

In-situ simulation to test preparedness for unexpected presentations of patients with possible highly infectious diseases to an emergency department: finding the gaps safely.

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Abstract

Background: The unexpected presentation of patients with highly infectious diseases to the Emergency Department poses significant risks to staff, other patients and the organisation in general. Responding effectively to these patients requires an immediate and coordinated action from multiple departments if the infection is to be safely contained and to impact minimally on the hospital's normal operation. The spread of infectious diseases such as Ebola and Avian influenza have been aided by air travel, and facilities far from the origin of infection must be prepared to respond to potentially infected patients. The recent outbreak of Ebola in West Africa triggered an Australian state-wide response to recognising and managing patients who could self-present to the Emergency Department. As part of this response Cabrini Malvern revised the response plan to cope with this especially infectious disease. A medical actor tested the utility of this response plan by presenting to the emergency department with typical early Ebola symptoms. While simulation is a well-established tool for teaching clinical skills, the effectiveness of simulated activities to "stress-test" entire departments and plan has not been well explored in Australian hospitals. This paper reports on the factors that were exposed during the simulation and the perception of usefulness and engagement by the staff involved.

Method: Cabrini Health developed a response plan according to state guidelines and established a policy and protocol to govern hospital internal operations. A training program was subsequently developed and delivered to a group of Emergency Department clinical staff in the use of Additional Personal Protective Equipment (APPE) procedures. Tablet computers were then programmed with checklists that aligned to the training and the response plan. A medical actor subsequently presented to the triage desk and auditors recorded the parameters they observed. Extra clinical staff were rostered on to ensure patient care was not compromised and staff were advised a training exercise would occur and to respond according to the response plan. The exercise was designed to examine the workflow and communication required by response plan and to identify any barriers that have not been foreseen during the plan's development. Outside agencies required to respond to the plan (Ambulance Victoria and the Department of Health and Aging) were briefed and provided the resources required to support the three-hour simulation.

Results: The simulation reinforced the general applicability of the response plan but revealed a number of areas for improvement and some areas that had not been considered during the development of the plan. The difficulty in restricting access to certain areas could not be appreciated until real-time movement of staff and patients was experienced. Similarly the ability to prepare and decontaminate clinical and non-clinical spaces was not fully appreciated until staff were required to integrate these activities into a normal working environment. In addition to the high potential for cross-contamination to staff, patients and other hospital users, the simulation revealed a far greater disruption to normal Emergency

Department operations than was anticipated by the response plan. The simulation also revealed a number of “dead-ends” in the response plan that required additional actions and resources following the debrief. Individual and organisational response to the simulation was positive with staff engaging in both the activity and the providing information to amend the response plan.

Conclusion: Despite a substantial investment of time and financial resources into preparedness for infectious disease, the complexity of any response plan cannot be fully appreciated until it is implemented. Testing the response using an in-situ simulation environment does not explore all potential variations of the plan but proved to be an effective tool in revealing major workflow, communication, training and resourcing needs. The cost of the activity was significantly less than the cost of a single episode of cross-contamination and staff at all levels found the activity worthwhile and safe.