



SEPTEMBER 11, 2001:

A test of preparedness and spirit

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As physicians and surgeons, we must be prepared to deal with the large-scale injury and loss of life left in the aftermath of natural and man-made disasters. Saint Vincent's Hospital in Manhattan, NY, had been located in the shadow of the World Trade Center since the towers were built in 1973. When the first terrorist bombing at the World Trade Center occurred, we realized that because we were the closest Level I trauma center, we needed to implement a disaster plan, which became effective February 26, 1993. That initial strike was the largest single event we had ever witnessed; we treated 160 patients, admitted 40, and performed multiple surgeries with only one death.

The experience taught us the value of a well-designed disaster contingency plan. To improve our plan, we've been holding mock disaster drills yearly, focusing on various scenarios. Additionally, we have had several actual multiple casualty events, ranging from shootings to automobile crashes to subway derailments.

The morning of September 11, 2001, however, was the single largest act of aggression against Americans on their native soil since the Civil War, leaving in its aftermath more casualties than the 1995 bombing of the Murrah Federal Building in Oklahoma City, OK, or the 1941 Japanese bombing of Pearl Harbor. It was the supreme test of our hospital disaster preparedness.

Initial reaction

At 8:50 am on Tuesday, September 11, 2001, the seven acute care hospitals of Saint Vincent's Catholic Medical Center once again implemented their disaster plan in response to a reported plane crash into one of the World Trade Center towers. Realizing that Saint Vincent's would once again serve as the central receiving hospital for casualties due to our proximity to the World Trade Center, the trauma service, headed by Jesse Blumenthal, MD, FACS, spearheaded the response to the disaster code. A

Left: In the wake of the World Trade Center attack, Saint Vincent's emergency room staff assembles stretchers on Seventh Avenue and awaits casualties.

predesignated command post on the first floor of Saint Vincent's was established and staffed by department heads, senior medical and surgical staff, and local New York Police Department precincts. Medical and ancillary personnel were requested to report immediately to their preassigned positions or to the human resource pools, which comprised approximately 300 physicians, 100 nurses, and 500 other staff members. The emergency room at Saint Vincent's was designated as the admitting and triage area, and the senior surgical personnel preassigned as triage officers took their posts to await the arrival of casualties. Elective operations were immediately cancelled, and all routine functions were suspended. The operating rooms, hemodialysis unit, endoscopy suite, cardiac catheterization laboratory, and the recovery room were put on alert status, thus making available every monitored bed in the hospital for the most seriously injured patients.

Within minutes of the disaster, efforts were under way to clear the ICU and other monitored beds. Efforts to discharge, transfer, or otherwise remove patients from the emergency room continued, as did efforts to discharge patients from regular hospital beds. Security, maintenance, and public information personnel were alerted. Supplies were marshalled in predesignated areas, and record room personnel moved to the triage area with sequentially numbered disaster charts. The rehabilitation gymnasium was staffed and designated to treat minor injuries. Six overflow emergency rooms were set up and staffed. Communications between key areas were established by walkie-talkie.

Marc Wallack, MD, FACS, chairman of the department of surgery at Saint Vincent's, remembers attending his regularly scheduled morbidity and mortality conference at Metropolitan Hospital, located on 96th Street and Second Avenue. Upon hearing of a small plane crashing into the World Trade Center from his wife, Jamie Colby, a local television reporter, he returned to Saint Vincent's to oversee the disaster operations. He traversed the more than 80 blocks to the hospital in less than 15 minutes; the trip takes up to 90 minutes on a normal business day. People were stopped along the side of normally bustling Fifth Avenue, staring open-mouthed at the burning



Surgical residents, Saint Vincent's surgical staff, and others attend to a victim of the World Trade Center disaster.

towers and walking en masse toward the disaster. The surreal spectacle was punctuated by the sight of Saint Vincent's, with trauma teams mobilized and Seventh Avenue lined with gurneys.



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As patients began coming into Saint Vincent's, we adapted our logistical response and organization based on the nature and number of injuries. As patients were admitted, the types of injuries were noted, and our space allocation, resource utilization, and supply requisitions were modified to better meet the needs of the injured patients. Personnel were reassigned and reorganized to better manage the types of injuries we saw as the day progressed.

Ready for the injured

Within three hours of the attack, Saint Vincent's had secured a two-week supply of medical and surgical items, including 25 beds, 25 ventilators, 300 oxygen tanks, 7,500 burn packs, 18,000 pieces of burn linens, and various medications. An emergency medicine team of physicians and nurses from Saint Vincent's was



Dr. Blumenthal assesses the situation at Ground Zero and relays his findings to others at Saint Vincent's. The dust particles in the air are visible in the photograph.

established to staff triage sites at the two Staten Island Ferry terminals, on board the ferry itself, at a local high school, and at Ground Zero.

The Federal Emergency Management Agency (FEMA) organized a triage center at Chelsea Piers, a warehouse and film studio complex located along the banks of the Hudson River. Vincent Scarpinato, associate program director, was stationed at the Chelsea Piers site. He remembers the day as being like "something out of a movie." The FEMA triage site was expansive, covering the floors of two large warehouses. One warehouse was designated for the treatment of medical conditions, while the other was assigned as the surgical triage area. Each treatment team was composed of a surgeon, a paramedic, a nurse, an OR technician, and a medical student or resident. The anxiety was palpable in the triage center, but by evening, the panic that set in soon after the attack had been replaced by frustration. Only a

handful of patients was seen in the FEMA triage center; it was closed the next day. According to Dr. Scarpinato, "The great sadness of that day was that the patients never came."

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Back at Saint Vincent's, because of the many serious burns, additional burn packs, burn linens, and burn medications were sent to the emergency areas. A burn unit was established on the plastic surgery floor. Otolaryngology and pulmonary medicine were mobilized to help assess and treat patients with airway, facial, and neck burns. Many minor burn patients and 15 patients with major burns were seen and treated. Four of the most seriously burned patients, some with burns covering up to 85 percent of the body surface area, were transferred to the burn center at New York Presbyterian Hospital after initial stabilization by plastic surgery personnel at Saint Vincent's. Only one early fatality occurred within this group, which was due to an inhalation injury.

Serious crush injuries, multiple fractures, and blunt trauma were also encountered in the early period after the attack due to the falling debris as well as the concussive forces of the explosions and subsequent building collapses. Debridements and closed reductions were scheduled on a staggered rotation over the next two days to maintain operating room availability. In this group, there were three fatalities due to massive blunt trauma.

Serious, unexpected logistical problems outside the hospital hampered treatment efforts inside the hospital. For example, Saint Vincent's Hospital is on the same water line as the World Trade Center. In the hours following the disaster, water pressure dropped from 130 psi to 10 psi. Within 60 minutes, however, then-Mayor Rudolph Giuliani sent two large water tanks to

supply the hospital and ensured that heating, ventilation, and air conditioning and suction equipment was available to Saint Vincent's. Computer communication lines, which were routed through the World Trade Center, were also lost initially, but by working closely with Verizon, communications were quickly rerouted and restored.

Emotional toll

New Yorkers responded to the disaster with an outpouring of volunteerism and personal sacrifice. While their services were a necessary and welcome part of the overall response to the tragedy, organizing the vast numbers of volunteers in the early hours was a daunting task. Within two hours of the attack, more than 500 blood donors had assembled outside the hospital. They arranged themselves by blood type, and Mayor Giuliani secured transportation for many of them to other sites in Manhattan, as the capacity to collect and process donated blood at Saint Vincent's was overwhelmed by the sheer number of unsolicited donors. Merchants, restaurants, and community members donated and served food to hospital staff, emergency workers, and to families and friends of victims. Numerous curiosity seekers, well-wishers, and volunteers beset Saint Vincent's, taxing the resources of the security department and creating a potential impediment to the delivery of speedy, efficient care to the injured.

By 2:00 pm, however, it was clear that those who were to survive had already escaped, and the most serious injuries had already passed through the doors of Saint Vincent's. By the end of the day, we had seen a total of 1,038 patients in the hospitals of Saint Vincent's. We had treated 797 victims, rescue workers, and volunteers; we had admitted 115 and lost four to fatal injuries in the hospital.

The emotional scars, however, were much deeper. Many employees had family, friends, and loved ones working in the World Trade Center or working for the New York Police Department, the fire department, or emergency medical services. Those individuals at Saint Vincent's who lost loved ones, and even some of the most jaded rescuers, found their normal coping mechanisms overwhelmed. The captive audience of nurses,



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patients, and residents on the upper floors of Saint Vincent's could only stand by and watch as the hulking towers first burned and then collapsed in an immense mushroom cloud of smoke. As Christopher Mills, MD, FACS, associate chairman of surgery, recalls, the morale of those who were left on the wards of Saint Vincent's to care for the inpatients was dismal. The atmosphere was one of frustration and helplessness. "In the end," he said, "[their] job was among the most difficult and important in the hospital."

Crisis counseling, pastoral care, and mental health support to victims and their families, rescue workers, and staff at Saint Vincent's started almost immediately. The New School University offered one of its buildings, located one block from the hospital, as a family center. More than 6,800 visits were made to the center, which was eventually moved to the Reiss Pavilion at Saint Vincent's. Fifty employees per shift checked the names of missing loved ones against rosters of admitted and treated patients and provided transportation if a match was found. Clinicians are still working closely with schools in southern Manhattan to provide debriefings and counseling for staff and students, including those at Public School 89, located about one block from the disaster site.

Lessons learned

Through this terrible and tragic event, we came to reaffirm our knowledge that a comprehensive disaster plan is essential in effectively dealing with large-scale casualties. Communications and logistics are difficult to establish in dire times, and must be in place before they are needed. Instant communication within the hospital is essential to safe patient flow and to access to needed supplies.

In dealing with disasters of these massive proportions, we came to realize that a pre-plan is needed to manage volunteers, blood donors, press, and curiosity seekers. Hospital security can become paramount to hospital operations, as access to the hospital may need to be controlled. We must be alert to the enormous emotional strain on family members, victims, and medical and rescue personnel, and we must be

able to deal openly with these issues. Immediate and long-term counseling must be available on both an individual and a group basis.

At 8:50 am on September 11, 2001, the faces and hearts of New Yorkers and people all over the world were turned toward the southern tip of Manhattan Island, where the colossal World Trade Center towers, which usually overshadowed the city majestically, burned furiously and filled the air with thick smoke and a pungent odor of burning metal. Saint Vincent's, the old charity hospital for the indigent, which has been quietly serving Greenwich Village since 1849, was again pressed into the service of the people of New York during one of the worst times in the city's long history. The smoke would last for weeks, the odor for months. The emotional repercussions may stretch on for decades. Efforts currently are under way to upgrade the disaster plan at Saint Vincent's, so that the lessons from the tragic attack of September 11 may last forever. □

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