SPECIAL REPORT

KAMEDO Report No. 76 Floods in Poland in 1997 and in Sweden in 2000

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KAMEDO = Swedish Disaster Medicine Study Organization

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Abstract

Extensive flooding occurred in Poland in 1997 and in Sweden in 2000. These events and their management are reviewed in this Report. The floods in Poland were more extensive than in Sweden as they covered some 10% of Poland's landmass. An estimated 55 persons died as a direct result of the floods in Poland and none were reported due to the flood in Sweden. No epidemics were encountered in either country, presumably related to the extensive use of bottled water and radio instructions to boil all water before its use. The water supply was interrupted and untreated water was taken into the water distribution systems. Chlorination of the water supplies was added in Sweden. Sewage and refuse management was problematic. The heathcare system was impacted profoundly in Poland both by direct damage to hospitals and/or loss of essential services such as electricity and water supplies. Government responses are described with the needs in Poland being extensive including the need for outside assistance. Some pathways used for obtaining aid were outside of government coordination. Comprehensive conclusions and recommendations derived from the observations are provided.

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Summary

Recently, Europe regularly has been hit by floods. During the summer of 1997, Poland experienced one the largest floods in the country's history. Water covered 10% of the landmass of the country and approximately three million people were affected. The floods occurred very rapidly, which led to many injured people. It is estimated that 55 people were killed. In Sweden, southern Norrland was impacted first by large amounts of rain in summer 2000, and in the autumn, the west of Sweden, experienced extensive flooding. The amount of rain, geography, climate, and infrastructure differed considerably from that of Poland, and the Swedish population was not affected as dramatically. No deaths or injuries were reported, nor was there an extra strain on the health service, as its buildings escaped damage.

Keywords: damage; electricity; epidemics; floods; government responses; health services; infectious diseases; medical infrastructure; refuse; sewage; vaccinations; water supplies

In Poland, contagious diseases were controlled. The expected epidemics did not occur, and compared to previous years, the control of epidemics in flooded areas was even better than in those that were not flooded. A range of factors contributed to the prevention of the epidemics following the onset of the floods, including: (1) massive amounts of information, particularly concerning drinking water, sensitive food, and personal hygiene, was provided to the public via the radio; (2) the general public behaved in a disciplined manner and observed the instructions and advice of the authorities; (3) rapid distribution of bottled drinking water and food was arranged locally; (4) the National Institute of Hygiene's skillful management centrally controlled the country's sanitary-epidemiological stations, and any risk or outbreak of infectious diseases was reported daily; and (5) there was a healthy skepticism as to whether vaccinations could solve the problems and, therefore, only high-risk groups were vaccinated.

In Sweden, there were no more than the normal number of reports of water-borne contagion. The number of domestic cases of campylobacter infection in Sweden was lower in 2000 than in 1999. During the summer and autumn of 2000, there was an extensive epidemic of tularaemia in Sweden, which, according to the Swedish Institute for Infectious Disease Control, may have been a mosquito-borne disease, and therefore, the increase could have been caused by the wet summer and the resulting large number of mosquitoes.

During the floods in Poland, the dependence on a working water supply was made clear. Damage to the water and sewage system was extensive and costly. The water works were located close to the river, the electricity supply was interrupted, and untreated water was taken into the distribution system, which put them out of service. Therefore, restoration of the water supply was given the highest priority, but it took one month before the main part of Wroclaw had its normal water supply. When water was let into the pipes again, it was recommended that the population boil drinking water for 10 minutes instead of the usual one minute. Normally, tap water is not drunk in Wroclaw unless it is boiled, which helped limit the number of infections during and after the flood. The common habit of drinking bottled water in Poland also was of important in disease control.

The floods also caused problems with the water supply in Sweden. Several municipal water works had problems with contaminated water, but overcame these by chlorination, distributing water in tanks, and directing the public to boil their water. Those in charge of the water supply managed the municipality's water supply by constant monitoring, testing, and damming. There was a risk of contaminated surface water getting into the water supply sources. Many private wells were contaminated, but the risk of infection was kept at a reasonably low level because of the warnings issued. Instead, water was taken from safer wells and/or boiled. One problem was that the water laboratory could not cope with the pressure of work in the summer and the wait for analysis results was unacceptably long.

Sewage became a problem in Poland and in Sweden. The flat Polish landscape made it difficult to drain sewage, because of the back flush of water through sewage pipes and river overflows. In Sweden, it became necessary to discharge untreated waste water into the receptors, and in spite of considerable dilution in the watercourses and lakes the quality of bathing water was impaired at certain beaches.

There was an avalanche of refuse in Poland because it was necessary to discard everything that had been water damaged. It was not possible to collect the refuse in the customary way, so it was stored in large piles to be removed later. Rat control was implemented in the autumn, which may have prevented an increase in leptospirosis, which can be spread by rats.

Compared to the Swedish health service, which was never affected by the floods, the Polish health service in the flooded areas had a number of problems, including: (1) hospitals were forced to close due to the floods; (2) heavy equipment, e.g., computed axial tomography scanners and mainframe computers, were destroyed by flood water; (3) patients had to be moved to other hospitals; and (4) otherwise functioning hospitals lost their electricity and water supply.

Eleven of 198 hospitals in the flooded areas had to be evacuated. The evacuation and relocation of patients to other hospitals was solved by the Ministry of Health, which was in a position to make rearrangements within the state hospital care service. Although Poland experienced a modest increase in the number of persons seeking treatment, non-emergency cases (e.g., elective surgery) were not admitted for treatment. The hospitals also requested and received pharmaceuticals from abroad, which caused problems (i.e., a need for knowledge of a foreign language) rather than providing benefits.

The floods caused considerable damage to the infrastructure of Poland. The cost has been estimated at 30–40 billion Swedish crowns. Roads, bridges, homes, industries, hospitals, waterworks, water purification plants, and flood protection resources were destroyed. Poland also experienced extensive damage to electricity, telecommunications, water, and sewage networks. It is estimated that restoring the damage caused by the floods will take at least 10 years.

Much of the destroyed property had inadequate or no insurance coverage. In Sweden, effects were more limited. Primarily the railway and road networks were damaged.

The emergency arrangements in municipalities and county councils in Sweden appear to function properly. The municipalities' emergency organizations had to bear the brunt of the burden in several of the affected Norrland municipalities. Those in charge of water the supply and environmental offices were affiliated with management groups. The floods occurred in the middle of holiday periods, so it was difficult to contact key persons.

The floods in Poland were so extensive that a national effort was needed. It took several days, however, before the government and the ministries understood the seriousness of the situation and began to take action. A crisis headquarters was established during the evening of 08 July 1997 after the city of Klodzko was flooded by the torrential rain that started falling during Saturday, 05 July.

On 08 July, a decision was made to request aid from other countries. At the same time, considerable rescue operations started, involving 35,000 personnel, 76 helicopters, four aircraft, and 387 boats/amphibious crafts. Military personnel and rescue services saved lives and provided drinking water, food, etc. A large number of volunteers participated.

In many Polish municipalities and counties first hit by the flood, it was realized quickly that outside help was needed. When Warsaw initially decided to wait and see, municipalities, counties, hospitals, and aid organizations attempted to get help from abroad. This impaired the possibilities of coordinating the foreign aid. The United Nations Department of Humanitarian Affairs (UNDHA) quickly arrived on-site and provided status reports via the Internet.

There was a great need for outside aid. In the short term, there was a need for money, rescue equipment, vaccines, mobile waterworks, mobile electricity plants, large pumps, and expert support. Those in positions of responsibility in the affected regions generally are subjected to severe media pressure when disasters occur. In some places in Sweden, meetings with journalists became a full-time occupation. Medical officers responsible for infectious disease protection, those in charge of water and sewage, and environmental offices effectively conveyed their messages via the media, which was valuable and perhaps crucial to preventing water-borne contagion.

Conclusions and Recommendations

1. In Poland, like in many other countries, authorities and vital institutions often are criticized for not acting in time. It is difficult to judge the extent of the damage and disruption, and, at the same time, people do not know how to act during these circumstances. Therefore, catastrophe plans and exercises are important at the national, regional, and local levels, and better criteria are needed for when these plans should be activated.
2. It is crucial that areas at risk for flooding build contingency arrangements to cope with short periods of isolation. Contingency arrangements should include an independent supply of potable water and energy. When aid from other countries is needed, the request should come from the country's government or crisis headquarters. It often is of great value to have aid requirements evaluated by observers with experience of disaster medicine from outside sources.
3. Military personnel and volunteers were of great use in both countries. In Sweden, the Home Guard contributed important efforts. The local contingency organizations should have better knowledge of what resources the armed forces can provide.
4. The National Swedish Board of Health and Welfare and the Swedish National Food Administration's earlier activities concerning contingency plans for health protection, control of infectious diseases, and drinking water contributed to a good state of mental preparedness. Swedish exercises and plans for the millennium also were mentioned as having been positive. Some municipalities also had previous experience with extensive flooding and others had previously practiced flood scenarios.
5. It is crucial that all important healthcare institutions have standby generators for electricity and water that are adequate to sustain operations for a few weeks.
6. Radio communication is of great value when land and mobile telephone networks are overloaded and/or stop working. It may be the only method of directing rescue actions. The possibilities of conveying important messages to the general public via transistor radios also should be utilized in case of power outages.
7. Information to the general public concerning water and food hygiene is of the utmost importance in protecting against an infectious diseases epidemic. Vaccinations only need to be boosted for those who do not have adequate protection, who are particularly sensitive to infection, or who are exposed to more contagion than others.
8. The potable water supply is one of the most important initial measures in all types of disasters. If the quality of the water is questionable, it should be boiled in order to avoid water-borne contagion.
9. When disaster aid is requested from other countries, aid requested often is not what actually is needed.
10. The floods were managed more efficiently than expected in Sweden. To some extent, this may be explained by the hilly landscape in the flooded areas. Also, no dams burst, and there were no lengthy power outages. Contingency arrangements proved successful in the regions, and a network of contacts was developed, and exercises were conducted. Early warning also was given of contaminated water.
11. In the future, there should be recurring exercises and training for personnel within water and sewage, infectious disease control, and environmental offices. Water laboratories must improve their routines in order to be able to complete water analyses more quickly.
12. The location of new sources of water supply, untreated wastewater pipes, and healthcare facilities should take into account the risk of flooding and landslides. In Sweden, water regulation companies should review the effects of their various strategies for drawing water.