ASSESSING A TEMPORARY ISOLATION ROOM

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The Problem

Patients with pathogens transmissible by contact, droplet or airborne pathways, are often isolated to prevent and control the spread of infection. However, isolation is only possible in hospitals with sufficient single rooms.

The Solution

Portable isolation technology such as the REDIROOM™ (Care Strategic Pty Ltd) prototype can be deployed quickly (see Figure 1), within a ward to isolate a patient requiring contact or droplet precautions.

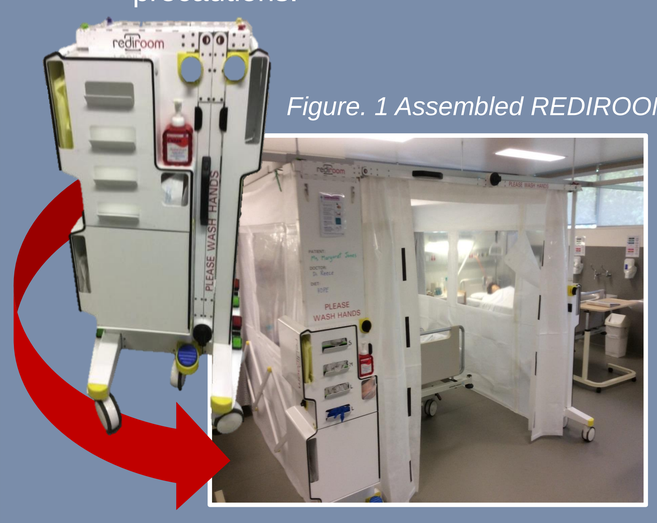


Figure. 1 Assembled REDIROOM™

The Challenge

There are no documented methods for assessing novel or temporary isolation rooms. As this study was the first of its kind, the research team designed a method to evaluate the **functionality** and **infection control** implications of the room.

FEATURES:

- ✓ <5 mins to assemble (see Fig.1)
- ✓ Disposable canopy
- ✓ Multi-occupancy to single-occupancy
- ✓ 'Easy-to-clean' surfaces
- ✓ Perforated rear
- ✓ Space for PPE (inside/outside)
- ✓ Foot-Pedal-Operated door = 'no hands'

Methodology

The REDIROOM™ was assembled in a simulated clinical ward environment at Avondale College of Higher Education. Participants (nurses and student nurses) performed a series of tasks in the REDIROOM™ and a patient care area of the same dimensions.

Figure 2 (top left) and Figure. 3 (bottom left) Assembled REDIROOM™ used for analysis Figure 4. (right) REDIROOM™ dismantled for portability/storage

Tasks performed included:

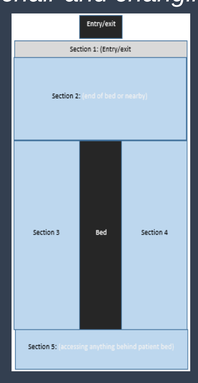
- ➢ Transferring patients
- ➢ Administration of medications
- ➢ Performing aseptic technique
- ➢ Bed bathing a patient
- ➢ Cardiopulmonary resuscitation
- ➢ Hoisting a patient

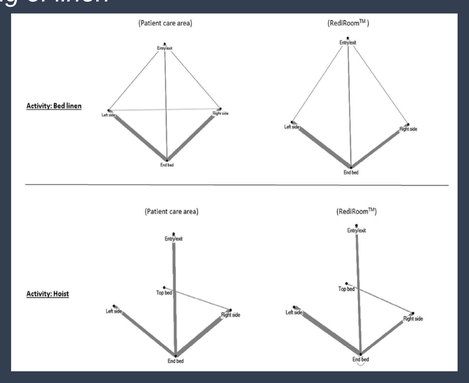
Functionality Assessment

In order to assess functionality, a mixed methods approach was employed, which involved:

- Video recording (see Figure 5) and the use of social network analysis which enabled:
  - Comparison of movements of the same activity in both rooms
  - Accurate recording of time taken to perform procedures
- Interviews, using a phenomenological approach, immediately after performing some activities
- Questionnaire to evaluate how easy it was to complete the activities
- Temperature and humidity measurements of both rooms every 5 minutes for an hour and repeated in regular patient care area for comparison

*Figure. 5 Five vertices **used in motion analysis video recording** to represent hoisting a patient from bed to chair and changing of linen*





Infection Control Assessment

Prior to seeing the room, two experienced infection control professionals developed a three stage evaluation process: an assessment against guidelines, cleaning and a professional assessment.

1. ASSESSED AGAINST GUIDELINES

- Australasian Health Facility
- Department of Health (NHS) Infection Control in the built environment

2. CLEANING

Ultraviolet (UV) solution and fluorescent light were applied to 24 surfaces in the REDIROOM™ to evaluate how easily it could be cleaned.

3. PROFESSIONAL ASSESSMENT

Assembly and dismantling performed by a member of the Care Strategic Pty Ltd. team in order to assess the practicalities and risk of exposure to infectious surfaces.

Results

Functionality Results

Time to complete activities
No difference between rooms.

Temperature and Humidity
There was a small temperature increase in both the REDIROOM™ and regular patient care room with 2 and 3 people present. Similarly, humidity decreased in both rooms with more people. Therefore, findings were consistent in both rooms.

Movements
Network analysis was used to compared movements of nurses through a range of activities in both rooms. No difference (Figure 5).

Interview
Identified three themes: 'Sense of restriction'; 'Temperature'; 'Management of critically ill patients'.

Questionnaire
No difference between normal care setting and REDIROOM™ except for 'transferring patient from bed to chair' and 'hoisting a patient into chair' where in both instances, normal patient care area scored higher than REDIROOM™. 9 out of the 11 criteria showed no difference between both rooms.

Infection Control Results

Guidelines

Of the 19 criteria, the REDIROOM™ fully complied with 17 of the recommended guidelines and partially with the remaining two.

Cleaning

The cleaning assessment undertaken with UV solution and fluorescent light showed UV solution was removed completely 23/24 times. This was trialled on 24 surfaces. There were no difficulties cleaning the REDIROOM™.

Professional

The adhesive walls were easily removed leaving no residue, the canopy was easily unhooked from the frame and folded inwards to avoid personal contact with the 'inside walls'. Cleaning of the REDIROOM™ frame did not fit the assessment scope of this study.

Conclusion

- Functionally, nurses could perform activities in the REDIROOM™ the same as in a regular patient care area
- The REDIROOM™ performed well in the infection control assessment and could potentially enhance/facilitate infection control practices
- The use of video reflexive ethnography could be use in future studies to evaluate novel isolation facilities
- The use of video ethnography and social network analysis was useful in providing objective data

For more information:

- Mitchell, BG., Williams, A., Wong, Z., O'Connor, J. (2017) Assessing a temporary isolation room from an infection control perspective: A discussion paper. *Infection Disease & Health.* 22 (3) p.129-135
- Mitchell, BG., Williams, A., Wong, Z. (2017) Assessing the functionality of temporary isolation rooms. *American Journal of Infection Control*. (Epub ahead of print)

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