

## THE LONDON ATTACKS — RESPONSE

## Prehospital and Hospital Care

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On the morning of July 7, 2005, when four bombs were detonated on the London public transportation system, doctors were mobilized from all over the city to report to work and put their hospitals' major incident plans into action. Another, smaller group of physicians was mobilized by the Central Ambulance Control (the "gold doctors") to attend at the scenes of the explosions. These doctors included members of London's pool of "major incident officers" as well as members of the London Helicopter Emergency Medical Service.

Rapidly assembled at each bombing scene was a team of doctors who were experienced in delivering prehospital care. Working with the ambulance service, they fulfilled two roles: the care of the individual patients with serious injuries ("bronze doctors") and the management of the scene to evacuate large numbers of casualties to surrounding hospitals ("silver doctors").

Traveling to the scenes by road was difficult in the immediate aftermath of the bombings, although the police soon began to set up priority routes. Emergency medical helicopters moved bronze and silver doctors and their equipment to the scenes, flying more than 25 sorties.

At three of the scenes, emergency-services personnel worked in semidarkness, in an environ-

ment contaminated with smoke and debris. Decisions had to be made quickly regarding each patient's care; these decisions were necessarily affected by the resources available and the clinical condition of other patients requiring care.

What was striking was the relative quiet at the scenes. Despite the rapid and efficient deployment of emergency services, seriously injured patients, many of whom were fully alert, had to wait 30 minutes or more to be rescued from their frightening situations. Even in the face of such delays, however, the injured persons were seemingly all patient, dignified, and mutually supportive. Ambulant patients with relatively minor injuries had to wait even longer at the bombing sites. They, too, generally accepted these delays without complaint, allowing the receiving hospitals to concentrate on the more severely injured patients.

Although the bombing scenes quickly underwent a basic assessment for radiologic and chemical contamination, the possible presence of unexploded secondary devices remained a risk. Rescue efforts continued despite this risk, but awareness of it increased the pressure to minimize the time spent at the scenes.

At 9:20 a.m., St. Mary's Hospital, Paddington, was informed that a major incident had been

declared. We had anticipated and had been readying ourselves for such an eventuality for some time. Now that it had happened, the hospital prepared to receive casualties, unsure of the number and nature of their injuries.

The major incident plan at St. Mary's has been activated on two previous occasions in the past six years — after the train collision at Paddington station in October 1999, when 51 casualties were treated, and after the Soho bomb attack in central London in April 1999.

On July 7, 2005, all staff members were called into the hospital. All patients who were in the emergency department were admitted to wards, transferred, or discharged home in order to clear the way for those injured in the bombings. Elsewhere in the hospital, the condition of inpatients was reviewed to assess the possibility of rapid discharge. Intensive care beds were identified. The operating rooms were prepared for emergency surgery.

We deployed trauma teams to each of the four receiving bays in the resuscitation room and one to the operating room in the emergency department. Teams of pediatricians and pediatric anesthesiologists were standing by in our pediatric accident and emergency department.

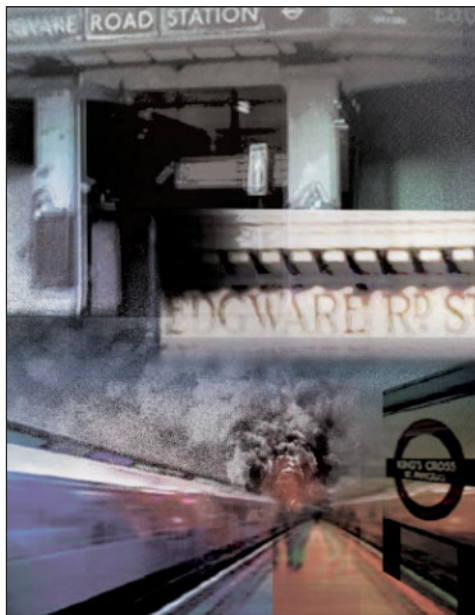
The first casualties arrived at 9:50 a.m. The patients had mul-

tiple injuries, including traumatic amputations, burns, inhalation injuries, and chest and intraabdominal injuries — the expected pattern of injuries from a blast occurring in a confined space. The most striking feature of the patients who were less seriously injured was deafness due to the perforation of the tympanic membrane. Most patients were subdued and deeply distressed.

Patients were triaged on arrival by senior teams and assigned to one of three areas of the emergency department, depending on priority. When the condition of two patients deteriorated during their initial assessment, their priority was adjusted accordingly. After initial assessment and management, critically injured patients requiring surgery were transferred to the operating rooms, where teams of orthopedic, vascular, and general surgeons would work on into the night.

The repeated reassessment of all casualties was important. A senior surgical consultant reviewed all casualties, ensuring that a thorough secondary survey was performed. Orthopedic surgical expertise was fundamental in assessing patients with complex compound injuries and prioritizing cases for surgery. Ear, nose, and throat surgeons evaluated and arranged outpatient follow-up for all patients with audiologic consequences of the blast. Radiologists interpreted trauma

x-rays and performed ultrasonography in the emergency department, as well as performing computed tomography. Chaplains, patient-liaison teams, and the mental health staff provided support to distressed patients and their relatives. Medical students acted as “runners” between key areas of the hospital and helped with supplies and blood samples.



Since St. Mary's is not a multidisciplinary, level 1 trauma center, we relied on the expertise of colleagues from neighboring hospitals, including ophthalmic surgeons and neurosurgeons. After patients with burns had received initial treatment and stabilization, our regional burn center took on those who required specialist burn care.

In addition to the treatment

provided at St. Mary's, a team of appropriate staff members went to an adjacent hotel to attend to 50 priority 3 casualties from the bombing scene on Edgware Road.

During the course of the day, we were informed that an additional explosive device was thought to be located in the post office next to the hospital. This possibility caused understandable consternation among staff members and led to the temporary evacuation of some sites around the hospital.

In total, St. Mary's received 38 casualties (7 priority 1, 17 priority 2, and 14 priority 3) from the incident before finally receiving notification at 2:40 p.m. that the scene was clear. More than 200 staff members were involved in the initial response in the emergency department, working cohesively in challenging circumstances as they treated patients with injuries that we would not normally see in our civilian practices.

It is sobering to realize that in some parts of the world, civilians face violence on a regular basis. Those who provide the medical response in such ongoing or repeated crises have our respect and admiration.

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