



Prehospital Rescue Organization During the November 2015 Paris Terrorist Attacks

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Medical responders conduct triage and damage control in a small yard near the Bataclan concert hall. Photo courtesy Fire Brigade of Paris

On Nov. 13, 2015, the heart of Paris was [struck by terrorism](#). With 130 dead and 352 wounded, it was the deadliest disaster in France since World War II. EMS was once again at the frontline to evacuate the wounded who were exposed to persistent threat and ensure their survival as they were transported to the hospital.

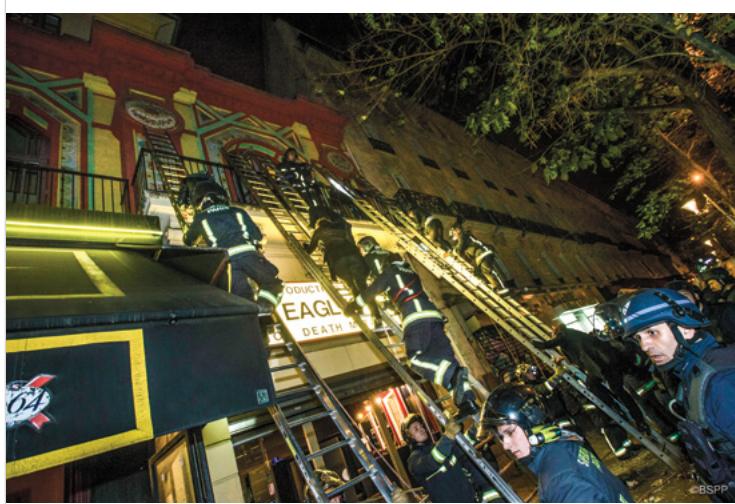
The Paris emergency medical system is a two-tiered [response system](#). The first tier involves BLS and is served by 200 teams of 3-5 professional rescuers each; these teams are deployed to 77 stations of the Firefighting Brigade of Paris. The ALS tier is served by 44 ambulance teams, each comprising an emergency physician, a nurse and a BLS responder who's also tasked with driving.

The terrorist attacks occurred within 40 minutes of each other in two distinct geographical areas: the fringes of the Stade de France in the commune of Saint Denis (12 km/7.5 miles north of Paris) and two arrondissements (administrative districts) in eastern Paris.

Following three explosions around the Stade de France—the national stadium of France and the fifth largest stadium in Europe—first responders were confronted with 59 victims in an area with a high risk for another attack. While treating those with multiple injuries and blast lesions, rescue teams also had to take into account the ordered evacuation of 72,000 spectators from the stadium.

At the same time, [multiple shootings](#) at cafés and restaurants around Paris left 120 victims who required rescue and care at five distinct locations and three fire stations, where several dozen victims fled following the shootings.

Finally, at the Bataclan concert hall, deadly shootings led to a hostage situation, which considerably complicated the intervention of first responders attempting to access the 114 [surviving victims](#).



Rescuers evacuate the Bataclan concert hall after the assault of SWAT teams. Photo courtesy Fire Brigade of Paris

RESPONSE & COORDINATION

The efficiency of the rescue teams, the presence of emergency physicians within the ranks of the police intervention units (such as the counter-terrorism RAID (Research, Assistance, Intervention, Dissuasion) and the anti-gang BRI (Research and Intervention Brigade) and especially the excellent collaboration between these police units and rescue services, helped to both neutralize the terrorists and aid in the removal of victims from the Bataclan to advanced medical posts and subsequently to Parisian hospitals.

One hundred twenty-five rescue vehicles, 430 rescuers and 21 medical teams from the Fire Brigade of Paris worked together with police as well as several dozen ambulance teams from SAMU (Service d'Aide Médicale d'Urgence-France's hospital-based EMS organization), 51 ambulances from rescue associations (French Red Cross, Civil Protection, Order of Malta, French Rescue Federation), and several backup units from the Ministries of the Interior, Health and Defense.

Initial testimonies helped to confirm the importance of many of the actions taken and to describe the difficulties encountered more clearly.



Despite being equipped with hemorrhage control kits allowing the treatment of 4-5 patients on both BLS and ALS ambulances, supplies were occasionally inadequate until reinforcement teams arrived with additional tourniquets, bandages, fluids and drugs. Photo courtesy Fire Brigade of Paris

TAKING CALLS & DISPATCHING

Adding to the inherent difficulty of receiving a large number of calls in the span of a few minutes, the treatment, dispersal and transportation of several hundred shooting victims within the same area raised special challenges for the emergency call centers.

These challenges included identifying the sites affected despite the diversity of addresses given by callers, quickly centralizing information about the threat in order to better guide the teams toward zones that were as secure as possible and giving appropriate advice to callers (e.g., confinement, fleeing and instructions on how to stop external bleeding).

ARRIVAL ON SCENE

Rescue teams were confronted with two types of threats. Most areas were under a potential threat, since the terrorists had likely left the area, but hadn't yet been located by police.

There was also a real threat at the Bataclan, where several Fire Brigade rescue teams were confronted by gunshots-multiple bullets were shot at two vehicles. Other Fire Brigade ambulances continued on their mission despite the difficulty of locating the origin of the fired shots.

The challenge, then, was to effectively reconcile efficient rescue and ensure sufficient safety. The immediate "atmosphere report" given by the first responding teams helped to adapt the involvement of incoming teams by informing them of the total number of victims, the number of severely injured, and the nature of the tactical context (e.g., zoning and dangerous roads).

At each site where victims were highly dispersed and/or there was a persistent threat of danger (i.e., terrorists were still on site), an initial deployment area was created to act as a safe zone for interservice coordination.

The risk of another attack or aggression toward first responders was a major concern. At the Bataclan concert hall, a few rescues were made under police protection to bring victims to safety.



The Fire Brigade of Paris was aided by rescue associations such as the French Red Cross and Civil Protection. AP Photo/Thibault Camus

SURVIVAL MANEUVERS

Shooting victims in a civilian environment are much like the wounded on the battlefield.^{1,2} In unsecured areas, the only possible actions are to shelter victims and apply tourniquets.

After bringing victims under cover, priority challenges were identified based on lessons learned from combat rescue and testimonies from several previous terrorist attacks.^{3,4}

These challenges included: stopping external bleeding, freeing the upper respiratory tract, managing thoracic wounds, ensuring rapid evacuations while providing fluid resuscitation and tranexamic acid (TXA) administration, performing analgesia and preventing hypothermia.

Simple initial triage occurred quickly at the beginning of an evacuation and separated victims into one of two categories: critically injured or not. This helped to facilitate medical treatment and prioritization of evacuations.

PREPARATION PAYS OFF

For many years, the Fire Brigade of Paris has trained its rescue workers on how to use tourniquets and emergency compression bandages. Since the Paris attacks in January 2015, the Fire Brigade has enhanced the quality and distribution of bleeding control equipment available in ambulances.

Drawing on military experience, a "hemorrhaging in special situations" kit was developed and is currently onboard all Fire Brigade vehicles in addition to the standard issue equipment.

This kit, which is employed by all BLS teams, includes two tactical tourniquets (in addition to those in each vehicle's emergency kit), a hemostatic QuickClot combat gauze and several types of bandages.

Kits from ALS ambulances include the same equipment, complete with pneumatic tourniquets, needles and tubes for chest decompression, and a perfusion kit.

Every rescue vehicle can treat 4-5 victims with severe hemorrhaging depending on the degree of their injuries and number of serious injuries on each patient.

Nevertheless, during the attacks on Nov. 13, 2015, rescuers were faced with such a large number of victims, many with multiple hemorrhaging lesions, that the means for controlling hemorrhaging were occasionally inadequate until the arrival of reinforcement teams.



Patients were tracked by medical crews using SINUS (Système d'Information Numérique Standardisé), a digital system for victim counting, triage and identification in MCIs, which has been used in Paris for several years. Photo courtesy Fire Brigade of Paris

TRIAGE, CARE & EVACUATION

For the most critical injuries, BLS medical treatment maneuvers were followed as quickly as possible. It's everyday practice in France for the seriously injured to be treated by the ALS teams.

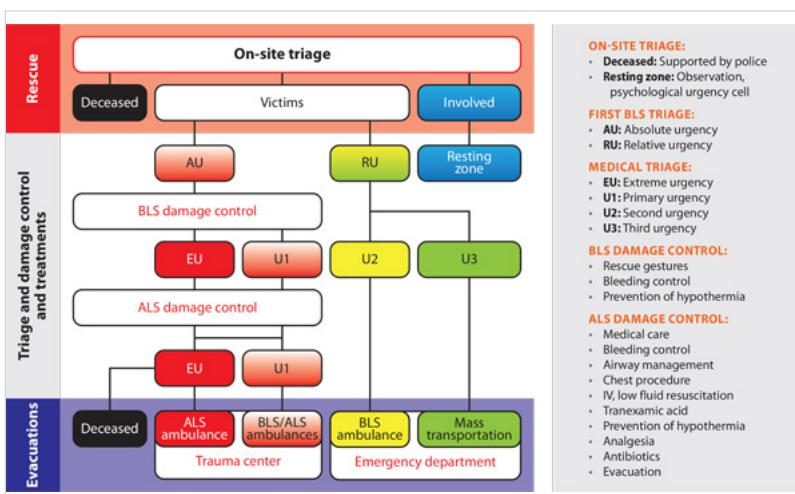
Because the number of injured in the November attacks greatly exceeded the number of medical teams immediately available, establishing field triage was imperative.

French prehospital triage in case of [mass casualty incidents](#) (MCIs) uses a four-level scale: "absolute urgencies" (AUs) are separated into "extreme urgency" (EU) and "first urgency" (U1), and "relative urgencies" (RUs) are separated into "second urgency" (U2) and "third urgency" (U3).

The tactical concept of the Alpha Red plan has been used in Paris since 2007. (See Figure 1.) All patients classified AU are conditioned by medical teams (triage, medical maneuvers, fluid resuscitation and TXA). Then, EUs are transported by ALS ambulance and U1s by ALS or BLS ambulances.

Under this same plan, the separation of RUs into U2s and U3s helped to accelerate evacuations by ensuring the transportation of less seriously wounded patients by large buses that deliver them to different, often more distant, hospitals.

Figure 1: Paris Alpha Red plan for MCI organization during multiple terrorist attacks



SPECIAL COMPLICATIONS

On Nov. 13, 2015, the specific characteristics of a mass shooting in a civilian context led medical teams to face two major constraints. First, a very large proportion of victims were classified as AU in comparison to other types of civilian MCIs (e.g., terrorist attacks with explosives)

and military situations (e.g., victims already equipped with ballistic protection). Second, persistent insecurity delayed the arrival of backup vehicles and complicated the organization of triage and evacuations.

The Alpha Red plan turned out to be particularly suitable to these dramatic events, allowing the medical teams deployed to the various sites to adapt their treatment and evacuation of every wounded person according to their wounds, the resources available (e.g., number of ALS ambulances, number of BLS vehicles, backup from large buses), and the nature of the tactical context (e.g., persistent threat, possibility of accessing additional teams).

When it wouldn't delay evacuating critically wounded patients, evacuation convoys consisting of several ambulances and a police escort simultaneously improved both police protection and medical capability. Each ambulance in the convoy provided transportation of 3-4 RUs, or one AU and one RU. A medical team carried out surveillance and treatment during the evacuation of the entire convoy.

Finally, the SINUS (Système d'Information Numérique Standardisé) system, a digital system for victim counting and identification in MCIs, ensured the traceability of the evacuations from multiple locations. SINUS has been used in Paris on a daily basis for several years and includes triage tags, digital watches and computer capture of patient information.



Patients with serious injuries were treated by ALS teams consisting of at least one emergency physician, one nurse and one BLS rescuer, who also drives the ALS ambulance. Photo courtesy Fire Brigade of Paris

CONCLUSION

As with every disaster, the events on Nov. 13, 2015, have demonstrated the importance for prehospital emergency services to have efficient and realistic mass casualty plans that enable field teams to immediately adapt their response to the specificities of the situation encountered.

The quick action taken by prehospital teams during the Paris terrorist attacks contributed to the survival of the wounded while the coordination between police units, BLS teams, medical teams and trauma centers eventually allowed our healthcare system to provide effective treatment to each casualty.⁵

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