

Modernizing Emergency Training

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There is a growing realization that quality of training can have a positive impact on an organization's reputation and financial health. At the same time, new methods have evolved to make training faster, less expensive, and more effective.

Ideally, training should include everything that could be anticipated in emergencies. That makes the response seem routine, which in turn leaves you with the reserve capacity to deal with unanticipated events. Training should also involve as many people as practical, even the entire hospital

The story of the crash of United 232 illustrates the value of these points. On July 19, 1989, a DC-10 with 296 souls on board was cruising from Denver to Chicago. As flight attendants pushed lunch carts through the cabin, there was a loud explosion. An engine had disintegrated destroying all three hydraulic systems.

Captain Al Haynes and his crew quickly discovered that they had no aerodynamic controls. Flying without a functional yoke or rudders is not part of anyone's training program. Still, they later said that it was training that enabled them to deal with this unanticipated emergency. In a feat of airmanship famous throughout the aviation industry, they improvised a method of using differential thrust on the two remaining engines to fly to the Sioux City Gateway Airport.

The flight terminated in a horrific crash landing. Upon touch down, the aircraft flipped over, broke into four sections, and burst into a ball of fire. When the burning main section came to rest upside down in an eight-foot high cornfield, 230 people were still alive. Many were dazed and trapped.

United's flight attendants receive some of the best recurrent training in the industry. It incorporates high quality video and interactivity. In the smoke, heat and turmoil, their training kicked in. Despite their own injuries and the shock of the crash, they unstrapped from the wreckage and continued evacuating trapped and injured passengers. About 195 people, some with massive burns and trauma, got out or were pulled from the wreckage. Eleven of those eventually died.

The Sioux Land emergency responders and health-care workers were also unusually well trained. The National Transportation Safety Board said that 35 to 40 people survived because of their exceptional preparation and response.

Almost exactly one year before the crash, the county conducted a disaster drill at the airport. The scenario involved the crash of a smaller jet with 100 casualties, which seemed unrealistically large, but designed to stress resources. Ironically, the drill was held on the



United 232 breaks up with 296 persons on board.



First responders approach the cornfield.



The first ambulances arrive at Marian Health Center.



The cornfield and main fuselage afterwards.

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same runway that United 232 would later use.

This training drill included a large number of organizations and people. The simulated patients were transported to Marian Health Center (now Mercy Medical Center) and St. Luke's Regional Medical Center. The hospitals' call back systems were exercised. Supplies were pulled from inventory and delivered to treatment rooms. Most of the staff benefited, even if from the awareness level.

On the day of the real crash, the Sioux Landers faced more than their share of the unanticipated. The first responders were immediately confronted with twice as many casualties as their "worst-case" drill. Visibility and movement to the fuselage was severely limited by the tall corn. A water pump failed on a fire truck. The responders discovered that some of their fellow rescuers, the flight attendants, were also victims requiring treatment.

Gary Brown, Director of Disaster-Emergency Services for Woodbury County said, "In a typical emergency, we'd transport 2 or 3 patients. That day we sent 196 patients to two hospitals and we did it in 48 minutes... During the disaster, nearly 300 agencies helped in some way."

The hospitals also effectively dealt with the unanticipated. Law enforcement personnel were unavailable because they were needed at the crash site. So, janitorial staff were deployed to direct traffic and provide security. When incoming calls overloaded the telephone system, they improvised by using a new technology at the time, cell phones.

Both hospitals were nearly overwhelmed. Barb Small, Director of the emergency department (ED) at Marian, said, "Dietary, security, physical resources all got involved. We created off-site treatment areas in the endoscopy unit and same day surgery unit. They treated the lacerations and minor fractures. We could focus on the critically injured." Nurses and physicians from all departments suddenly became emergency care providers and national heroes.

Most drills are not as effective or relevant as Sioux City's. They usually involve just a small portion of the

hospital staff. Those who are involved only experience a small portion of a response to a limited scenario. And, drills are expensive.

Drills must be supplemented with additional training covering a much broader range of content and provided to a broader audience. Yet, even this is expensive. Pay and benefits can exceed \$50 an hour for a nurse.

Interactive, video-based Internet training can be completed in a third of the time required for lecture-based training. Content must be carried by both video and sound. People learn best when they see the content demonstrated. Gratuitous video, including talking heads and eye candy, is worse than nothing. A good video will carry the message even when the sound is turned down.

Training should employ stories. Facts, procedures, and explanations by themselves tend to fall flat and are not retained well. Stories give life to the content. The audience is more likely to enjoy, think about (ie, process), and recall (ie, review) information embedded in a story. The audiences' knowledge may even increase over time, as they pursue additional related knowledge.

Good training requires frequent responses from the student. Giving a test at the conclusion of a 15-minute presentation does little to help the student retain the information.

The video-based Internet training not only teaches faster, but it is available anytime and anywhere, so staff can access it during down time. This availability makes it ideal for "just in time" training. If a radiological event or pandemic occurs, staff can receive critical training in just a few minutes.

Alan Reeter is a former US Air Force fighter pilot, emergency trainer, and president of Medfilms Inc. During the production of a disaster preparedness training video, he traveled to and interviewed a number of those involved in the crash of United 232. ■