



Review

Emergency nurses' and department preparedness for an ebola outbreak: A (narrative) literature review

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ABSTRACT

Introduction: The 2014 Ebola Virus Disease outbreak in West Africa triggered a public health emergency of international concern. Emergency departments worldwide responded with Ebola containment and preparation measures. This paper reports a literature inquiry into how emergency departments and emergency nurses prepared to manage the Ebola risk.

Method: Narrative review was the method used. Guidelines (n = 5) for organisational and emergency department preparedness were retrieved from relevant websites. Searches for primary studies and case reports were undertaken in the MEDLINE and CINAHL databases. After screening and quality appraisal, 20 papers were included in the review.

Results: Research and case reports identified 17 different preparedness strategies, and practical interventions for containment undertaken in emergency departments. These included a requirement for surveillance and reporting, Ebola case management, inventory and logistic management, laboratory management, and communication and education. Emergency nurses' personal preparedness was influenced by the emotional readiness, their willingness to care for people at risk of Ebola, and the provision of psychological support.

Conclusions: The preparation efforts reported internationally were generally consistent in strategy and intervention. The findings provide guidance for future preparedness strategies by emergency departments in response to threats like Ebola.

1. Introduction

This narrative review describes evidence regarding emergency departments' (EDs) and emergency nurses' preparedness to manage an Ebola virus disease (EVD) outbreak. EVD is a contagious disease accompanied by a high mortality rate. The 2014 EVD outbreak in West Africa resulted in a public health emergency of international concern [1] and EDs around the world adopting containment measures. This review into containment and preparedness strategies was undertaken in 2015. The findings will be useful to emergency nurses when outbreaks of EVD or related diseases reoccur in the future.

1.1. Ebola virus disease

Ebola outbreaks are caused by the Ebola virus, which is a negative strand RNA virus [2] in the filoviridae family [1]. Five subtypes are recognized: Zaire, Bundibugyo, Sudan, Reston and Tai Forest, the first three being responsible for human outbreaks in Africa [1]. The 2014 outbreak in West Africa was caused by the Zaire Ebola virus. The

disease is zoonotic (but also spread from person to person). The natural reservoir for the Ebola virus is believed to be fruit bats [1]. Primates and rodents are accidental hosts, like humans. The virus is transmitted to humans via close contact with the body fluids or organs of infected animals such as fruit bats [1,3], primates [1], antelope [1] and rodents [1]. Human-to-human transmission of the disease occurs via infected body fluids (blood, saliva, bodily secretions, seminal fluid and sweat) [1]. No evidence has been reported to demonstrate airborne, waterborne and foodborne transmission [4].

The Ebola virus incubation period in the human body ranges from 2 to 21 days [1]. EVD is clinically diagnosed based on signs and symptoms, travel and contact history, and laboratory confirmation. Typical signs and symptoms may include: fever of greater than 38 degrees Celsius lasting for more than 24 h, diarrhoea, myalgia, vomiting, abdominal pain, headache or bleeding [5]. Humans are contagious from the point of displaying the symptoms [1]. Any of those symptoms listed may be absent and all are nonspecific.

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1.2. EVD crisis

The 2014 outbreak in West Africa was considered to be the largest Ebola outbreak in history [3], and resulted in 11,313 reported deaths [1]. Air travel and global disaster assistance for the affected communities increased the risk of disease spreading to other countries. Globally sporadic cases and deaths were reported for example, in Italy, Mali, Senegal, Spain, United Kingdom and United States of America; and in Nigeria there was a small outbreak, which was rapidly controlled [6]. By late 2015, the outbreak was contained and the international risk of spread had reduced. Previous outbreaks of EVD have been reported [1], and future outbreaks are likely. Additionally, Ebola virus has the potential to be used as a bio-weapon [7,8] which increases the risk of another outbreak, due to the unpredictability of terrorism.

1.3. ED preparedness for EVD

In most health settings in developed countries, a person with symptoms similar to EVD will present to the general practitioner (GP) or to the ED [5]. It is imperative that GPs and EDs are able to prevent further spread of the disease.

As ED's are an access point and emergency nurses often act as first responders, it is important to consider what is needed to achieve preparedness for EVD outbreaks. The focus in this paper is the preparedness of EDs and emergency nurses to safely achieve patient assessment and containment of EVD contamination and spread. Preparedness is described as having adequate knowledge, skillsets, equipment, facilities and policies to enable appropriate assessment of EVD risk and management to prevent further spread of the disease. It is also about providing a safe workplace and setting for employees and health care consumers.

A search of the literature revealed limited appraisal and synthesis of research and policy documents to assist EDs and emergency nurses achieve organisational and personal preparedness for EVD. Even though the crisis associated with the 2014 outbreak is over, EDs and emergency nurses may well need to reactivate EVD preparedness in policy and practice in the future. Therefore, reporting the findings of the literature synthesis remains important.

2. Method

2.1. Review aim

The aim of this narrative literature review was to describe the evidence to-date regarding strategies that achieve emergency nurses' and EDs preparedness to manage EVD risk.

2.2. Method and search strategy

Narrative literature reviews are designed to summarise and describe the key literature on a topic [9]. The narrative method utilises a systematic approach to inclusion and exclusion criteria, database searching, and critique [10]. Narrative literature review was selected as the method of choice as the diversity and quality of the literature was not suited to scoping or systematic review methods.

Searches were undertaken in the MEDLINE and the CINAHL databases to identify primary research and case reports related to emergency nurses' and organisations' preparedness for EVD. Searching included the terms 'nurse' AND 'Ebola' AND 'prevention' or 'preparedness'; and 'emergency department'. Truncations (e.g. nurs*), wildcards (e.g. h#emorrhage, organization) and Boolean operation (AND, OR) were used. Medical subject headings were also used (hemorrhagic fever, Ebola, emergency nursing). Searches were limited by year 1999–2015, English language, and academic abstracts/papers. Manual searching of the references in relevant full-text articles was undertaken. As journal publication of EVD guidelines (local, national,

and international) was limited it was necessary to perform an additional search for pertinent grey literature (Google was used for this).

The results of searching and document selection (Fig. 1) resulted in 975 research papers being identified from the databases. An additional seven papers were identified from the reference lists of research papers. All references were exported to an EndNote library, and 354 duplicate papers removed. The number of papers screened was 633, and 605 were discarded after title and abstract evaluation against eligibility criteria. Three papers were excluded due to unavailability of full-text. Inclusion criteria for the papers were:

1. original research papers (qualitative, quantitative), literature reviews, case descriptions or guidelines about nurses or emergency department/healthcare facilities in relation to EVD;
2. research papers, case reports or guidelines about emergency department/healthcare facility preparedness, education, response, prevention and control.

Exclusion criteria were:

1. papers generally addressing EVD
2. case or research reports regarding field hospitals at EVD outbreak sites.

Twenty full-text papers were retrieved and included. Additionally, five guidelines for ED preparedness or management were retrieved from resources published on reputable health organisation and government websites. Guidelines were retrieved from international organisations (World Health Organization [11] and the Centers for Disease Control [12]) and national sources (in this case Australia [13]) and State based sources (Victoria [14]) and an example of local guidelines from a large Victorian hospital [15]. The guidelines were selected to reveal synergies and linkages between international, national, state and local guidelines that either directed or informed ED organisational preparedness activities and standards.

2.3. Research critique procedures

Qualitative and quantitative studies, literature reviews and case description papers selected for retrieval were assessed for methodological validity using The Joanna Briggs Institute's (JBI) [16] quality assessment tools. The five guidelines were accepted on face-value and selected for relevance.

2.4. Classification of results

The papers included in the review addressed two issues for EDs: i) organisational preparedness and ii) nurses' own preparedness. Fourteen papers were classified for organisational preparedness: three surveys [17–19], three educational evaluations [20–22] and eight case descriptions [23–30]. Five papers were classified under both organisational and nurses' preparedness [31–35]. One paper was classified under personal preparedness [36]. The studies were conducted in Africa, Asia (Western), Europe, New Zealand, Spain, the United Kingdom and the USA. The five guidelines were classified for organisational preparedness.

3. Results

3.1. Organisational (Hospital and ED) preparedness for EVD

The findings for hospital and ED preparedness are presented in two sections: results from the guidelines, then results from research studies and case reports.

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