

# Emergency Department Ceiling Collapse: Response to an Internal Emergency

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## ABSTRACT

Hospital disaster resilience is often conceived as the ability to respond to external disasters. However, internal disasters appear to be more common events in hospitals than external events. This report describes the aftermath of a ceiling collapse in the emergency department of VieCuri Medical Center in Venlo, the Netherlands, on May 18, 2017. By designating the acute medical unit as a temporary emergency department, standard emergency care could be resumed within 8 hours. This unique approach might be transferrable to other hospitals in the developed world. In general, it is vital that hospital disaster plans focus on both external and internal disasters, including specific scenarios that disrupt vital hospital departments such as the emergency department. (*Disaster Med Public Health Preparedness*. 2019; 13:829–830)

**Key Words:** emergency service, hospital, disaster medicine, disaster planning, health facility administration, structure collapse

Hospital disaster preparedness is usually conceived as the ability to respond to external events, such as natural disasters, mass casualty incidents, or terrorist attacks. However, health care professionals should realize that a disaster can also be an *internal* emergency, with the potential to occur at any time, at any location, in any hospital. An internal disaster refers to an incident that disrupts the everyday routine services of the medical facility itself,<sup>1</sup> and possible causes include power failure, fires, floods, internal or external hazardous material releases, terrorist attacks, and computer system failures.<sup>1,2</sup> While these internal disruptions appear to be more common events in hospitals than external disasters,<sup>3</sup> literature on internal disruptions is scarce. Here we report on an internal disaster that disrupted the continuity of our emergency department (ED), followed by the rapid transformation of an acute medical unit (AMU) into a temporary ED so that emergency care could be resumed.

## NARRATIVE

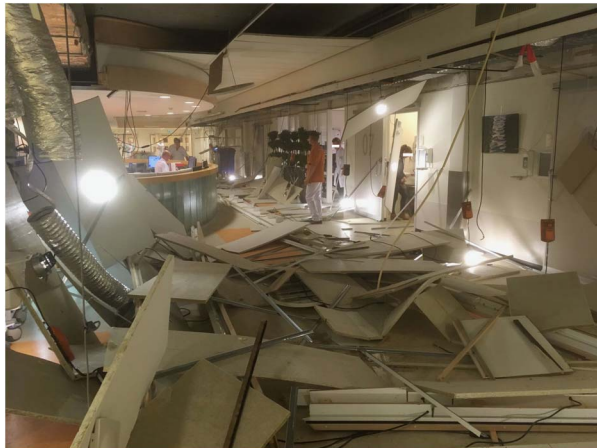
Just before midnight on May 18, 2017, all ED activities of VieCuri Medical Center in Venlo, the Netherlands, were acutely disrupted when the suspended ceiling comprising roughly 75% of the central square collapsed (Figure 1; see also Supplementary Figure). Fortunately, no injuries were reported. However, the situation led to the immediate closure and evacuation of the ED, and the hospital disaster plan (HDP) was activated. Emergency medical services were informed about the closure of our department. In case a patient in the highest triage category were to present to the ED, 2 intensive care unit beds were blocked to cover this possible scenario.

The 12-bed ED of VieCuri has a yearly census of 23,000 to 25,000 patients and serves a population of 280,000 in a rural area in the southeastern part of the Netherlands. VieCuri is a level 2 trauma center and a center for percutaneous coronary interventions. The hospital is provided with an AMU, which is located directly adjacent to the ED and consists of 5 units accommodating 12 patient beds. The AMU in our hospital is staffed and equipped to provide multidisciplinary and medical specialist assessment, care, and treatment for up to 24 hours prior to discharge or transfer to other wards.<sup>4</sup> For *external* disasters, our HDP designates the AMU for the care of the secondary or delayed triage category. However, the role of the AMU in case of an *internal* disaster was not delineated.

Consequently, the organization was confronted with a challenge, as emergency care was acutely disrupted and this specific scenario was not foreseen in the HDP. In the first crisis meeting, it was decided that the AMU should serve as a “spare” ED during the aftermath of this incident. Thus, in the middle of the night, the AMU was transformed into a temporary ED. The personnel and activities of the AMU were subsequently transferred to another hospital ward. Meanwhile, cleanup and construction repairs were commenced. In the early morning, approximately 8 hours after the incident, the temporary ED was completely equipped and “standard” emergency care could be resumed. Only the highest patient acuity category was still redirected to other hospitals. To be able to treat these patients, a hygienic, hermetical corridor was built, connecting the ambulance hallway and the 2 trauma units of the ED. These works were completed in the afternoon of May 19, 2017. Only 17 hours after the

## FIGURE 1

**Photo Showing the Collapsed Ceiling of the Central Square of the Emergency Department**



incident, emergency care was entirely resumed. Ceiling repairs were completed after 6 business days, after which the AMU and the ED returned to business as usual. During this period of crisis, patient safety was maintained and no critical incidents were reported.

Later investigations revealed that the ceiling collapse was caused by a construction defect, which was not present in other hospital departments.

## DISCUSSION

Internal disasters within EDs do occur, but are rarely reported in literature.<sup>3</sup> Most reports on hospital disasters describe incidents that compromise the activities of multiple hospital departments or the complete institution.<sup>1,3,5-7</sup> Although it is impossible to fully prepare for all potential disasters, this internal emergency yielded several lessons. First, hospitals should be prepared to respond not only to external disasters, but also to internal disasters, including specific scenarios that compromise vital hospital departments such as the ED. If an AMU is available, it might well serve as a “spare” ED as shown in this report. Also, training and exercises are crucial to respond effectively to internal emergency situations.<sup>2,7</sup> Second, communication is key: communication with personnel, other hospital departments, emergency medical services, adjacent hospitals, and the press.<sup>2,6</sup> By doing so, patient care was guaranteed as all involved parties knew exactly which care the ED was able to provide during each phase. Third, one should consider the role of social media in these types of disaster.<sup>6,8</sup> Even before the press could be officially informed about the incident, pictures were leaked to newspapers and websites via social media. This could have been harmful if erroneous information had been published. Personnel should therefore be informed about the hospital code of conduct on social media use. Fourth, in case of an internal

disaster, allocation of extra personnel might be needed temporarily to ensure continuity of the medical facility operations.<sup>1,2</sup> This was required because of changed ED logistics (ie, longer distances between the temporary ED, the 2 trauma units, and the radiology department). Fifth, do not forget about the importance of supporting services, such as information and communication technology or technical services.<sup>2</sup> For example, think of seemingly simple solutions, such as the converted connection of monitored beds or adjusted routes of pneumatic tube systems. Finally, if a hospital is struck by a crisis of this nature, one needs and should cherish the collaboration of all hospital departments.

## CONCLUSION

In conclusion, HDPs should not only focus on external threats, but should also recognize the catastrophic potential of internal hospital disasters, including specific scenarios that disrupt vital hospital departments such as the ED. Health care organizations should consider the incorporation of an AMU in HDPs, as well as the possible potential of an AMU to be transformed in a temporary or extended ED in times of crisis.

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## Conflict of Interest Statement

The authors have no conflicts of interest relevant to this article to disclose.

## Supplementary material

To view supplementary material for this article, please visit <https://doi.org/10.1017/dmp.2018.133>

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