

COMMENTARY

The Swiss bus accident on 13 March 2012: lessons for pre-hospital care

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Abstract

The recent bus crash in Switzerland involving many children provides several lessons for the pre-hospital care community. The use of multiple helicopters that are capable of flying at night and that carry advanced medical pre-hospital teams undoubtedly saved lives following the tragedy. We describe the medical response to the incident and the lessons that can be learned for emergency medical services.

On 13 March 2012, shortly after 9 p.m. local time near Sierre, a Swiss town close to the Italian border, a tragic road traffic accident occurred. A coach carrying 52 people, mainly children around 12 years old, was returning to Belgium following a school skiing trip to Val d'Anniviers in the Swiss Alps. For reasons that are not yet known, the coach collided head-on with a concrete wall of a motorway tunnel. This resulted in one of the most serious road traffic accidents in Swiss and European history. Rescue teams worked on-scene for eight hours to extricate, treat, and transport trapped passengers. In total, 28 people, including 22 children, were killed and 24 were injured, many critically [1]. No other vehicle was involved in the accident. Such an incident can occur at any time, on any motorway, and has the potential to cause a mass casualty incident.

Details of the response to the incident were widely publicized. Sharing of detailed emergency medical services information allows other services to analyze and test their own systems in order to improve the response should a similar incident occur in their region. In recent times, there have been detailed publications describing mass casualty incidents following the London and Madrid bombings and the Norway bombing and shooting [2-4].

The emergency medical services community eagerly awaits the formal findings of the Swiss investigation and information that goes into greater detail about the emergency medical response to the incident, but valuable lessons can already be learned. Although all major incidents are unique, they have common elements, and valuable lessons can be learned from sharing detailed information.

Emergency medical services response

The news media have comprehensively reported on the emergency medical services reaction to the accident. Following the accident, the first emergency medical services arrived on-scene within 20 minutes. A major incident having been declared, an impressive number of resources were mobilized to the scene. In total, eight rescue helicopters, 15 doctors, 30 police officers, 60 fire-fighters, 100 paramedics, and three psychologists attended the accident site. Triage was performed on-scene, and the injured were transported to several hospitals. Of note is that the number of aeromedical resources available enabled injured children to receive advanced medical care at the scene, including pre-hospital anesthesia, and to be flown directly to specialist pediatric trauma centers in Lausanne and Bern. Ambulances transported other patients to hospitals in Sion, Visp, Lausanne, and Bern. In total, more than 200 people were involved in the rescue operation [1].

Major road traffic collisions

Major road traffic accidents are not uncommon. The majority involve private cars, resulting in small numbers of patients for each individual incident. Road traffic accidents involving buses can result in multiple casualties and require a multi-agency response. Road traffic accidents that result in trapped patients require specialist input from fire and rescue services with hydraulic cutting and rescue equipment to extricate trapped casualties. Such equipment may need to be transported to the scene over some distance.

Major road traffic accidents can result in significant traffic congestion around the incident, causing delay to emergency services arriving on-scene and taking patients

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to the hospital. The use of helicopters can facilitate rapid delivery of medical teams to the scene as well as rapid transport of patients to specialist hospitals.

Lessons for the emergency medical services community

Several key lessons can already be learned from the Swiss bus tragedy. The accident happened during the hours of darkness. In many European countries, civilian helicopter emergency medical services (HEMS) are currently restricted to daylight hours and only military aircraft are capable of undertaking night-time landings in the dark. The use of night vision goggles has already been implemented in some European countries (for example, in Scandinavia) but is not yet routine in others (for example, the UK). Not all European HEMS services have a doctor-paramedic team as a standard protocol. Mobilizing eight separate helicopters with doctor-paramedic HEMS teams on board in this recent tragedy was impressive and allowed several children to receive early advanced intervention and then be flown directly to specialist centers. The main Swiss HEMS service, REGA, operates 24 hours a day, every day of the year. From 13 helicopter bases, REGA operates 17 helicopters and can reach most areas of Switzerland within 15 minutes. Without a night HEMS service, treatment and transport of these critically injured children would have been significantly delayed. Some European countries (in Scandinavia) have integrated HEMS services supported by statutory funding from the government, whereas others (the UK and Germany) have services that rely on charitable donations. A fully integrated, night-capable HEMS service would undoubtedly improve the emergency medical response to major incidents across Europe.

The presence of experienced pre-hospital doctors at the scene allowed medical incident command and advanced interventions such as pre-hospital anesthesia and facilitated appropriate triage of the injured children. In some European countries (the UK), the activation of pre-hospital doctors, even to a major incident, is not yet formalized and relies on voluntary schemes. These doctors have varying clinical governance structures and varying degrees of experience and knowledge. Ideally, doctors responding to mass casualty incidents will have received formal training in major incident management and will already be fully integrated into the local emergency medical services system.

Incidents involving major pediatric trauma are challenging. Accidents involving children are usually emotional and are not routinely dealt with by emergency medical services. Pre-hospital pediatric triage is more complex than adult triage [5]. Critically injured children require highly specialist care in the form of pediatric anesthesia, surgery, and intensive care. These services may be available only in tertiary centers that are a considerable distance from the incident site. Experienced HEMS teams may be invaluable in responding to major pediatric trauma, especially when multiple children are involved.

The Swiss emergency medical services are to be commended for their ability to provide a rapid and medically advanced response to this tragic incident, despite significant challenges. Emergency medical services across Europe can learn important lessons from this incident and should question whether a similar medical response would occur in their country.

Abbreviations

HEMS, helicopter emergency medical services; REGA, helicopter emergency medical services of Switzerland (*Rettungsflugwacht* [Air Rescue Service] + *Garde Aérienne/Guardia Aerea* [Air Guard]).

Competing interests

The authors declare that they have no competing interests.

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