*Disaster Medicine and Public Health Preparedness*

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## Report from the Field

**Cite this article:** Helou M, Weinstein ES, Kalaji J, Chaaban T and Yammine K (2024). Pager Explosion in Beirut: An Unprecedented Event. *Disaster Medicine and Public Health Preparedness*, **18**, e215, 1–2
https://doi.org/10.1017/dmp.2024.281

Received: 27 September 2024
Accepted: 27 September 2024

**Keywords:**
explosion; disaster plan; pager explosion

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# Pager Explosion in Beirut: An Unprecedented Event

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**Abstract**

On September 17, 2024, at 15:30 local time, thousands of pagers used by members of a specific party group detonated across Lebanon. As a result of the explosions, 2800 were wounded and 12 lost their lives. Almost two-thirds of the injuries were in the face, eyes, or hands. The Lebanese American University Medical Center received 38 injured and admitted 36 patients, 13 of them to the Intensive care unit. A total of 33 patients needed surgeries. All medical and nursing staff were deployed. The health care workers faced major challenges that night: the severity of the injuries and the unprecedented types of injuries with the same pattern, and the urgent need for ophthalmology and orthopedics within the hospital and across the country. Learning from the Pager Explosion, each hospital should perform assessments of their disaster response plan, develop trainings, and conduct regular exercises in preparation for future disasters.

On Tuesday, September 17, 2024, at 15:30 local time, thousands of pagers used by members of a specific party group detonated across Lebanon, lasting for around an hour.[1,2] These explosions were caused by small amounts of explosives planted inside pagers purchased from a Taiwanese company that were ordered months before the explosion.[1] The pagers exploded after a coded message was sent, simultaneously activating the explosives. These group members have been using pagers as a basic means of communication to evade location-tracking.[1]

## Narrative

As a result of the explosions, 2,800 were wounded, and 12 lost their lives, among them two children and four health care workers, according to the Lebanese Minister of Health.[1,3]

Most of the injured were individuals who reached for their pagers to check the notifications and consequently sustained injuries to the hands and eyes.[3] Almost two-thirds of the 2,800 injured needed surgery for the face, eyes, or hands.[3] More than 60% to 70% of the patients ended up with at least one eye removed and many suffered amputations.[3] The injuries were divided across Lebanon as follows: 750 in the south of Lebanon, 150 in the Bekaa Valley, and about 1,850 in the capital and its suburbs.[3]

At the Lebanese American University Medical Center (LAUMC), a private university hospital in the capital of Beirut, 38 injured patients presented to the hospital. 37 were triaged red on arrival; only 1 patient was triaged green. One patient of 11 years old died in the Emergency Department. Most of the injuries involved the face (in particular, the eyes) and the hands. A total of 36 patients were admitted to the hospital, and 13 of them were admitted to the Intensive Care Unit (ICU). One patient was transferred to another hospital. A total of 33 patients needed surgeries, and some of them had to be operated upon more than one time.

All medical and nursing staff were deployed to ensure adequate management of the injured. The emergency preparedness plan was immediately activated, and a rapid response was initiated. Lebanese bystanders and health care workers played a major role.

## Discussion

The Lebanese people have ample experience with explosions and dealing with injuries. After the Port of Beirut Blast on August 4th, 2020, the hospital administrators and medical personnel lived a terrible experience which prepared them for future disasters.[4] After this experience, all

Lebanese hospitals revised and updated their disaster response plan. A mass casualty management training was conducted by the Ministry of Health and the World Health Organization to reinforce the adequate response to mass casualty incidents.[5] These three-day hands-on trainings were conducted in Lebanese hospitals all over the country. An assigned team representative from each hospital was sent to attend the training; afterwards, the representatives trained the rest of the hospital staff at their respective hospitals.

Bystanders and the Lebanese Red Cross played a major role in the initial response and in the transport of the injured to hospitals across the country. The Red Cross is a humanitarian organization, and they are the main providers of ambulances in the country.[6] They are volunteers whoreceive regular trainings to be able to respond to emergencies and disasters.[6] Services are managed through a radio communication system from four central operation rooms.

The health care workers faced major challenges the night of the Pager Explosion. The disaster response plan is designed for "all-hazards," or the most common disasters. The Pager Explosion was an unprecedented event, with a high number of casualties that had the same pattern of injuries. Triage is a crucial part of a sudden onset disaster mass casualty incident response; with a high number of casualties arriving in a short period to a small space, the only means to adapt is with a rapid and effective sorting process. More than 99% of the injured were triaged (sorted) into the red category, indicating the need for immediate dedication of resources, which is not commonly seen in explosions. All these patients were admitted inside the 17 bed LAUMC Emergency Department, which is the red zone. There were five patients in the Emergency Department when the first patient injured in the Pager Explosion arrived. These patients were immediately evacuated to the wards, specifically to the sixth floor of the hospital, to be discharged later on. The case manager played a major role in transferring the injured to the wards as fast possible. At the same time, all patients in the ICU deemed transferrable by the ICU team were transferred to a regular ward to allow more room for the receiving of injured patients. After initial stabilization and primary survey, most patients in the emergency department required urgent brain imaging due to the nature of injuries. Radiologists and trainees were available on site for immediate reading. The Computed Tomography (CT) scan machine available in the Emergency Department was used for high acuity unstable patients while the Radiology Department CT scan was used for lesser acuity cases. For some patients, imaging occurred after transfer to ward.

Another challenge was the high number of casualties that needed ophthalmologic and orthopedic surgeries. Most of the ophthalmology and orthopedic surgeons at LAUMC worked on a full-time basis at the hospital and were immediately called in to the operation room. The part time surgeons were called to nearby medical centers where they performed surgeries all night long. On that night, the orthopedics and ophthalmology team sent a physician to join an anesthesiologist inside the LAUMC Emergency Department red zone and the intensive care unit to assess the priority for surgeries, determine whether a patient's eye or the fingers/hands could be saved, and then prioritize transfer to the Operating Room (OR) accordingly. With eight operating rooms, all surgeries could not have been performed on the same day. By the third day, all surgeries were done. In addition to the manpower limitation, surgical instruments for ophthalmological surgeries were available for only three rooms, limiting the number of simultaneous ophthalmological surgeries. Another characteristic limitation was the inability to provide patients and their families with immediate answers regarding expected long-term disability in sight and function. The salvageability of the eyes and limbs were the main factor for transfer to OR.

Learning from the Pager Explosion, each hospital should perform an assessment of their disaster response plan. Every disaster provides an opportunity to improve the process of increasing resources and meeting the demands presented. Specific staff and equipment may be needed to meet the unique nature of the disaster. Systems, physical space, and other structures may be required to satisfy the challenges presented by a disaster that could not have been expected. Then, hospitals can develop education, trainings, and conduct regular exercises incorporating these lessons in preparation for future disasters.

**Acknowledgments.** The authors would like to thank all the health care personnel in Lebanon who have worked relentlessly during the response, especially the hospital staff at the Lebanese American University Medical Center.

**Author contribution.** MH, JK, and TC: data collection and writing of the report; KY and EW: writing of the report and editing.

**Funding.** This work received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

**Competing interest.** The authors have read and understood the policy on declaration of interests and declare to have none.

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