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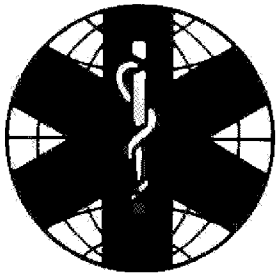
Education and training in disaster medicine

Curriculum

Scientific Committee
International Society of Disaster Medicine



Disaster medicine - definition and goals

International statistics show that major accidents and disasters have become significantly more common in recent decades, parallel to and generated by social developments:

- Increased and more rapid transportation of people and goods and higher-capacity modes of transport.
- Concentration of large numbers of people in limited areas, occasional or permanent.
- Growth of chemical and technical industries involving production and transportation of ever increasing amounts of explosive and toxic agents, often in and through densely populated areas and with insufficient safety measures.
- Terrorists exploiting these risks for personal or political reasons.
- Increase of armed conflicts.

One important contributing factor to all this is that the world population has increased from one and a half billion to six billions in 100 years, leading to a corresponding increase of the risk for disasters and also the number of casualties.

Thus despite measures, we know that such major accidents will continue to occur and cost, in addition to material damage, human lives, permanent disablement and considerable physical and mental suffering.

The goal of health care in these situations is to save lives, preserve function and reduce suffering as widely as possible. Sound medical knowledge and common sense, through prerequisites, are not enough. All relevant experience clearly demonstrates that if the personnel of rescue organizations and medical services have prepared themselves for such situations, not only in the medical, curative field, but also in other disciplines like sanitation, nutrition and epidemiology, the possibilities for optimal results will be greatly increased.

Preparation must include identification of risks, planning of organization and equipment and perhaps most important, education and training. All this is covered by the heading "disaster medicine" which must also include scientific research with collection and analysis of experience and results and evolution of new methods for treatment, planning and education. Disaster medicine has been recognized as a special field only in recent decades, but is rapidly becoming established throughout the world.

Education and training in disaster medicine

Education and training are not merely important, but essential for disaster services. Good planning and equipment may be of little or no use if the staff has not received appropriate instruction in the function of the organization or use of the equipment.

Education and training must be undertaken at many levels:

- The general population
- Rescue workers (police and fire services)
- Ambulance staff
- Nurses
- Doctors
- Specialists
- Co-ordinators

Instruction of the general population in basic first aid and response to a major accident is important, as members of the public often are the first on the scene. Such instruction should be a responsibility of every community, to be given in schools and other educational centres, during military service and in driving schools.

Training of doctors in disaster medicine is a duty for all medical schools and all hospitals involved in the organization of disaster services, as it must be given at all levels:

- During basic courses
- In specialist training
- Postgraduate

The extent and quality of education and training in disaster medicine vary throughout the world, from excellently organized at all levels to nonexistent. The reason may be lack of knowledge or of resources, or simply low priority in centres or hospitals without experience of disasters or major accidents.

Need for common guidelines for education and training

The need-quantitative and qualitative- for generally accepted guidelines for education and training in disaster medicine has long been emphasized. Such guidelines would promote international collaboration and assist current efforts to plan and develop centres for training.

The International Society of Disaster Medicine is a world-wide association of doctors and nurses with experience and skills in that field. One of the society's main aims is to promote and to propagate such knowledge and generally to support all those concerned with organization and/or education in disaster medicine.

The Society's Scientific Committee has worked since May 1990 to devise such guidelines, which are now presented in the form of an educational curriculum.

The purpose of the curriculum is to provide guidance in planning of education and training in disaster medicine in all schools of medicine or nursing and training centres for ambulance crews and other rescue workers.

How to use the curriculum

Levels of knowledge and practical skill are defined for the following grades:

a) Co-ordinator = medical officer in charge of planning and co-ordination at the scene of accident/disaster or in the hospital.

b) Doctor, specialist within the relevant field/topic.

c) Doctor other than (b).

d) Nurse with special training/experience in emergency medicine or anaesthesiology, participating in "field teams".

e) Nurse other than (d).

f) Paramedic = ambulance crew with special training in resuscitation and emergency medicine.

g) Ambulance staff other than (f).

The levels of competence are:

Degree	Theoretical knowledge	Practical skill
0	Not required	Not required
1	Outline information	Knowledge of principles
2	Some knowledge	Knowledge of performance
3	Detailed knowledge	Competence/experience

Although the required knowledge may appear extensive, especially at high levels of medical competence, the Committee considers the requirements to be justified and indeed essential for acceptable levels of medical care in these difficult and increasingly common situations.

All this knowledge cannot be imparted or acquired in one or even several courses in disaster medicine. It must be integrated in all courses of study: basic medical care, anaesthesiology and resuscitation, surgery and traumatology, internal medicine, toxicology, infectious diseases, paediatrics, forensic medicine, nuclear medicine, psychiatry. In addition however, special courses are needed to deal with organizational problems, communication and triage of injuries and diseases. Practical training and disaster simulation are required to demonstrate the adjustments from care in normal circumstances. These special courses and training should preferably be placed as late as possible in study programmes and their extent and contents must depend on the local organization of medical training and on those aspects of disaster medicine that are included in other education.

A co-ordinator of disaster medicine (postgraduate) must be appointed in every medical school, teaching hospital, school of nursing and ambulance training centre. At university level, the co-ordinator's responsibilities should include monitoring of scientific developments in disaster medicine, thereby emphasizing the need for an academic chair in disaster medicine in at least the major universities.

In addition to lectures and literature, education and training in disaster medicine requires practical exercises and/or disaster simulations to teach adjustment of the mode, of action from normal medical care to very different situations.

The Scientific Committee of the International Society of Disaster Medicine sincerely hopes that these guidelines-which have been confirmed and accepted by the Society's Board-will prove helpful to all who work in this important field of medical care.

Topic	a co-ordinator	b doctor, specialist within the actual field	c doctor other than (b)	d nurse with special training in emergency medicine / anaesthesia	e nurse other than (d)	f paramedic = ambulance staff with special training	g ambulance staff other than (f)
I Medical Care							
1 Surgery and traumatology							
Mechanisms of injury							
- Missiles and fragments (wound ballistics)	2	3	2	2	1	2	1
- High-energy blunt trauma	2	3	2	2	1	2	1
- Crushing	2	3	2	2	1	2	1
- Explosion (pressure wave)	2	3	2	2	1	2	1
- Heat or cold	2	3	2	2	1	2	1
Diagnosis, evaluation and primary on-scene management							
- Prevention of further injury	3	3	3	3	3	3	3
- Classification of victims:Triage	3	3	3	2	1	2	1
- Positioning of victims	2	2	1	3	3	3	2
- Basic life support	3	3	3	3	3	3	3
- Advanced life support	2	3	3	3	2	2	1
- Carrying and transportation techniques	2	2	1	2	1	3	3
At the casualty clearing station/first aid post							
- Further evaluation of vital functions	2	3	2	3	1	2	1
- Evaluation of other injuries: Trunk, nervous system, limbs, blood vessels, bones and soft tissues	2	3	2	3	1	1	1
- Categorization	3	2	2	2	1	2	1
- Stabilization and conditioning	2	3	3	3	2	2	2
- Dispatching and transportation	3	3	2	2	1	2	2
Principles of treatment							
- Primary management of the severely injured patient: Establishment/secure of airway and vascular access, haemostasis, shock prophylaxis and treatment, reduction and stabilization of fractures	2	3	3	3	2	3	2
- Wound excision (all tissues), principles of drainage and delayed closure	2	3	2	1	1	1	1

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- Surgical strategy and technique in head, trunk, spinal and limb injuries (including principles for simplified treatment and prioritizing of patients/ therapeutic measures in situations with insufficient resources)	2	3	1	1	1	1	1
- Surgical treatment of contaminated injuries	2	3	2	1	1	0	0
- Treatment of burns and cold injuries	2	3	2	1	1	1	0
2 Anaesthesiology and resuscitation							
Mechanisms of cardiopulmonary insufficiency							
- Airway obstruction	2	3	2	2	1	2	1
- Ventilatory insufficiency	2	3	2	2	1	2	1
- Circulatory impairment	2	3	2	2	1	2	1
- Coma	2	3	2	2	1	2	1
- Hypothermia,hyperthermia	2	3	2	2	1	2	1
- Drowning	2	3	2	2	1	2	1
Diagnosis, evaluation and primary on-scene management							
- Prevention of further injury	3	3	3	3	3	3	3
- Classification of victims.Triage	3	3	3	2	1	2	1
- Positioning of victims	2	2	1	3	3	3	2
- Basic life support	3	3	3	3	3	3	3
- Advanced life support	2	3	3	3	2	2	1
- Carrying and transportation techniques	2	2	1	2	1	3	2
At the casualty clearing station /first aid post							
- Further evaluation of vital functions	2	3	2	3	1	2	1
- Evaluation of other injuries. Trunk, nervous system, limbs, blood vessels, bones and soft tissues	2	3	2	3	1	1	1
- Categorization	3	2	2	2	1	2	1
- Stabilization and conditioning	2	3	3	3	2	2	2

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- Dispatching and transportation	3	3	2	2	1	2	2
Principles of treatment							
- Anaesthesia:Local, regional/ general and sedation	2	3	2	2	1	1	1
- Oxygen therapy and artificial ventilation	2	3	2	2	1	2	1
- Metabolic and renal support	2	3	2	2	1	2	1
- Special cases: Crush, blast, drowning, hypo- and hyperthermia	2	3	2	2	1	2	1
3 Chemical injuries							
Mechanisms of poisoning	2	3	2	2	1	2	1
Epidemiology							
- Risks	3	3	2	2	1	1	0
- Chemical accidents	3	3	2	2	1	1	0
Diagnosis, evaluation and primary on-scene management							
- Identification/detection	3	3	2	2	1	1	1
- Prevention of further damage	3	3	3	3	3	3	3
- Classification of victims: Triage	3	3	3	2	1	2	1
- Positioning of victims	2	2	1	3	3	3	2
- Basic life support	3	3	3	3	3	3	3
- Advanced life support	2	3	3	3	2	2	1
- Carrying and transportation techniques	2	2	1	2	1	3	3
At the casualty clearing station/ first-aid post							
- Further evaluation of vital functions	2	3	2	3	1	2	1
- Decontamination	3	3	2	3	1	3	2
- Evaluation of injuries other than chemical	2	3	2	3	1	1	1
- Categorization	3	2	2	2	1	2	1
- Stabilization and conditioning	2	3	3	3	2	2	2
- Dispatching and transportation	3	3	2	2	1	2	2
Principles of treatment	2	3	2	3	1	2	1

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Special equipment and procedures	3	2	1	2	1	1	0
Protection and evacuation of population	3	3	2	2	1	2	1
4 Nuclear injuries							
Mechanisms of irradiation and contamination	2	3	2	2	1	1	1
Epidemiology							
- Risks	3	3	2	2	1	1	0
- Nuclear accidents	3	3	2	2	1	1	0
Diagnosis, evaluation and primary on-scene management							
- Identification/detection	3	3	2	2	1	1	1
- Prevention of further damage	3	3	3	3	3	3	3
- Classification of victims: Triage	3	3	3	2	1	2	1
- Positioning of victims	2	2	1	2	1	3	2
- Basic life support	3	3	3	3	3	3	3
- Advanced life support	2	3	3	3	2	2	1
- Carrying and transportation procedures	2	2	1	2	1	3	2
At the casualty clearing station/ first-aid post							
- Further evaluation of vital functions	2	3	2	3	1	2	1
- Decontamination	3	3	2	3	1	3	2
- Evaluation of injuries other than nuclear	2	3	2	3	1	1	1
- Categorization	3	2	2	2	1	2	1
- Stabilization and conditioning	2	3	3	3	2	2	2
- Dispatching and transportation	3	3	2	2	1	2	2
Principles of treatment	2	3	2	3	1	2	1
Special equipment and procedures	3	2	1	2	1	1	0
Protection and evacuation of population	3	3	2	2	1	2	1

Topic	a co-ordinator	b doctor, specialist within the actual field	c doctor other than (b)	d nurse with special training in emergency medicine/ anaesthesia	e nurse other than (d)	f paramedic = ambulance staff with special training	g ambulance staff other than (f)
5 Infectious diseases							
Prevention							
- Primary	2	3	2	2	2	1	0
- Secondary	2	3	2	2	2	1	0
- Tertiary	2	3	2	2	2	1	0
Vectors/environment							
- Complicating factors in disaster situations	2	3	2	2	2	1	0
- Programmes for control	2	3	2	2	2	1	0
- Environmental imbalance	2	3	2	2	2	1	0
Main tropical diseases							
- Acute	2	3	2	2	2	1	0
- Chronic	2	3	2	2	2	1	0
Emergencies							
- Meningitis outbreak	2	3	2	2	2	1	0
- Acute respiratory infections	2	3	2	2	2	1	0
- Epidemics in refugee camps/ displaced persons	2	3	2	2	2	1	0
- Dehydration and rehydration	2	3	2	2	2	1	0
Essential drugs							
- WHO restricted list	2	3	2	2	2	1	0
- Storage and transport	2	3	2	2	2	1	0
- Standardization	2	3	2	2	2	1	0
- Protocols for use	2	3	2	2	2	1	0
Simplified treatment protocols							
- For main tropical diseases according to local prevalence and resistance	2	3	2	2	2	1	0
- For prophylaxis	2	3	2	2	2	1	0
- For main respiratory and gastrointestinal infections, according to local prevalence and resistance	2	3	2	2	2	1	0
- Antibiotics; first choice/ indications/limits	2	3	2	2	2	1	0
- Rehydration (health education)	2	3	2	2	2	1	0

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6 Psychological care							
Post-traumatic psychiatric disorders and emotional reactions							
- Of population	3	3	2	2	1	1	1
- Of casualties	3	3	2	2	1	1	1
- Of rescue workers	3	3	2	2	1	1	1
- Clinical symptomatology (acute and chronic reactions)	3	3	2	2	1	1	1
- Individual and collective reactions	3	3	2	2	1	1	1
- Specific paediatric aspects	3	3	2	2	1	1	1
Preventive measures							
- For victims	3	3	2	2	1	1	1
- For rescue workers	3	3	2	2	1	1	1
- For families + relatives	3	3	2	2	1	1	1
- Acute interventions and long-term support	3	3	2	2	1	1	1
Psychotropic drugs	2	3	2	2	1	1	1
Mourning and specific problems of bereavement	3	3	2	2	1	1	1
Preventive measures in refugee camps/displaced persons	3	3	2	2	1	1	1
Medical care of psychiatric patients							
- Emergency situations	2	3	2	2	1	1	1
- Group approach and support	2	3	2	2	1	1	1
- Psychiatric in- and out-patient activities	2	3	2	2	1	1	1

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II Public Health							
1 Epidemiology							
Data acquisition and processing	3	3	1	1	1	0	0
Health indicators	3	3	1	1	1	0	0
Initial survey	2	3	1	1	1	0	0
Epidemiological surveillance	2	3	1	1	1	0	0
Epidemics							
- Research	3	3	1	1	1	0	0
- Prevention	3	3	1	1	1	0	0
- Programmes	3	3	1	1	1	0	0
- Biostatistics	3	3	1	1	1	0	0
2 Sanitation, health and environment							
Water-related problems	2	3	1	1	1	0	0
Garbage-related problems	2	3	1	1	1	0	0
Excreta-related problems	2	3	1	1	1	0	0
Hygiene-related problems	2	3	1	1	1	0	0
Multifactorial approach	2	3	1	1	1	0	0
Monitoring of environmental programmes	2	3	1	1	1	0	0
Management of sanitary programmes	2	3	1		1	0	0
3 Nutrition and alimentation							
Nutritional and alimentary survey	2	3	1	1	1	0	0
Identification of malnutrition	2	3	1	1	1	0	0

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Food distribution programmes	3	3	1	1	1	0	0
Supplementary feeding	2	3	1	1	1	0	0
Alimentary rehabilitation programmes	2	3	1	1	1	0	0
Nutritional assistance	2	3	1	1	1	0	0
Alimentary system component analysis	2	3	1	1	1	0	0

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III Disaster Management							
1 Risk management							
Risk definition	3	3	1	1	1	1	1
Potential risk	3	3	1	1	1	1	1
Preparedness	3	3	1	1	1	1	1
Risk prevention	3	3	1	1	1	0	0
2 Definition/classification/ evaluation							
Disaster concept							
- Definition	3	3	1	1	1	1	1
- Classification	3	3	1	1	1	1	1
- Evaluation	3	3	1	1	1	1	1
- Severity scale	3	3	1	1	1	1	1
- Medical severity index	3	3	1	1	1	1	1
3 Medical relief organizations (levels)							
Local	3	3	1	1	1	0	0
Regional	3	3	1	1	1	0	0
National	3	3	1	1	1	0	0
International	3	3	1	1	1	0	0
4 Regulation							
Legislation							
- National	3	2	1	0	0	0	0
- International	3	2	1	0	0	0	0
Ethics	3	2	1	0	0	0	0
Forensic medicine	3	2	1	0	0	0	0

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5 Planning							
Disaster plans (general/specific)	3	3	2	1	1	1	1
Alarm techniques	3	3	2	3	1	3	2
6 Co-ordination/communication command							
Co-ordination							
- Internal organization	3	3	1	2	0	1	1
- Inter-agency organization	3	3	1	2	0	1	1
- General principles (autonomy/cooperation)	3	3	1	2	0	1	1
Communication techniques	3	3	1	3	0	3	3
Command	3	3	1	2	0	1	0
7 Logistics							
Rescue equipment	3	3	1	2	0	3	3
Rescue tools	3	3	1	2	0	3	3
Medical supplies							
- Equipment	3	3	1	3	1	3	3
- Drugs	3	3	1	3	1	3	3
Safety equipment	3	3	2	2	0	3	3
Mobilization and utilization of resources	3	3	2	3	0	3	3
8 Protection and security							
Protection of patients	3	3	3	3	1	3	2
Protection of population	3	2	1	1	1	1	1
Protection of rescue-and medical workers	3	3	1	3	1	3	1

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9 Triage							
- Principles	3	3	2	3	1	2	1
- Categorization and scoring systems	3	3	2	3	1	2	1
10 Pre-hospital phase management							
Organization of medical assistance in the rescue process	3	3	2	3	1	3	2
Specialized intervention procedures (toxicology/nuclear medicine)	3	3	2	2	1	2	1
Alarm transmission	3	3	2	3	1	3	1
Pre-hospital activities	3	3	2	3	1	3	3
11 Transportation							
Methods of transportation	3	3	2	3	1	2	2
Utilization and selection	3	3	2	3	1	2	2
Dispatching of victims	3	3	2	3	1	2	2
Organization	3	3	2	3	1	2	2
12 Hospital phase management							
General (external and internal)	3	3	2	2	2	0	0
Alarm procedure	3	3	2	2	2	0	0
Preparedness	3	3	2	2	2	0	0
Evacuation	3	3	2	2	2	0	0
Medical records	3	3	2	2	2	0	0

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13 Information and news media							
Selection and information	3	3	2	1	0	1	1
Organization of public information centre	3	3	2	1	0	1	1
Dealing with authorities and news media	3	3	2	1	0	1	1
14 Rehabilitation							
Health problems							
- Environment	3	3	2	1	1	0	0
- Preventive care	3	3	2	1	1	0	0
- Medical care	3	3	2	1	1	1	0
- Psychological care	3	3	2	1	1	1	0
15 Management of displaced persons and refugees							
Site selection	3	3	2	2	0	0	0
Housing	3	3	2	2	0	0	0
Public health	3	3	2	2	1	1	0
Sanitation	3	3	2	2	1	1	0
IV Education and training in disaster medicine							
Training process	3	3	1	2	1	2	1
Training material	3	3	0	0	0	0	0
Data bank	3	3	0	0	0	0	0
Definition of teaching objectives	3	3	0	0	0	0	0
Testing techniques	3	3	0	0	0	0	0
Evaluation, updating, audit	3	3	0	0	0	0	0
Practical training	3	3	2	2	1	2	1