Australasian Emergency Nursing Journal (2006) **9**, 79—84

ELSEVIER

AENJ

www.elsevier.com/locate/aenj

DISCUSSION

Issues associated in chemical, biological and radiological emergency department response preparedness

Matt Luther, Master Nursing (NP), Grad Dip Midwifery, BaNursing, Cert Emergency Nursing*, Shane Lenson, Bachelor of Nursing, Dip Health Science (Emergency Care), Kate Reed, Bachelor of Nursing, Grad Dip Crit Care Nursing

Emergency Department, Calvary Healthcare ACT, Belconnen Way, Bruce, Canberra ACT 2617, Australia

KEYWORDS
Chemical;
Biological;
Radiological;
CBR;
Terrorism;
Disaster;
Mass casualty;
Emergency department;
Response;
Prepardness

Summary An increasing level of dissatisfaction amongst minority groups has led to an increase in the use of chemical, biological and in some instances radiological agents in an attempt to persuade public opinion. Preparedness to mount a response to these chemical, biological or radiological (CBR) threats is a very complex task that presents many new challenges to staff of healthcare facilities, emergency departments in particular.

As healthcare professionals we must be prepared for CBR incidents so that we may provide adequate care for the people affected. Being prepared for such an incident includes, addressing concerns (public and staff), regular training both on a local and national level as well as having a tested system in place prior to such incidents occurring.

It is an unfortunate reality that natural disasters, industrial accidents and terrorism, involving CBR substances will occur. Even though these incidents are unpredictable, if recent times are an example of the future, there will be no argument that we have reached a point in time where it is no longer a 'possibility'!

Introduction

Recent global unrest has meant that there is a worldwide increase in the use of weapons, such as improvised explosive devices and those made from chemical, biological and, in some instances, radiological agents to cause mass destruction and manifest mass fear.

Possibly as an implication of Australia's support and involvement in the regulation of extremist groups, Australia has become a direct target for acts of terrorism. In an attempt to respond to this threat, strategic Australian hospitals have been issued with caches of equipment so that they can mount an appropriate response to chemical, biological and radiological (CBR) threats. While this

* Corresponding author. Tel.: +61 2 6201 6777; fax: +61 2 6201 6640.
E-mail address: mbluther@bigpond.net.au (M. Luther).

1574-6267/$ — see front matter © 2006 College of Emergency Nursing Australasia Ltd. Published by Elsevier Ltd. All rights reserved.
doi:10.1016/j.aenj.2006.03.007

specialised equipment has dramatically increased the ability of emergency departments (EDs) to safely deal with CBR threats, equipment alone is of minimal value. To provide 'best practise' health care, we as emergency nurses have to find ways to deal with this relatively new threat, which will be no easy task due to its complexity. One particular area of concern is the need for education of ED personnel so that they can better recognise CBR agents before the department becomes contaminated.

This paper examines the experience of one ED's attempt to implement a new hospital emergency plan, which incorporated all CBR threat response components.

Discussion

A recent spate of biological and explosive threats in Canberra has brought the assessment of CBR preparedness into the public spotlight. These events have challenged response plans in all ACT emergency service organisations with specific focus on the two major EDs that service the ACT and its surrounds.

Calvary Health Care has a 24 h ED that sees an average of 45,000 presentations per year. Patient populations range from neonates to the elderly while also including trauma and general practice complaints. Because Canberra has a large rural interface, Calvary deals with individual presentations of chemical contamination, such as organophosphate exposure, only occasionally. However, large scale threats from CBR agents and the subsequent treatment of the affected patients remains untested. Unfortunately the response to a CBR emergency is no longer a remote possibility for EDs, here or overseas.

Research has shown that there are a variety of issues in key areas associated with CBR response preparedness. After attempting to mount an appropriate response to these threats in a recent mock trial, a review of Calvary ED performance uncovered a few areas for improvement, including:

- new terminology and concepts;
- an increase in personnel protective equipment available;
- the mass casualty and fear aspect often associated with CBR incidents;
- well established Mass Casualty Incident (MCI)/disaster plans;
- early recognition of a contagion or contamination;
- inclusive training.

New terminology and concepts

CBR-specific terminology (lingo) was one of the greatest factors hindering our EDs effective response to a CBR incident. Such terminology includes: chemical, biological and radiological (CBR); mass casualty incident (MCI); hospital emergency plan (HEPLAN); disaster plan (DISPLAN); decontamination (Deco); incident command system (ICS); personal protective equipment (PPE); hot zone, warm zone, cold zone; environmental contaminate distribution (ECD); among others. Because CBR brings with it a whole new language that needs to be understood and used for an effective, multidisciplinary, multi-service disaster response a common language specific to the incident was needed to enable efficient communication between services and to limit misunderstandings.

Personnel protective equipment

Emergency nurses must also adapt to the use of CBR-specific personal protective equipment (PPE). Although healthcare professionals are familiar with universal precautions for infection control, using PPE to deal with a CBR threat adds a new dimension. CBR PPE has to provide its user with protection from multiple vectors simultaneously, eg airborne, contact and excreted. It also has to be able to provide protection against corrosive substances. As such current CBR PPE can be quite cumbersome and certainly provide a very hot work environment during prolonged use. Attempting skills requiring fine dexterity, such as cannulation, requires much practise when wearing butyl rubber gloves, not to mention the limited field of vision offered by powered air purifying respirators.

Correct and confident use of protective suits, gloves and boots and also powered air purifying respirator (PAPR) devices (Figs. 1 and 2), reduces the incidences of staff becoming contaminated while providing a foundation on which CBR patient management can be built.[1] PPE can be cumbersome and restrictive, especially when performing procedures such as cannulation or intubation; butyl rubber gloves are not known for their deft touch.

A cache of CBR PPE has been distributed nationally to Emergency Departments which has increased the ability of the emergency personnel to safely deal with CBR incidents. The ongoing use of specific PPE will reduce the number of affected first responders and healthcare professionals, a lesson learnt from the Asian response to the SARS Pandemic, where many incidences of healthcare worker infection and cross infection was detected.[10]