Infection, Disease & Health (2017) xx, 1–7

Available online at www.sciencedirect.com

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journal homepage: http://www.journals.elsevier.com/infection-disease-and-health/

Discussion paper

Assessing a temporary isolation room from an infection control perspective: A discussion paper

Brett G. Mitchell [a,b,c,*], **Anthony Williams** [b], **Zorana Wong** [a], **Jayne O'Connor** [d]

[a] *Faculty of Arts, Nursing and Theology, Avondale College of Higher Education, Wahroonga, NSW, Australia*
[b] *Lifestyle Research Centre, Avondale College of Higher Education, Cooranbong, NSW, Australia*
[c] *School of Nursing and Midwifery, Griffith University, Nathan, NSW, Australia*
[d] *Infection Control Department, Sydney Adventist Hospital, Wahroonga, NSW, Australia*

Received 3 May 2017; received in revised form 16 June 2017; accepted 19 June 2017

KEYWORDS
Infection control;
Cross infection;
Biomedical technology

Abstract *Introduction:* Assessing the functionality and infection control implications of new technologies presents significant challenges. In this discussion paper, we present our approach to assessing infection control aspects of a new isolation room, the RediRoom™ (prototype). We report how we evaluated this room, lessons learnt and suggestions for future evaluations in this area.

Methods: There is no documented method for evaluating a novel temporary isolation room. We combined a range of existing tools to undertake a technical assessment. Three approaches were used, an assessment against standards or guidelines; professional assessment; and a cleaning assessment.

Results: To assess compliance against existing recommendations related to the built environment and isolation rooms, elements contained within Australasian and United Kingdom guidelines were used. We were able to identify which elements in these guidelines were of the most value and relevance. An ultraviolet (UV) solution with fluorescent light assessment was used to assess the ability to clean surfaces. This approach was a useful objective measure. A professional assessment is potentially subjective, but provides an opportunity to identify other potential issues and benefits. In this study, the RediRoom™ performed well against all three approaches. We identified limitations in using existing guidelines for a temporary isolation room.

* Corresponding author. Faculty of Arts, Nursing and Theology, Avondale College of Higher Education, Wahroonga, NSW, Australia.
E-mail address: brett.mitchell@avondale.edu.au (B.G. Mitchell).

http://dx.doi.org/10.1016/j.idh.2017.06.003

Conclusion: In our study, the use of video and video reflexive ethnography for the professional assessment would have been useful. We propose a revised list of assessment against which new isolation solutions or technologies could be assessed, with the view of others continuing to build on this.

Highlights

- We present our approach to assessing infection control aspects of a new isolation room.
- Existing guidelines for isolation rooms are not entirely suitable for assessing temporary isolation rooms.
- A multifaceted approach to evaluating new isolation approaches is warranted.

Introduction

Infection control and the prevention of infection is not a modern development. Historically, it focused on asepsis; however, ongoing pharmacological improvements to combat infections have triggered the unwanted complication of drug resistance in some transmissible pathogens. Preventing the spread of these drug-resistant pathogens in the healthcare setting is challenging and has led to modern advances in infection control methods [1]. However, further research is required to determine how effective these methods are, how they can be improved or whether completely new innovations are necessary to prevent the spread of infection.

Strategies and approaches within current infection control methods include (but are not limited to) hand hygiene, environmental cleaning, use of personal protective equipment and patient-specific strategies such as chlorhexidine bathing and screening for pathogens and isolation techniques [2—6]. Patients with pathogens transferred by contact, droplet or airborne, are often isolated to prevent and control the spread of infection [5]. However, isolation is only possible in hospitals with sufficient single rooms. Prevention of infection has been one of the main drivers for the increasing availability of single rooms. There are also other benefits such as improving staff-to-patient communication, patient confidentiality and privacy, family support and patient satisfaction are also important [7]. Conversely, single occupancy isolation rooms may have some potential drawbacks, such as financial cost, decreased staff productivity and reductions in the patient's quality of life while in hospital [8].

There is ongoing debate about the design of wards, including the balance between open and shared patient room accommodation and provision of single rooms [9]. Hospitals are expected to be flexible enough to respond to variations in demand levels and meet changing clinical and patient priorities [10]. Governments and health boards across the world have and continue to struggle with this dilemma, reflected by the diversity of approaches and recommendations on the required proportion of single rooms in hospitals [7,11—13]. New technologies and innovations enabling flexible patient isolation may provide a partial solution.

Assessing the functionality and infection control implications of new technologies presents significant challenges to researchers. In this discussion paper, we present our approach to assessing infection control aspects of a new isolation room, the RediRoom™. This room assessed was a prototype. For the purpose of this paper, the term 'isolation room' is used, noting there are differences in terminology between countries. In the context of this paper, isolation room means a single room capable of preventing the spread of infection via contact and droplet transmission routes.

The RediRoom™ is a temporary and disposable room, developed by CareStrategic Ltd. The RediRoom™ can be deployed quickly to isolate a patient requiring contact or droplet precautions. The room can be deployed in an existing hospital ward area, such as a bay or shared accommodation. In this paper, we report how we evaluated this temporary isolation room, lessons learnt and suggestions for improvements to guide future evaluations in this area. A functionality assessment (i.e. ability to undertake clinical activities) of the RediRoom™ was undertaken separately and reported elsewhere. Therefore, this discussion paper focuses on infection control issues, rather than the ability to undertake clinical activities in the RediRoom™.

The approach

Design

There is no documented method for evaluating a novel temporary isolation room in the literature. In our study, we combined a range of existing tools to undertake a technical assessment of the RediRoom™. The utilisation of this multiple faceted approach, provides the means whereby to evaluate its effectiveness in facilitating infection control in the context of a hospital environment.

Setting

The study was set in the Avondale College, School of Nursing clinical laboratory, Clinical Education Centre,

Please cite this article in press as: Mitchell BG, et al., Assessing a temporary isolation room from an infection control perspective: A discussion paper, Infection, Disease & Health (2017), http://dx.doi.org/10.1016/j.idh.2017.06.003