undesirable to some shortly after an incident.

Why conduct disaster HIA

The underlying goal of disaster aftercare is to contribute to the restoration of control at both individual and societal level. A disaster HIA may contribute to a pro-active government response by providing information on the needs of the victims and, consequently, on the relief facilities required to support individual and collective post-disaster care activities. It may also serve to recognize and acknowledge the victims and their post-disaster problems. The following three main objectives of disaster HIA are recognized:

1. Provision of (health) care information:
   - Determining victims’ health state: type, numbers, development, and possible trends/patterns of health problems, either directly related and/or attributed to the disaster.
   - Identifying groups at increased risk, need for special health care (provisions).
   - Monitoring the effects of interventions.
2. Provision of (health) care policy information:
   - Initiation, adaptation and coordination of suitable (health) care provision.
   - Co-ordination and dissemination of information on the public health consequences of the disaster.
3. Scientific objectives:
   - Improving understanding of mechanisms that affect the health and well being of disaster victims.
   - Improving understanding of the possibilities to prevent or minimize (persistent) health problems resulting from disasters.

In the above-mentioned Dutch disaster HIAs different approaches have been applied, ranging from surveillance of existing or ad hoc health care registries, surveys of health and exposure end points, exposure assessment in contact media, screening, and evaluation or effect studies. Each study type has distinctive strengths and weaknesses depending on objectives, circumstances, and burden to participants.

Organization of disaster response in The Netherlands

In The Netherlands, disaster preparedness and response are managed by the regional public health authorities, fire brigades, police, and the municipalities. The mayor has overall command over disaster control, usually the fire chief has operational control. Depending on the severity, or if the (consequences of the) crisis or disaster exceed administrative boundaries, the command and control can be scaled up to national level.

Therefore, any preparedness planning for disaster HIA needs to include all these players in local government, emergency response and public health organizations, and health care providers. This is a challenge in itself.

Disasters are rare, and hence the complicated undertaking of a HIA is not often needed. It would be unrealistic to expect that every regional public health authority prepare for such events. For this reason, a national Centre for Health Impact Assessment of Disasters (CGOR) was founded by the Ministry of Health, Welfare, and Sports to serve as a clearing house and support unit for local authorities.

Initiate a disaster HIA, or not?

One main function of CGOR is to provide the government with rapid and authoritative advice on whether or not to initiate a disaster HIA, its possible objectives, and an outline of the study programme. To this end an independent Expert Advisory Committee has been set up to provide such advice within 24 h after alert, on the basis of previously agreed rules of engagement.

References


Recommendations to improve post-disaster HIA: planning before the disaster

Pierre Verger1, Marc Ruijten2, David Russell3, Thierry Lang4

Why?

Establishing the health impact of a disaster as completely, reliably, and credibly as possible is essential to provide information for a democratic debate about all of the issues (health, social, and economic) that these events might raise. Health Impact Assessment of disasters may provide essential information for designing, adjusting, and implementing the aftercare activities following a disaster, and improve decisions about future risk prevention and choices in development and zoning. Lack of appropriate and timely HIA response after disasters such as the Chernobyl accident or the Schiphol...
aircraft crash have proved to favour mistrust of experts and public authorities, rumours about the health consequences, and even indictment actions against public health authorities (as in France, 15 years after the Chernobyl accident).  

**Which disasters?**

Preparation should facilitate HIAs of a wide range of disasters and scenarios. Some disasters have a clear initiating event and develop rapidly (e.g. fireworks explosion, airplane crash), others are primarily manifested as a disease cluster (toxic oil syndrome in Spain) and yet others develop slowly and sometimes insidiously (Camelford water contamination incident). Besides short- and long-term effects caused by physical trauma or shocking events, preparedness should focus on the assessment of the health impact of individual exposure to chemical, physical (including radiation), and (micro-)biological agents. Most EU countries have arrangements for infectious disease outbreak investigation in place; a HIA might be initiated in addition to study medium-to-long-term sequelae and non-infectious (e.g. mental) health endpoints that are not routinely covered.

**When and how?**

It is important to realize that some elements of disaster HIA need to be performed within a critical time window (such as chemical exposure assessment), which can be as brief as hours after the event. As in any disaster-related activity, the efficiency, efficacy, and success can be greatly enhanced with appropriate preparation. Preparation should be
timely, of adequate quality, and recognize the existing structures and organizations. Therefore, infrastructure, tools, and methods needs to be developed on as follows:

- **Organization** (arrangements for decision-making, funding, and command and control of disaster HIA, communication of results, and access to relevant information);
- **Prior information** on the quantities and distribution of hazardous materials and their hazard profiles, release scenarios (including reactants, products, and media contaminated), and characteristics of at risk populations;
- **Environment exposure assessment** (comprehensive access to monitoring, environmental sampling, and modeling and mapping);
- **Identification and registration** for follow-up of exposed populations and victims (necessary for epidemiological purposes or for indemnification);
- **Individual exposure or doses assessment** (biosampling, development of novel biomarkers, and questionnaires on behaviour and protection during and after exposure...);
- **Health end point assessment** (questionnaires, indicators, and biomarker suitability and validation, availability of reference data, etc.);
- **Practical and logistical arrangements**;
- **Data collection, management, and analysis**.

Such preparation involves setting up a permanent system of scientific teams and independent specialists responsible for preparing disaster Health Impact Assessment and an arrangement for access to funding. This system should have a mechanism of control and regulation that enables rapid access and that facilitates and monitors the implementation of disaster HIA. Improving cooperation between institutions and agencies is part of the challenge. Rules of engagement should be the basis for deciding whether or not to initiate a health impact assessment programme after a disaster.

**Who?**

Clearly, the diversity of arrangements that need to be in place to enable a rapid disaster HIA requires that preparations are made by a well-managed multidisciplinary network organization. Only in the Netherlands a dedicated unit (CGOR) has been formally established. The optimal scale to prepare for disaster HIA has not yet been established. Disasters or their health consequences do not respect national borders and may require a multinational health response (cf. Chernobyl). Development, validation, and standardization of tools and methods, and a systematic approach to learning lessons from previous disasters may prove to be an activity beyond the capabilities and resources of individual European states. International collaboration, or even EU level preparedness may be a more realistic approach.

Decisive action is required to put the subject on the agenda, gather information and expertise globally, draft plans, and set up specialist centres to ensure a proper response following the next disaster.


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