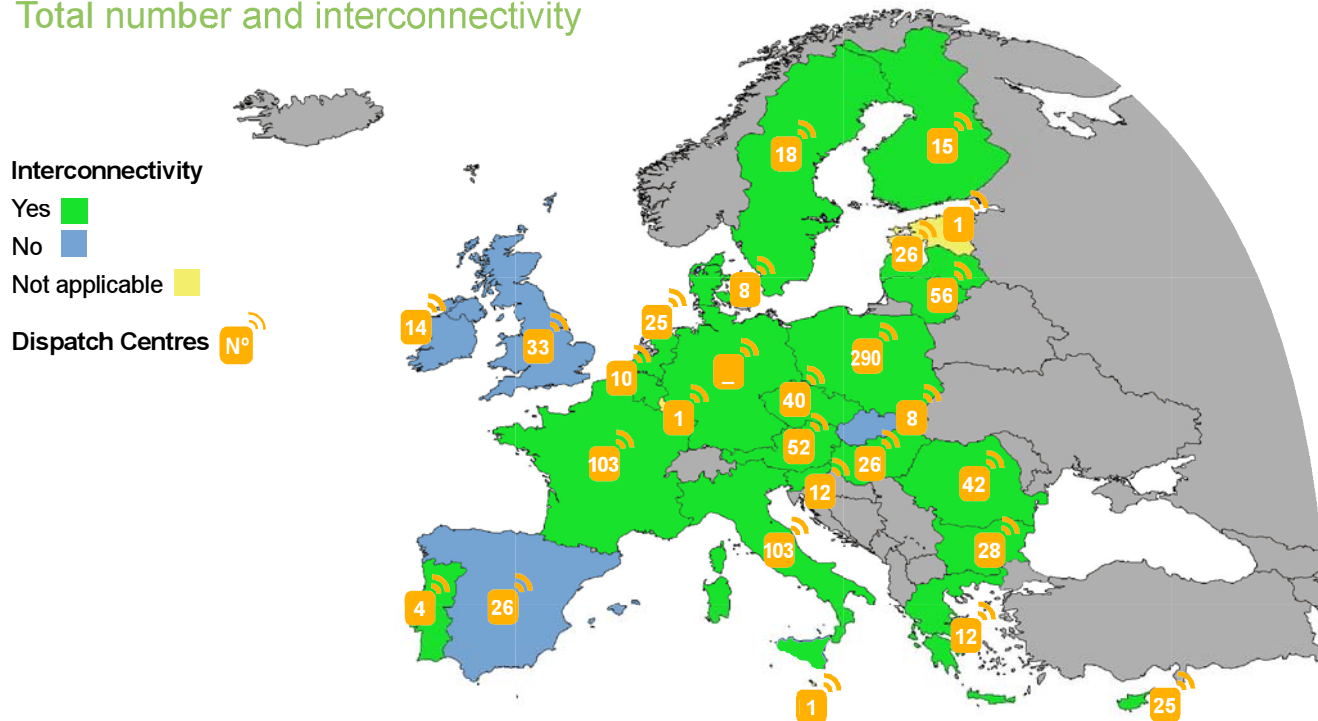


Minority languages generally spoken during calls



DISPATCH CENTRES

Total number and interconnectivity

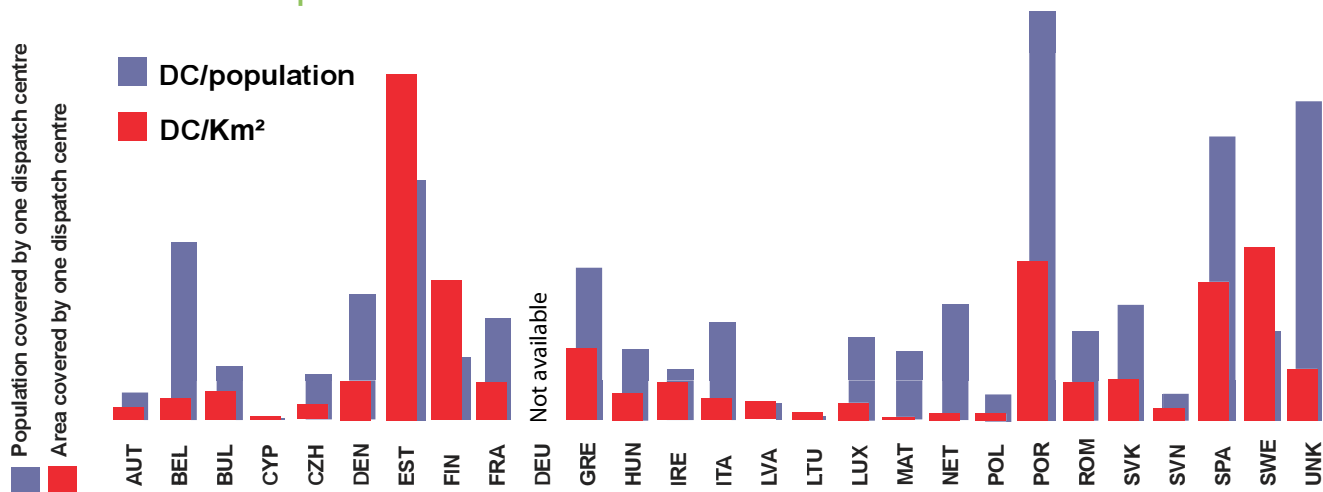


Interconnectivity between dispatch centres

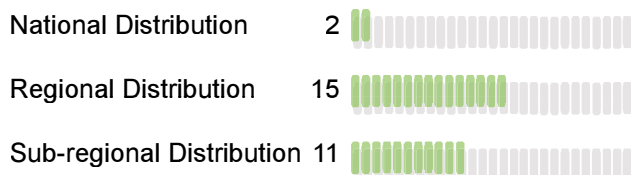


The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the World Health Organization.

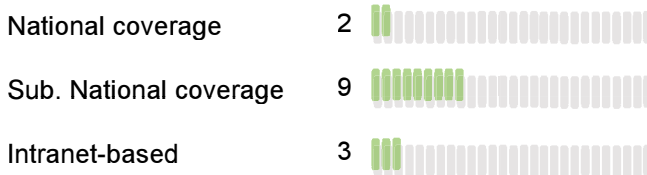
Distribution of Dispatch Centres



Geographical distribution



Real-time update of intensive care beds

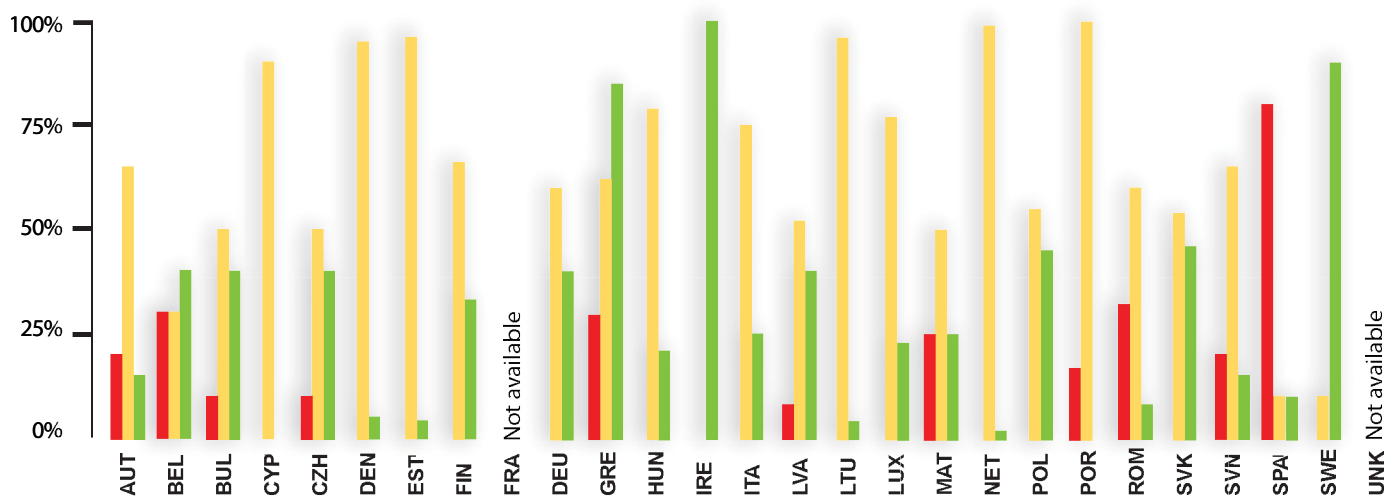


EMERGENCY VEHICLES

Medical equipment available in other emergency services vehicles


	Police	Fire Brigade	Volunteers	Other
Cervical collars	2	16	9	3
Oxygen	1	16	7	3
Suction unit	1	9	7	2
Aut external defibrillator (AED)	4	12	8	4
Manual resuscitator	2	11	9	2
Other medical equipment	5	12	10	5
Functional co-ordination with EMS dispatch centre	13	18	8	5

Percentage of types of emergency vehicles



Ambulance type A 
Patient Transport Ambulance

“Road ambulance designed and equipped for the transport of patients who are not expected to become emergency patients” *

Ambulance type B 
Emergency Ambulance

“Road ambulance designed and equipped for the transport, basic treatment and monitoring of patients” *

Ambulance type C 
Mobile Intensive Care Unit

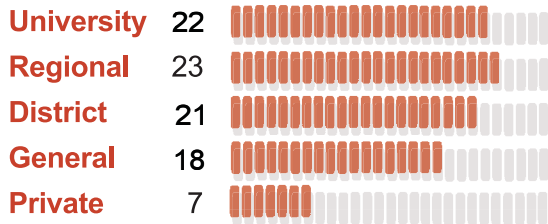
“Road ambulance designed and equipped for the transport, advanced treatment and monitoring of patients” *



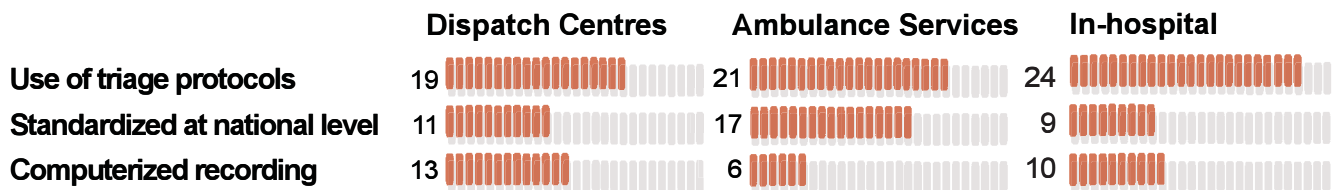
* Source: EC Standard EN 1789:2007

EMERGENCY DEPARTMENTS

Emergency departments are present in the following types of hospitals

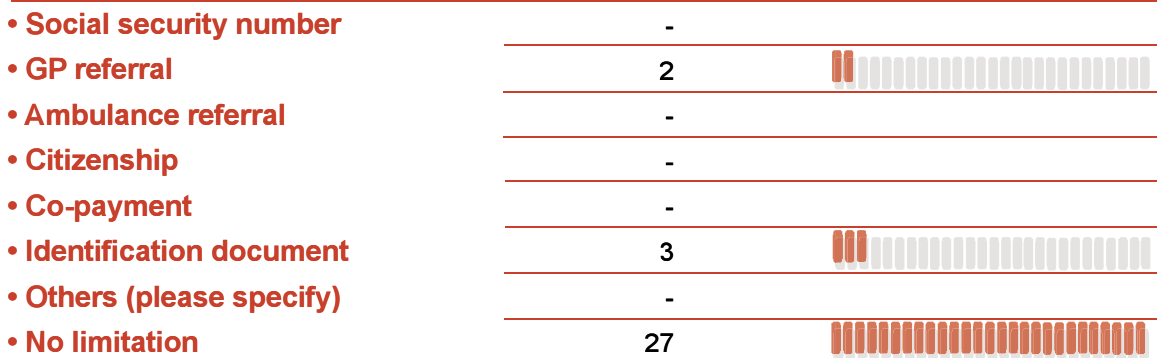


TRIAGE PROTOCOLS



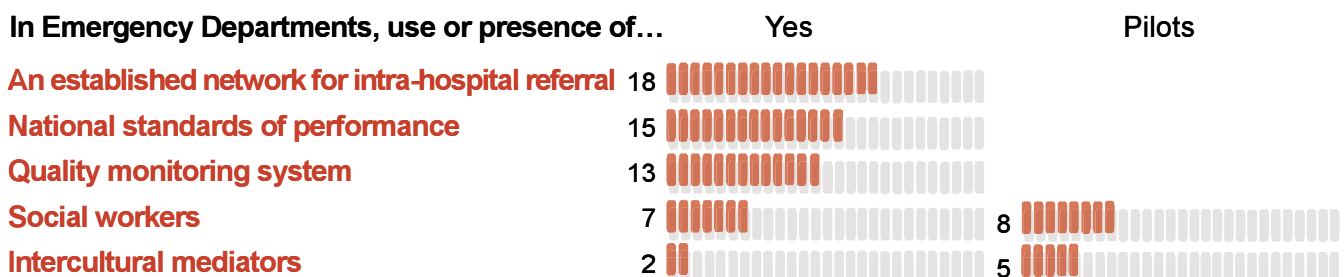
ACCESS

Conditions to access emergency departments waived in case of vital conditions



NB: Multiple answers allowed

INTEGRATED CARE AND QUALITY



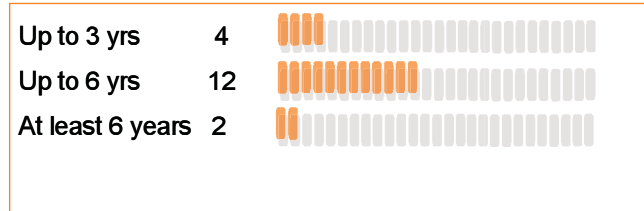
Education in EMS

UNIVERSITY STUDIES

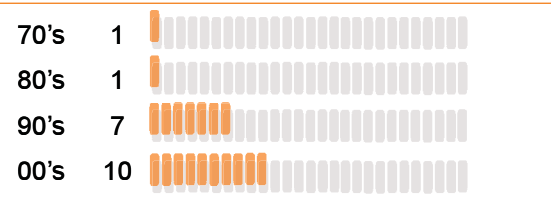
Emergency medicine courses are part of the curriculum at medical school 16 

Emergency medicine specialization is recognized by law 19 


Length of training



Decade of establishment



TRAINING IN EMERGENCY MEDICINE

Follows a nationally approved curriculum 20 


Provides certification for physicians from a professional board/college 21 

Provides certification for nurses from a professional board/college 14 

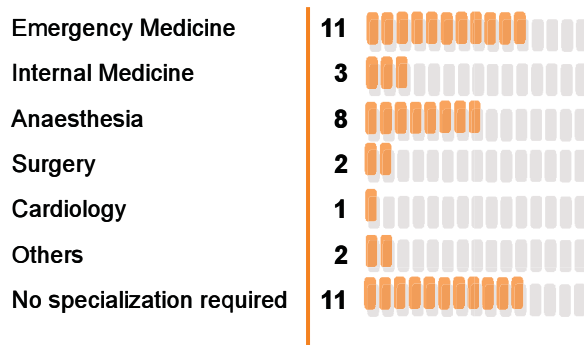
EDUCATION REQUIREMENT IN EMS

A specialization is legally required for physicians working in

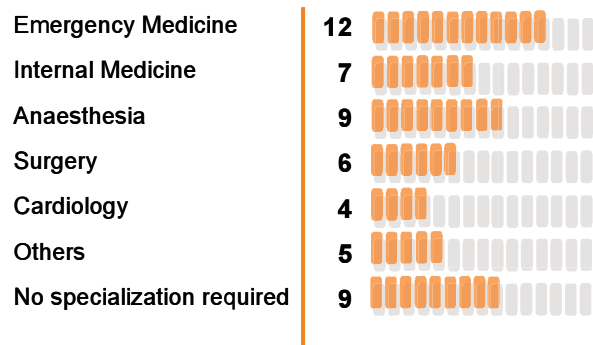
Out-of-hospital 15 

In-hospital 15 

Type of Specialisation required



Type of Specialisation required



POSTGRADUATE TRAINING

	Physicians	Nurses	Paramedics
University-based	10	6	3
Government-based	6	6	9
Private	3	4	2

ROLE OF EMS

EMS representative is part of the national crisis management team	12	
Role of EMS in the National crisis management Plan specified by law	23	
Role of EMS in Regional/Provincial crisis management plan	24	
Specific training in crisis/disaster management for EMS personnel	20	
International co-operation protocols in EMS	18	

CRISIS PREPAREDNESS PLAN IN EMS

	Out-of-hospital	In-hospital
Required by law	24	22
Obligatory regular testing	21	18

LEADING INSTITUTION IN CASE OF NATIONAL CRISIS

Cabinet Office	Firemen	Civil Protection	MoH-EMS	M. Interior	M. Defence	Others	PM Office
1	1	5+1*	1	12	3	2	1

* Including BUL: Ministry of State Policy for Disasters and Accidents.

SAFETY MEASURES

Matching the patient with medical records (e.g. wrist bands)	23	
Stress management system (for patients, staff, relatives)	19	

EDUCATION



List of educational institutions providing specific training in crisis management for EMS personnel.

Training opportunities in crisis management

Please check updated list on: www.euro.who.int/emergservices

AUSTRIA

- Vienna Ambulance service
www.wien.gv.at/rettung
- Austrian Red Cross
www.rotekreuz.at
- Fire Brigade
www.bundesfeuerwehrverband.at/oeffv/index.php?id=1
- Johanniter-Unfall-Hilfe in Österreich
www.johanniter.at

BELGIUM

- Katholieke Universiteit Leuven
www.kuleuven.ac.be/
- Université Libre de Bruxelles
www.ulb.ac.be/
- Université Catholique de Louvain
www.uclouvain.be/
- Vrije Universiteit Brussel
www.vub.ac.be/
www.dismedmaster.org

BULGARIA

- National Medical Coordination Centre

CYPRUS

Not available

CZECH REPUBLIC

- NCO NZO
www.nconzo.cz
- PVZ
www.ipvz.cz

DENMARK

Regions are responsible for the training

ESTONIA

- The Training Centre in Tallinn Emergency Medical Service
www.tems.ee

FINLAND

- National Rescue College
www.pelastusopisto.fi

FRANCE

- University Claude Bernard, Lyon
www.univ-lyon1.fr
- Faculty Necker, Paris
www.necker.fr

GERMANY

- Akademie für Krisenmanagement, Notfallplanung und Zivilschutz des Bundesverwaltungsamtes
www.aknz.de

GREECE

- National Health's Operation Centre
www.mohaw.gr
- KEEL
www.keel.org.gr
- EKAB
www.ekab.gr

HUNGARY

- Hungarian National Ambulance and Emergency Service
www.mentok.hu

IRELAND

- Graduate Diploma/M.Sc. in Emergency Management in Dublin City University

www.dcu.ie/prospective/deginfo.php?classname=MSEM&mode=full

- Intersectional training in EMS are organised between the Health Service Executive, Garda, Fire Department, etc.
www.hse.ie/eng/

ITALY

- University of Novara (Nord East Piedmont)
www.dismedmaster.org

LATVIA

- Emergency and Disaster Medicine Centre
www.kmc.gov.lv
- Emergency Medicine Centre

LITHUANIA

- Department of Emergency Medicine, Kaunas University of Medicine
www.kmu.lt

LUXEMBOURG

Not available

MALTA

Not available

NETHERLANDS

- For hospitals: Hospital major incident medical management and support (HMIMMS)
www.alsg.nl/

POLAND

Not available

PORTUGAL
Not available

· Emergency and Disaster Medical Centre, AKMC in Umeå
www.akmc.se

ROMANIA
Not available

UNITED KINGDOM

SLOVAKIA
Not available

· Civil Contingencies Secretariat
www.evannetwork.net/cmd-view?entity=/db/contents/news/69170b96.xml

SLOVENIA
Not available

· The Cabinet Office Emergency Planning College
www.epcollege.gov.uk/

SPAIN

· UK resilience
www.ukresilience.gov.uk/response/ukgovernment/cgert.aspx

· EPES_061

www.epes.es/cocoon/index.html

· SAMU

www.gruposamu.com/samu

· Escuela Nacional de Protección Civil

www.proteccioncivil.org/enpc/enpc00.htm

· SAMUR de Madrid

www.munimadrid.es/samur

SWEDEN

· Centre for Teaching & Research in Disaster Medicine and Traumatology, KMC in Linköping
www.lio.se/templates/Page.aspx?id=27405

· Department of clinical Science and Education Karolinska Institutet, Section of Prehospital Care, SPC in Stockholm

www.prehospitala.se

· Prehospital and Disaster Medical Centre, PKMC in Gothenburg
www.vgregion.se/vgrtemplates/S tart___41453.aspx



Application form for the inventory of training opportunities

IMPORTANT – Read First:

- 1 Please print out this document and complete by ELECTRONIC TYPING ONLY.
- 2 This application form must be completed carefully, accurately and comprehensively as possible. Please sign where indicated.
- 3 Required supporting documentation where specified in the application shall be provided for verification purposes with the aim of achieving a successful approval process.
- 4 Applications without sufficient supporting documentation or evidence will be referred back to you to provide such information.

SECTION 1: INFORMATION ABOUT YOUR INSTITUTION

1. INSTITUTION IDENTITY:

Name of Company/ Organisation:

2. TYPE OF ORGANISATION:

- | | |
|---|--|
| <input type="checkbox"/> Private company | <input type="checkbox"/> College |
| <input type="checkbox"/> Public company | <input type="checkbox"/> Institutes of technology (and Polytechnics) |
| <input type="checkbox"/> Governmental Institution | <input type="checkbox"/> Private university |
| <input type="checkbox"/> Foundation | <input type="checkbox"/> Public university |
| <input type="checkbox"/> International organization | <input type="checkbox"/> Others...(Please specify) |
| <input type="checkbox"/> NGO | |

3.- COMPANY DETAILS:

Address:

Postal Code:

Telephone:

Fax:

E-mail:

Website:

4. TYPE OF BUSINESS:

Please write a brief description/presentation of the institution

SECTOR and SUBSECTOR DESCRIPTION:

SECTION 2: CONTACT PERSON

PRIMARY CONTACT – This is the person who will be responsible for the relationship with WHO.

First Name _____ Surname _____ Designation _____

Telephone/Cell Phone _____ E-mail address _____

SECTION 3: EDUCATIONAL OFFER

Type of course	Title of the course	Target Participants	Location of course	Duration of the course	Language

Hereby confirm that we apply for being included in the inventory of Educational Institutions offering training on Emergency and/or Disaster Medicine in Europe. I acknowledge that WHO will register and publish on books and internet the company details.

Place /Date

Name

Signature

PLEASE POST, FAX, E-MAIL OR DELIVER THIS FORM TO THE WHO EMS PROGRAMME

WHO BARCELONA OFFICE, Marc Aureli 22-36, E-08006 Barcelona – Spain

Tel: +34 93 241 8270, Fax: +34 93 241 8271

E-mail: ems@es.euro.who.int

For more info: <http://www.euro.who.int/emergservices>



The WHO Regional Office for Europe

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.

Member States

Albania
Andorra
Armenia
Austria
Azerbaijan
Belarus
Belgium
Bosnia and Herzegovina
Bulgaria
Croatia
Cyprus
Czech Republic
Denmark
Estonia
Finland
France
Georgia
Germany
Greece
Hungary
Iceland
Ireland
Israel
Italy
Kazakhstan
Kyrgyzstan
Latvia
Lithuania
Luxembourg
Malta
Moldova
Monaco
Montenegro
Netherlands
Norway
Poland
Portugal
Romania
Russian Federation
San Marino
Serbia
Slovakia
Slovenia
Spain
Sweden
Switzerland
Tajikistan
The former Yugoslav Republic of Macedonia
Turkey
Turkmenistan
Ukraine
United Kingdom
Uzbekistan

ISBN
WHOLIS number
Original:

ASSESSMENT OF EMERGENCY MEDICAL SERVICES SYSTEMS IN THE EUROPEAN UNION

World Health Organization Regional Office for Europe

Scherfigsvej 8, DK-2100 Copenhagen Ø, Denmark

Tel.: +45 39 17 17 17. Fax: +45 39 17 18 18. E-mail: postmaster@euro.who.int

Web site: www.euro.who.int