

KAMEDO Report No. 75

Fire Catastrophe in Gothenburg

29–30 October 1998

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KAMEDO = Swedish Disaster Medicine Study Organization

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Abstract

A fire developed in a facility being used as a discotheque that resulted in death for 63 young people. The rescue operations, ambulance responses, medical care provided at the scene, hospital operations, and psychosocial responses are described. Bodies blocked the exit and many survivors had to evacuate by leaping from windows. A total of 16 ambulances were used. Survivors and people not directly involved in the incident created disturbances and some even attacked responders. Many of those who escaped early suffered mild inhalation injuries and those who escaped later, sustained more severe inhalation injuries. High levels of both carbon-monoxide and cyanide were detected at autopsy. A total of 213 persons were transported to hospitals, 85 by ambulance. Most who died at the scene had severe burn injuries, were unconscious, or suffered from fire-gas injuries. A total of 150 victims were admitted to a hospital, of which 74 (49.3%) required intensive care. Only one of the four hospitals actuated a disaster alert. Psychosocial support was complicated due the multicultural characteristics of those involved. Support to the survivors and relatives of the victims was provided by representatives of various religious organization, non-profit organizations, and by the government of Gothenburg. Many recommendations are provided to better prepare for future events.

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The Event

In the late evening of 29 October 1998, a fire, which later turned out to have been started deliberately, broke out at the Macedonian Association in the Hisingen area of Gothenburg (Figure 1). That particular evening, the venue was being used as a discotheque. Around 390 young people, many of them immigrants, were in the building when the fire began. The fire started at the emergency exit and spread quickly. Panic erupted when the young people tried to escape. Collapsed victims blocked the only exit. Some people managed to escape through the windows, the bottoms of which were approximately 2.2 meters above the floor. From some of the windows, it was possible to jump onto the roof of a lower building, but these windows also were quickly reached by the flames. At an early stage of the fire, some of the sur-

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Keywords: alert; autopsy; ambulance; burns; carbon-monoxide intoxication; chaos; command; cardiopulmonary resuscitation (CPR); cyanide intoxication; disaster plans; entrapment; fire; hospitals; journalists; medical care; medical direction; rescue; psychosocial support; responses; response times; resources; security; violence

vivors were able to escape down to the street level approximately six meters below from windows either by jumping or being pushed out.

Responses

Rescue Operations

The first emergency 1-1-2 call to the SOS Alarm Emergency Service Centre reporting the fire was received from a mobile phone at 23:42 hours. Approximately three minutes later, the first rescue force was dispatched. A standard ambulance and a mobile intensive care unit (OLA) ambulance were dispatched immediately and the Police Command Center also was informed. The SOS Alarm also dispatched a medical team from Östra Hospital. Soon thereafter, the Accident and Emergency Departments at Sahlgrenska, Mölndal, and Kungälv Hospitals were alerted. When the SOS Alarm received further phone calls and a report from the rescue unit on the scene, a major alert was issued, with call-outs from three fire stations and an additional 14 ambulances.

For the first force, the total time from the receipt of the alert to arrival at the scene of the event was approximately six minutes. This force encountered total chaos. Screaming young people filled the open space in front of the building, which blocked the path of the fire engines. People jumped from the windows. Smoke divers forced their way into the premises through the entrance and windows.

The victims rescued by the smoke divers at an early stage suffered from mild smoke inhalation and slight injuries. Of those rescued later, most had severe fire-gas poisoning, were unconscious, and had severe burns.

Of the approximately 390 people present when the fire broke out, approximately 260 had managed to get out by themselves before the rescue service arrived. Around 150 of these victims suffered from fire-gas poisoning or other injuries, and were transported to the hospital. Of the 120 people estimated to still have been in the building when the rescue work started, approximately 60 were rescued by smoke divers. Ten of these victims died from their injuries. A total of 63 young people died, and 213 were transported to the hospital.

In total, 50 firemen and 42 police officers from 19 police patrols worked at the scene of the fire during the first few hours. They had three main tasks: (1) saving lives; (2) cordoning-off the scene; and (3) supervising the casualty assembly point. When the fire was extinguished, the police assumed control of the scene.

Ambulance Operations

Of the two ambulances initially dispatched, one was an OLA ambulance. In total, 16 ambulances were involved, two of which were OLA ambulances. The first ambulance arrived on-scene at 23:50 hours and the first OLA ambulance (which became the forward ambulance control unit) arrived at 23:53 hours. The first, open-air, provisional, casualty assembly point was set up alongside the wall of a building. Attempts at using priority slips and treatment cards proved unsuccessful due to the chaos. The mood

around the forward ambulance control unit was frenzied at times. At first, the range of injuries in those who had managed to leave the building through the exit and those who had jumped out of the windows consisted mainly of slight inhalation injury. When the smoke divers managed to remove the plug of people blocking the exit, the victims with severe inhalation injury and burns came out. Many of the firefighters with medical training had to alternate between being firefighters and ambulance staff.

Medical Care at the Scene

The doctor on-call in Gothenburg arrived at the scene of the fire just before midnight. Approximately one-half an hour later, a mobile medical team arrived with a doctor from Östra Hospital. The casualty assembly point gradually was moved into a car showroom. No on-scene medical director was called. One medical team from Sahlgrenska Hospital and one from Mölndal Hospital arrived at the scene of the event after all the patients had been evacuated.

In general, first aid was provided, most often to clear the airways, and the casualties were transported to a hospital as quickly as possible. The less seriously injured were placed in groups and had to share oxygen, which was not in sufficient supply for everyone. When the severely injured were evacuated, more advanced actions such as endotracheal intubation and cardiopulmonary resuscitation (CPR) were performed. However, this was not always successful. Intravenous fluids were administered for those with severe burns. No other specific treatments were provided.

A total of 213 young people were transported to the hospital, of whom, 85 were taken by ambulance. The others were driven to hospital in buses, taxis, and private cars.

During the on-scene work, rescue service personnel and ambulance personnel were subjected to verbal threats and, in a few cases, more palpable violence involving kicks and punches. The injuries sustained were bruising/abrasions and, in one case, broken ribs. The perpetrators in the majority of cases were attempting to enforce priority in the treatment of their nearest and dearest. In one case, it was reported that bystanders prevented medical personnel from discontinuing CPR, despite the medical staff's judgments that continuing CPR would not be successful.

That night, it was decided that ambulances would transport the deceased to the mortuary at Sahlgrenska Hospital. The last corpse arrived at the mortuary at 08:00 hours.

Most of those who died at the scene had suffered from severe burns, but the most common cause of death was carbon monoxide poisoning. Many also had high levels of cyanide in their blood that also could have been the cause of death.

Hospital Operations

One of the most important tasks at Sahlgrenska Hospital was to separate the injured from their relatives and friends, and then, the slightly injured from the more seriously injured. By 14:00 hours, 48 patients had been registered at Sahlgrenska Hospital. The influx of patients to Östra Hospital was so great and so rapid that all treatment took place using emergency triage.

One-hundred fifty people were admitted to the hospitals in the Gothenburg region. Seventy-four (49.3%) of these required care in the intensive care unit. As a result of resources being transferred from surgical departments and extra intensive-care beds being provided in wards outside the intensive care units, all of the victims were able to receive adequate treatment for injuries due to fire gases and burns. In addition to those admitted as in-patients, another 63 young people (42.0%) were able to leave the hospital following a medical examination. Five people attended a health center during the first 24 hours.

Around 18:00 hours on Thursday, 31 October, 63 patients remained at the four emergency hospitals in Greater Gothenburg (Sahlgrenska, Östra, Mölndal, and Kungälv Hospitals). Twenty-two (34.9%) of them were being treated in intensive care units. Thirteen patients, after initial care at the hospitals in Gothenburg, were transported to burn units at other hospitals in Sweden and Norway (Uppsala University Hospital and Karolinska Hospital in Stockholm, and Linköping University Hospital, Malmö General Hospital, and Haukeland Hospital in Bergen, Norway). On Monday, 02 November, it was reported that two of the hospitalized patients had died, one in Bergen and one at Sahlgrenska Hospital. Two weeks after the event, a total of 26 patients still were hospitalized. Of the remaining patients, 14 were at hospitals in Greater Gothenburg and 12 were at other hospitals in Sweden. The last patient was discharged from Gothenburg hospital on 13 April 1999.

At an early stage, information flowed from the scene to SOS Alarm to the emergency departments at the affected hospitals. However, it is impossible to clarify precisely what information was passed on, when this information was shared, and who received the information at the particular hospitals. At first, correct information regarding the extent, the precise location, or how the incident had developed could not be obtained. The situation was handled differently at the various hospitals. No disaster alert ever was raised at Sahlgrenska, Östra, or Mölndal Hospitals, but only at Kungälv Hospital.

The bodies of the 63 deceased young people were transported to the mortuary at Sahlgrenska Hospital. All the police work was conducted there, which included a description of the deceased, police identification, an opportunity for relatives to pay their last respects, ablution, and placement in coffins. All together, this involved more than 250 visits to the mortuary by relatives during the course of seven days. The forensic examinations were conducted in the autopsy department at Sahlgrenska Hospital.

Psychosocial Operations

Early on, it was clear that there would be a very heavy burden on the psychological disaster management group (PKL) activity at the hospitals over the next few days, and therefore, it was decided that priority would be given to dealing with injured and uninjured young victims and providing support to relatives in identifying bodies and paying their last respects.

Heavy pressure was placed on the coordination of

resources for providing psychological support to relatives and survivors with representatives of various religious communities and non-profit organizations. At first, it was feared that the multicultural composition of the affected group would pose particular problems. However, Sweden had ample capacity to deal with this issue. Instead, the greatest problem was that such a large group of young people had been affected. In addition, cultural differences between generations came to light regarding behavior in the event of the loss(es) of close relatives/friends. Great cohesion within several youth groups was a notable feature of the collective mourning during the initial period following the fire.

The ritual ablution was an important part of taking care of the many deceased Muslims. A solution was found through cooperation between the pathologist and the imams concerned. Although Muslim tradition prescribes that burial must take place as soon as possible after death has occurred, the relatives did understand that a delay was unavoidable.

The municipality of Gothenburg contributed an interpreter service and various types of financial support for the affected families. This made it possible for relatives to come to Sweden to visit the injured or attend funerals. The municipality also paid for phone calls to relatives in other countries.

To some extent, the psychosocial work after the fire occurred thanks to cooperation between representatives of the medical services, the municipality, and various organizations including immigrant organizations. Imams, a Macedonian priest, and a Catholic priest, along with representatives of associations with political or cultural roots in various immigrant groups, took part in the work during the initial period at Sahlgrenska Hospital. The Swedish Church also played an active role at the hospitals and in the districts of the city in which cooperation with representatives of the municipality also took place. A Muslim support operation started at Hammarkullens School within a few hours after the fire. People who volunteered to take part in this operation also played an active role in several large-scale ceremonies after the fire.

A large number of media-related issues arose. A major issue in the subsequent debate and research has been the relationship between central crisis communication and the disruptions that took place within the multicultural community. Light also was shed on "disaster journalism" in several studies.

Conclusions and Recommendations

The following conclusions and recommendations can be derived from analysis of this event and the responses to it.

1. Rescue services, ambulances, and medical personnel worked well in the difficult situation.
2. At first, the amount of medical resources available to cope with the need to provide adequate medical care, triage, and transportation of the large number of casualties were meager. Therefore, a chaotic situation developed during the early phase. This probably could not have been avoided.

3. It was possible to set up a casualty assembly point as more rescue and medical personnel arrived at the scene of the fire. Setting up a casualty assembly point cannot be done until sufficient personnel and equipment are present.
4. Instructions given to the medical services on dispatching mobile medical teams and an on-scene medical director must be given high priority and the routines must be improved. No on-scene medical director was called in. When major incidents occur, it is essential that one or more mobile medical teams be dispatched to the scene. It also is important to be prepared to dispatch someone trained in directing medical operations to the scene. If possible, specially-trained, on-scene medical directors should be on standby. An on-scene medical director takes over medical responsibility for the activity and relieves other personnel of this responsibility. If there is no trained, on-scene, medical director in the organization (or none is available), the person best trained to direct medical operations at the scene of an incident should take on this task.
5. Doctors who man emergency cars should be familiar with the medical disaster organization and how medical care on the scene is organized before commencing to deliver such service.
6. There was a great need for oxygen treatment for those who had been mildly or seriously affected by fire gases, particularly carbon monoxide. Regardless of the need for oxygen treatment, it certainly had a calming effect on many patients. Access to large quantities of oxygen is important at the scene of fires.
7. Carbon monoxide poisoning was present in most of the deceased. The concentration of cyanide in the blood of the vast majority of the deceased also was sufficiently high enough to cause severe poisoning. While taking care of victims exposed to fire gases indoors, cyanide antidotes should be given as soon as possible.
8. Victims who suffer cardiac arrest upon evacuation from a burning building and who display clear signs of exposure to cyanide and carbon monoxide (soot in the airways) probably have been exposed to lethal concentrations of one or both of these gases. The prospects of successful cardiopulmonary resuscitation must be regarded as very slight, and in a mass-casualty situation, priority should be given to those with preserved circulation.
9. The large number of casualties with severe and with less severe injuries required maximum utilization of ambulance transport. Because of the shortage of ambulances, these were used for several patients at a time, and buses, taxis, and private cars were used to transport those with mild injuries to a hospital.
10. The state of alert never was raised at the larger hospitals, although it should have been. Experience from previous incidents (as reported in several KAMEDO reports) show that there is a disinclination to raise the state of alert at an early stage. However, at least it is better to create a reinforcement situation at an early stage and then call off the alert, than to call a disaster alert too late. The thought of possible financial consequences must not prevent the state of alert from being raised.
11. Work carried out in mortuaries/autopsy departments should be included in disaster plans, and mortuary/autopsy attendants should be on duty. Well-established forms of cooperation with undertakers facilitate operations in an incident with many deaths. Contacts with religious and other groups should be prepared and be included in disaster planning.
12. The psychological disaster management group (PKL) activity as well as community-based psychological disaster management (POSOM) activity were undertaken on a large scale following the event. The multicultural composition of the affected group and their affiliation to various religious communities made new and heavy demands on these activities, something that must be taken into account to a greater extent in the future.
13. The treatment of the injured was made more difficult by threats and even violence. One of the main tasks of the person who has responsibility for directing the medical services at the scene is to ensure that his or her own personnel are not injured during the rescue work. A decision to use protected breaking points should be taken as soon as possible in consultation between the police incident officer and the medical director on-scene/forward ambulance control unit.
14. The security departments of hospitals should plan for handling a large influx of relatives at the time of major incidents. The general prohibition on the use of mobile phones inside most Swedish hospitals also should be reconsidered in these events. Perhaps, this prohibition can be limited to intensive-care units and other technology-intensive departments.
15. The command organization must be thoroughly familiar with confidentiality rules. This applies both to rules that protect personal integrity and rules that permit confidentiality to be broken in certain situations. Therefore, it is important to have access to legal expertise in an emergency situation so that correct judgments can be made.
16. It is important that journalists and photographers are trained in disaster journalism and disaster psychology. It would be of great value for such aspects to be included in state training courses for journalists.