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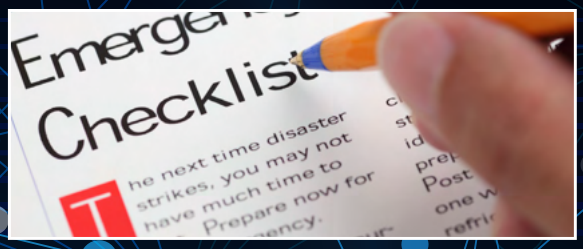
FLOODS IN THE WHO EUROPEAN REGION:

HEALTH EFFECTS AND THEIR PREVENTION



Public Health England

World Health Organization

REGIONAL OFFICE FOR Europe

Floods in the WHO European Region:

health effects and their prevention

Edited by:
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Public Health England

ABSTRACT

In 2009–2011, the WHO Regional Office for Europe and the United Kingdom Health Protection Agency undertook a project to investigate the adverse health effects of floods and to understand how best to protect the health of populations during floods in the European Region. The project had two main components. A questionnaire was sent to 50 of the 53 Member States of the WHO European Region to collect information on recent experience of floods, their health effects and current preparedness and response mechanisms. Furthermore, a systematic review was undertaken of the epidemiological literature on the global impact of flooding on health. Analysis of the returned questionnaires and the peer-reviewed literature brought to light many issues pertinent to Europe. These findings will help WHO to prepare evidence-based guidance for the European Region on health concerns before, during and after flooding incidents and the measures for prevention, response and recovery.

Keywords

Delivery of health care – organization and administration
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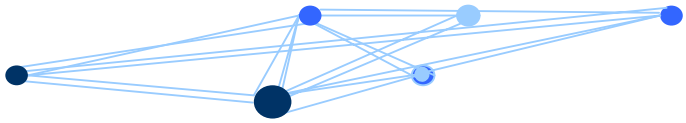

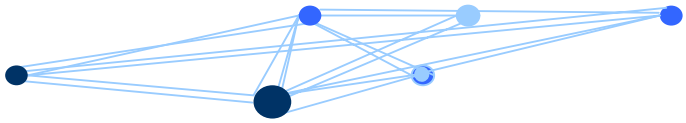

Foreword

Natural disasters commonly have deep, far-reaching consequences for the communities affected. In the European Region, floods are the most common disasters, causing extensive damage and disruption. The magnitude of the physical and human cost of such events can, however, be reduced if adequate emergency preparedness and planning are implemented, mitigation actions are undertaken and timely and coordinated responses are launched throughout and after the event.

In particular, much can be done to prevent or minimize the health impacts and human suffering. Globally and at the European level, WHO has been heavily involved in addressing the health dimensions of emergency management. The Hyogo Framework for Action (2005–2015) adopted by the World Conference on Disaster Reduction highlights the need to integrate planning for disaster risk reduction into the health sector. World Health Assembly resolutions 58.1 and 59.22 (2005 and 2006, respectively) urged Member States to formulate national emergency preparedness plans giving due attention to public health, including health infrastructure, and reiterated the importance of building national capacity in emergency preparedness. The WHO Eleventh General Programme of Work (2006–2015) identifies strengthening of global security as a priority, supporting an integrated approach and society-wide responses to emerging and new threats to health, including disasters and emergencies. At the European level, the Regional Framework for action on climate change sets as an objective improved provision of early warning systems, the preparation of action plans for extreme weather events, disaster preparedness and response and development of climate-resilient health care and other public service infrastructure.

The purpose of this review is to assist Member States in better understanding the health risks of flooding and developing their own public health responses for flood prevention in the context of wider emergency planning. Its findings are based on a comprehensive review of the scientific literature, web-based governmental and nongovernmental reports and a survey conducted by the WHO Regional Office for Europe with the United Kingdom Health Protection Agency (HPA)[1] between 2009 and 2011.

Resilient, proactive health systems that anticipate needs and challenges are more likely to respond effectively during emergencies, save lives and alleviate human suffering. The WHO Regional Office for Europe will continue to support Member States in their efforts to minimize the health impacts of floods. We hope this publication will provide background for that collaborative work and promote progress in this area.

Guénaël R. Rodier
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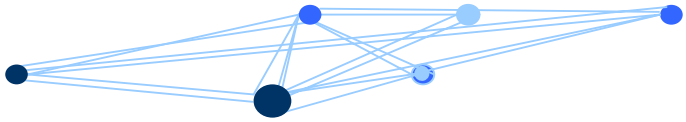
David L. Heymann
Chairman
Advisory Board of Public Health
England

[1] Since 1 April 2013, the HPA has been part of Public Health England.



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Executive summary

Floods are the most common natural disaster in the European Region, which has experienced in recent years some of the largest flooding events in its history. The effects of flooding on health are extensive and significant, ranging from mortality and injuries resulting from trauma and drowning to infectious diseases and mental health problems (acute and long-term). While some of these outcomes are relatively easy to track, ascertainment of the human impact of floods in Europe is still weak. The WHO Regional Office for Europe and the United Kingdom HPA collaborated to assess the health effects of floods as well as to identify measures to prevent or minimize their health effects. The result is this document, which is intended to provide decision-makers with evidence for action before, during and after flooding events.

The information for this report was obtained through a comprehensive review of scientific evidence and "grey" literature, governmental and nongovernmental reports and data. Valuable information on practices and experiences of flooding and related public health measures was ascertained from the responses to a questionnaire sent to WHO Member States in the European Region. The key messages of this publication are as follows.

Extreme precipitation events and floods are frequent, and projected to increase, in the European Region.

- Flooding occurred in 50 of the 53 countries in the WHO European Region during the past decade, with the most severe floods in Romania, the Russian Federation, Turkey and the United Kingdom.
- It is projected that climate change will cause more rainfall. This may result in more frequent and more intense floods of various types such as local, sudden floods (flash floods); extensive, longer-lasting pluvial and fluvial floods; coastal floods and snowmelt floods.
- Heavy precipitation is likely to become more frequent throughout Europe. Even in summer, when the frequency of wet days is projected to decrease, the intensity of extreme rain showers may still increase. In addition, the frequency of precipitation for several days is projected to increase. In consequence, if no measures are taken, river flooding is projected to affect 250 000–400 000 additional people per year in Europe by the 2080s, more than doubling the numbers from those in 1961–1990. The populations most severely affected will be those of central Europe and the British Isles *(1)*. Rises in sea-level and storm surges, which cause coastal flooding, will