Australasian Emergency Nursing Journal (2016) xxx, xxx–xxx

Available online at www.sciencedirect.com

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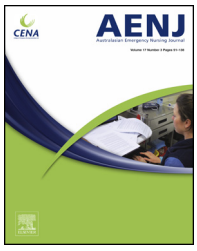

DISCUSSION PAPER

A healthy degree of suspicion: A discussion of the implementation of transmission based precautions in the emergency department

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Received 17 December 2015; received in revised form 10 March 2016; accepted 29 March 2016

KEYWORDS
Emergency department;
Triage practices;
Transmission based precautions;
Healthcare associated infections;
Infection control

Summary
Background: Emergency department (ED) presentations have increased significantly domestically and internationally. Swift identification and implementation of transmission based precautions (TBP) for patients known or suspected of having an epidemiologically important pathogen is important. ED staff, particularly triage nurses, are pivotal in detecting and preventing infection, including healthcare associated infections (HAI).
Methods: MEDLINE, CINAHL, PubMed and Ovid were searched for articles published between 2004 and 2015 using key search terms: infection control/prevention and emergency department(s), triage, and transmission based precautions and emergency department(s), and triage, to identify common themes for discussion. Systematic review/meta-analysis was not in the scope of this exploration.

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http://dx.doi.org/10.1016/j.aenj.2016.03.001

Please cite this article in press as: Zimmerman P-A, et al. A healthy degree of suspicion: A discussion of the implementation of transmission based precautions in the emergency department. *Australas Emerg Nurs J* (2016), http://dx.doi.org/10.1016/j.aenj.2016.03.001

Findings: Themes were identified relating to HAI and ED practices and grouped into: assisted detection of conditions for which TBP is required, ED and TBP, mass-causality event/bioterrorism/pandemic/epidemic, infection control not TBP and multi-resistant organisms not TBP. The literature is heavily influenced by worldwide epidemic/pandemics and bioterrorist risks resulting in increased awareness of the importance of swift identification of syndromes that require TBP, but only in these situations.
Conclusion: Implementation of appropriate TBP, changing triage practices, training and measures to assist decision-making could assist in preventing HAI in the ED context. A systematic quantitative review of the literature is recommended to guide practice change research.

Introduction

Prevention and control of healthcare associated infections (HAI) is one of the greatest challenges confronting healthcare providers and clinicians worldwide. Emergency departments (ED) have a significant role in identification, triage and application of proven infection prevention and control (IPC) measures to curb the risk of transmission of communicable disease within the healthcare setting. Best practice indicates this is achieved through the swift identification and implementation of transmission based precautions (TBP) for patients who are known or suspected of having an epidemiologically important pathogen. Emergency departments are often viewed as healthcare safety net providers with the number of ED presentations steadily increasing over recent years.[1,2] This added pressure from both the community and primary care providers can potentially further strain a compromised or inadequate triage system and place healthcare worker and patient safety in jeopardy.

Transmission-based precautions are IPC practices implemented for the care of patients who are known or suspected to be infected with a pathogen that is transmitted by contact (direct or indirect), droplet or airborne routes.[3,4] These precautions are subsequently divided into three types: (1) contact, (2) droplet and (3) airborne precautions, or a combination of these. Transmission-based precautions are always implemented in addition to standard precautions, which are IPC practices in place for all patients, regardless of known or suspected infectious status. In acute care settings, TBP require a combination of:

- appropriate personal protective equipment (based upon route of transmission)
- patient-dedicated equipment
- single room accommodation or cohorting of patients
- appropriate air handling systems
- specific environmental cleaning requirements
- restricted transfer and/or movement of patients within and between facilities.[3]

Timely implementation of TBP is aimed at reducing opportunities for infectious agents to be spread via their specific transmission route. These precautions are therefore warranted when there is a potential for a patient to be infected, or colonised in some cases, with a relevant pathogen.[3,4] Community outbreaks of infectious disease can be easily amplified in the healthcare setting if well-established IPC principles and policies are not being practiced. This is particularly true of respiratory pathogens such as respiratory syncytial virus (RSV) and *Bordetella pertussis* or those spread through airborne transmission such as measles and tuberculosis. In late 2003 the world saw an outbreak of a new respiratory virus causing illness and mortality in both patients and health care workers. By mid-2004 the pathogen, severe acute respiratory syndrome coronavirus (SARS-CoV), was identified and the world prepared for a pandemic response. The year 2009 saw a novel influenza A (H1N1) strain causing significant illness across the globe, resulting in a pandemic.[5] In 2014 the largest known outbreak of Ebola virus disease (EVD) occurred (and is still continuing) in West Africa with devastating human, economic and societal effects in that region. With the recent spread of Middle Eastern respiratory syndrome coronavirus (MERS-CoV) in the Asia-Pacific region it is timely to consider how prepared EDs are to recognise presenting infectious diseases and implement the appropriate IPC precautions.

In Australia IPC policies and principles are in place as required through the accreditation of health facilities, however compliance with these appears to not be routine during normal provision of care.[6,7] Therefore when the need to step-up precautions occurs there is a limited baseline level of practice and compliance to build from. For example, hand hygiene is widely recognised as a foundation of infection prevention. The latest national compliance rate for hand hygiene in Australia is 82.2% across all healthcare workers.[8] Variation exists between professions with nurses and midwives at 84% and medical staff at 68.9% with other healthcare workers (such as allied health professionals and ancillary staff) in between. With baseline compliance at this level, one of the most basic aspects of IPC, there is little reason to suspect that this would not contribute to healthcare workers becoming ill.

Similarly the compliance with transmission based precautions is often less than ideal. High patient volume in acute care limits the ability to place patients suspected of requiring single rooms in these until a diagnosis is confirmed. This creates a potential reservoir of infection for both patients and healthcare workers alike. It has also been shown that health care workers can be reluctant to implement transmission based precautions until a diagnosis is confirmed due to perceived and real imposts on time and resources, plus administrative patient flow pressure. Human factors may lead to a situation where the healthcare workers are cognitively overloaded and as their regular practice may be less

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