

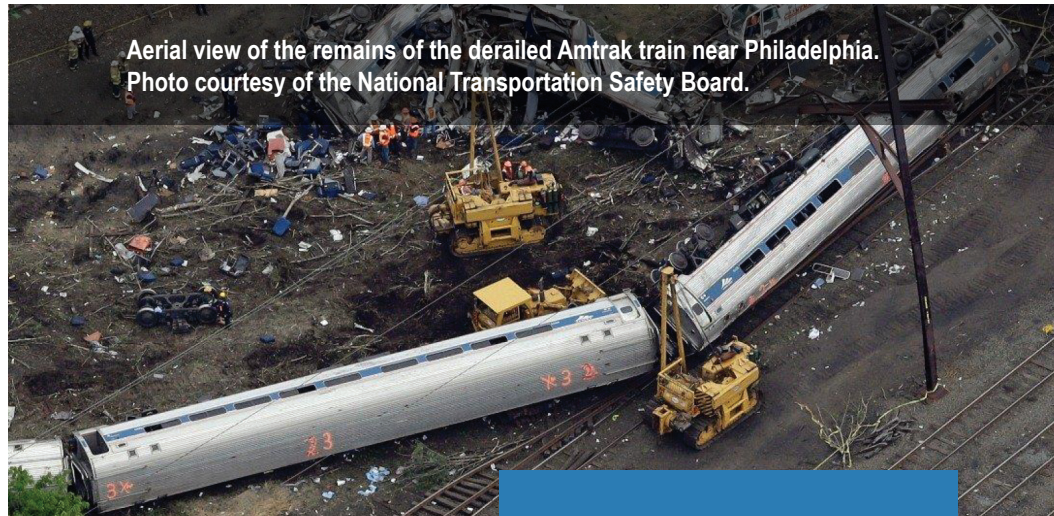
# Responding to the Amtrak Train Derailment: An Interview With Dr. Ernest Yeh

(Commentary Provided by Dr. John L. Hick)

On May 12, 2015, an Amtrak train traveling from Washington, DC, to New York City derailed and crashed in the Port Richmond area of Philadelphia at a high rate of speed. More than 200 passengers and crew were injured, and many of the injured were transported to nearby Temple University Hospital (a 550-bed Level 1 Trauma Center), where Dr. Ernest Yeh serves as the Physician Medical Director for the hospital's emergency preparedness committee (since 2002) and Emergency Medical Services Division Chief. ASPR TRACIE interviewed Dr. Yeh to learn more about how the hospital responded that night.

## Notification and Activation

Dr. Yeh was working a 3–11 p.m. shift in the emergency department (ED) when the Philadelphia Fire Department called on the ED notification phone, asking how many patients they could take from an incident (this is a relatively common call). When Temple University police officers shared that they had overheard the Philadelphia Police Department discussing the derailment on the police radio, Dr. Yeh and others realized the serious nature of the incident. Once the “HASTE” (or hospital alert system) sounded,



Aerial view of the remains of the derailed Amtrak train near Philadelphia. Photo courtesy of the National Transportation Safety Board.

staff began ramping up and the hospital administrator activated Level 1 (the lowest level) of the hospital disaster plan.

Temple University Hospital's ED averages approximately 90,000 ED visits per year, including pediatric patients. On the night of the derailment, there were four attending physicians and eight residents working in the ED. When patients began arriving, it was close to shift change, and employees were held over to tend to the injured.

The first patients were a large group that arrived in a police department van. Police often “scoop and run” shooting victims to the hospital, and they did the same thing with many train crash victims. Although this was a potentially

*“It truly was our emergency management planning for an all-hazards approach that helped the most, because we had done many of these things before.”*

*Dr. Ernest Yeh,  
Temple University  
Hospital*

good idea with penetrating trauma (and proof that “daily practice = disaster practice”), this presented issues for the following reasons:

- No triage had been done, and ED staff had to find triage tags and triage patients themselves.

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- As often happens, these “walking wounded” did not have severe injuries, but were taken to the closest Level 1 center, occupying resources that might be needed by the later, more critical patients.
- Though the EMS system was aware of the number of patients going to area hospitals, police transports were “invisible” to the EMS system – generating patient tracking and distribution issues which could have created problems with nearby hospitals being overloaded.

Once the first group of patients arrived, the hospital moved to Level 4 (the highest level) of their plan, calling in additional staff based on established guidelines, and holding over nursing and ancillary staff.

**Response — Lessons and Challenges**

As patients arrived, they were registered using the hospital’s hard copy disaster packets and given identification bracelets. Dr. Yeh explained that the registration process proved to be the “biggest bottleneck.” For a hospital that typically uses electronic records, paper registration posed several challenges. For example, digital x-rays could not be matched to the disaster registration. Family members had to wait a significant amount of time to find out if their loved ones had been admitted (while staff maintained and tried to simultaneously update several hard copies of patient lists; the same issue was experienced city-wide). Hospital registrars had to be encouraged to only collect basic information and not complete a full registration process. Until a patient was

**CSC-and Mass Casualty Incident-Relevant Topic Collections:**

Crisis Standards of Care

Disaster Ethics

Family Reunification

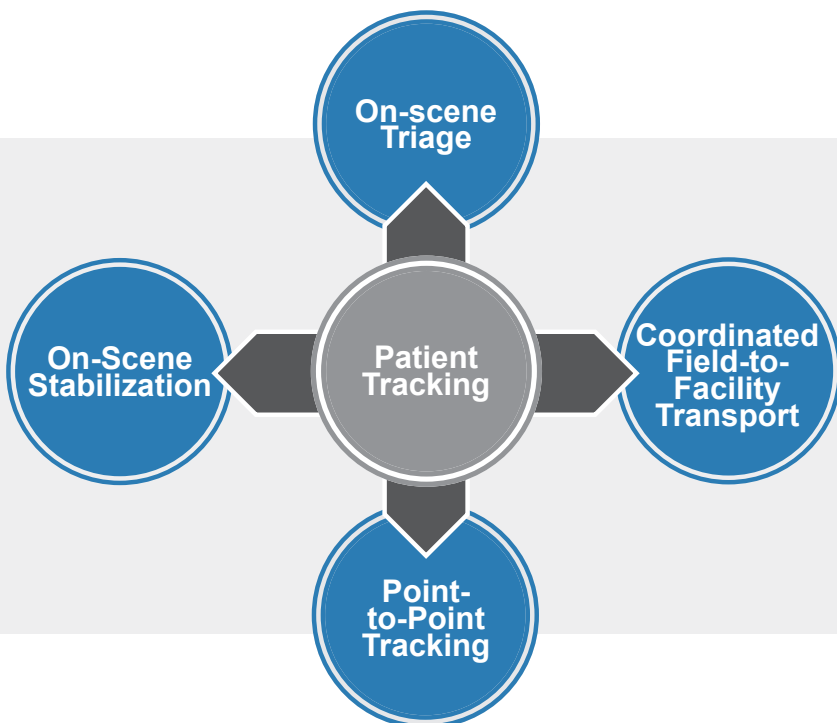
Fatality Management

Hospital Surge Capacity and Immediate Bed Availability

registered, they were only known by their disaster number, so in the early phase of the response, there was not a good way to know if a specific individual was there or not.

The hospital set up a family support center in a nearby university building. Staff soon learned that because the building was “non-clinical” and for security reasons those computers could not access clinical records, they had to go back and forth between buildings and maintain several hard copy lists at one time. There were also very few phones available at that location. Public relations staff handled calls from concerned family members and media. Hospital security evicted a few reporters who had posed as sick patients in order to gain entry to the ED. Hospital command

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center staff ended up working out of the ED, which—while not part of the plan and creating more congestion—saved time by allowing staff to make requests directly to senior administrators rather than over the phone. The fact that most of the patients were not local made things more difficult, and with patients spread to other hospitals in the area, coordination of patient lists took most of the night.

While staff had recently completed Psychological First Aid training at the satellite conference, no one remembered to formally apply it. That said, Dr. Yeh explained that the hospital hosted a debrief and offered counseling resources for staff; hot washes and after-action reviews took place regularly for some time.

Temple University Hospital is currently reviewing the hospital's Level 1–4 response system, since many of those who work outside of the ED may not fully understand it. They are also fine-tuning the number and content of

messages being pushed out to increase comprehension.

### What Worked Well

Dr. Yeh explained that the hospital normally sees up to 250 patients per day, making the train derailment “a high volume one or two-hour surge.” Of the 54 patients they received, 24 were considered Level 1 trauma activations, and they were managed by trauma teams. The rest were managed by ED staff, allowing a good balance across resources. Fortunately, there were no shortages of operative space, and a third CT scanner was opened to decompress the two adjacent scanners in the ED. To ensure there was enough space for incoming patients, staff moved non-critical patients who were already in the admitting process to inpatient areas and made use of the beds in the ED's pediatric wing as well as spaces set aside for fast track and lower acuity patients.

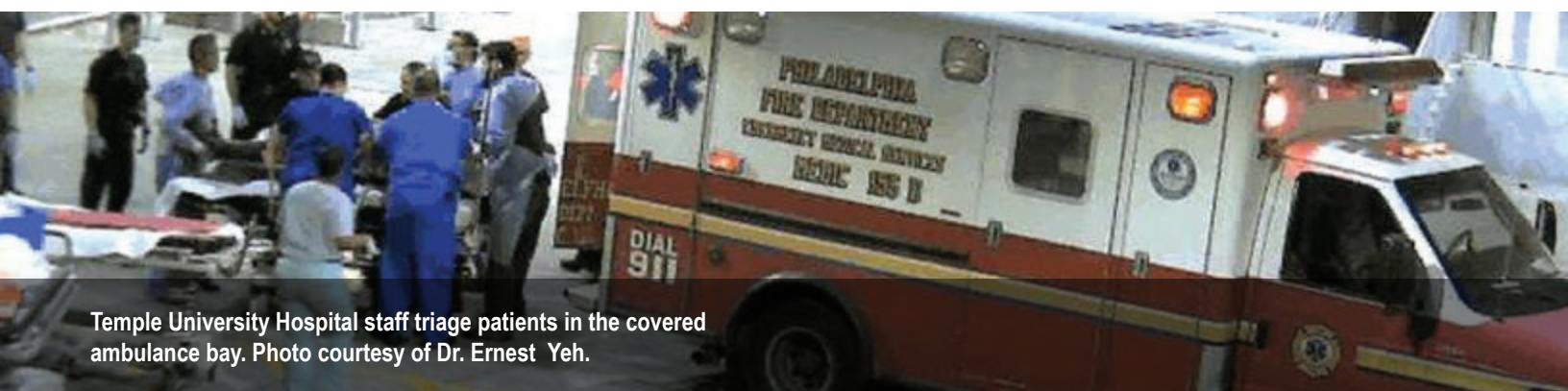
Dr. Yeh said that instead of simply showing up for work, residents and nurses called in to ask if

they were needed. Not only did this prevent additional crowding, it allowed for sufficient staffing levels the next day.

Overall, Dr. Yeh expressed that the response went well. Due to the significant amount of emergency planning for any type of hazard, communication processes went well, supplies were readily available, and staff were not overextended. ■

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Temple University Hospital staff triage patients in the covered ambulance bay. Photo courtesy of Dr. Ernest Yeh.

## Commentary

The excellent response by Temple University Hospital highlights a number of issues common to mass casualty incidents:

**1. Casualty distribution across multiple facilities** is often challenged by spontaneous arrivals or, in this case (as well as Aurora, CO), multiple transports by police. All transporting agencies need to be aware of the potential to overwhelm the closest facility and consider alternate destinations particularly for patients with minor injuries. Hospitals close to the incident should always expect spontaneous arrivals.

**2. Patient arrival processes** seldom live up to expectations – rarely used barcode and other special systems are often misused, standard processes are too slow, and “disaster numbers” may not track or integrate with the electronic health record systems (including radiology images). Lots of planning and testing of the patient arrivals process is necessary.

**3. Large trauma centers** can bring a vast amount of clinical resources to bear in a hurry that makes the clinical care seem fairly smooth. It is often the family reunification, patient information, and media-related issues that are the key reasons to activate the command center. And yet, for a smaller facility, planning for 54 victims may seem monumental. Therefore, careful planning for the initial clinical management and prioritization for referral to other facilities is very important.

**4. Daily practice = disaster practice.** Unless you have trained your personnel VERY well, they will default to what they do every day (e.g., registration personnel may carry out the entire registration process rather than abbreviating it to process more patients). Under stress, cognitive abilities suffer, so we tend to “fall to the level of our training” rather than “rise to the occasion.” Plan to keep response processes similar to daily operations and where you cannot (e.g., crisis care situation) make sure to do adequate pre-event and just-in-time education.

Strong incident management practices, supported by clinical and emergency management experts at your facility, are also critical to adjusting to situations that don't fit with usual practices.

**5. Consider** whether your personnel sufficiently understand the tiers of response if you use a response system with several levels of response. During an incident, staff often become confused about what level is highest (this happened during the Rhode Island nightclub fire in 2003 among others) or are not sure of their role at the different levels. Since it is rare to activate these plans, consider having a single activation level for the front line personnel that triggers a uniform response and then allow the command center to modify it based on evolving needs (e.g., send a page out that no more resources are needed).

**6. In a mass casualty event** in an urban area, if patient distribution is optimal, they will be transported by EMS to multiple facilities. Having a means to generate master lists of patients as rapidly as possible that can be accessed by the hospitals, EMS, and emergency management/public health (ideally through a hotline or other central mechanism) for purposes of family reunification is critical to reducing stress for the families, patients, and can reduce the volume of calls to the hospitals and to 911. This information can change rapidly in the initial hours; therefore, a secure electronic system is optimal. Pennsylvania has such a system; it's not perfect, but no system ever is.

“Daily practice = disaster practice.”