Accommodating patients with a history of colonisation or infection with a multi-resistant organism: a case study investigation

Peta-Anne Zimmerman  
RN BN MHSc (Infection Control)  
Clinical Nurse Consultant, Infection Control  
Ryde Hospital and Community Health Services, NSW

Marianne Wallis  
RN BSc(Hons) PhD  
Griffith University Research Centre for  
Clinical Practice Innovation and  
Gold Coast Health Service District, Qld

Jennifer Rowe  
RN BA Grad Dip Ed MPhil PhD  
School of Nursing  
Griffith University, Brisbane, Qld

Abstract

Health care associated infection (HAI) with multi-resistant organisms is a major concern for in-patient facilities. Individuals who have previously been infected or colonised with multi-resistant organisms may require in-patient rehospitalisation, yet consistent application of infection control precautions remains problematic. This paper reports the findings of a case study that explored the application of contact precautions in a specific hospital context. Specifically, the factors that influence the accommodation of people, with a history of infection or colonisation with a multi-resistant organism, when they are admitted to hospital, are described.

Data from semi-structured interviews were subject to a qualitative content analysis. The findings reveal complex interactions among health professional practices, material resources and organisational dynamics. Consequently, the responsibility for appropriately accommodating patients infected or colonised with multi-resistant organisms may be shouldered by many healthcare professionals but borne by none. The findings indicate that there is a need for creative solutions to the issues that impact on the application of infection control protocols in clinical environments. A strategic practice development framework is proposed to enact responsive, effective and accountable practice in the implementation of contact precautions.

Introduction

Health care associated infection (HAI) with multi-resistant organisms is a significant infection control issue with consequences for the people who acquire them and for the demands placed on health care resources. The sources of pathogens that are associated with HAIs are many. People admitted to hospital, who have a history of colonisation or infection with an antibiotic resistant organism from previous hospital contact, are one source. Infection control programmes recommend segregating people with a history of colonisation with resistant organisms, such as multi-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant Enterococci (VRE) and extended-spectrum beta-lactamase (ESBL) producing organisms, if they are re-admitted to hospital 10.

Segregation is an aspect of contact precautions and a subset of additional precautions. It involves placing patients either in isolation rooms or in like-patient cohorts. These precautions also involve the use of ensuite bathrooms, single use aprons or gowns, disposable gloves, dedicated equipment and limitation of patients within the facility to essential services only 5.

Infection control strategies and work practices such as these are important in preventing HAIs in susceptible hospital inpatients. Generally, compliance in the clinical environment is measured in surveillance activities. However, there are issues associated with their consistent implementation. This paper explores some of these issues.
At the present time, there are no internationally agreed imperatives for infection control of multi-resistant organisms \(^6\). In Australia, guidelines recommend the use of both standard and additional precautions in individuals infected or colonised with these organisms. These guidelines highlight the need to have an alert system for readmission to hospitals of such patients, so that they can be accommodated appropriately \(^5\). Standard and additional precautions have been shown to be efficacious in the prevention of transmission of infection when clinicians observe the guidelines \(^5,12\).

The guidelines and protocols adopted by health care facilities require consistent implementation in everyday practice in order for transmission of pathogens to be prevented. Factors affecting the implementation of these protocols include knowledge, motivation, time, facilities, staff availability and clinical priorities \(^15,16\).

There are issues concerning knowledge of infection control procedures and practices for a range of health professional groups \(^15\). In the context of nursing, one problem that has been cited is the tendency for people to learn from and copy their colleagues' practice, thus potentially perpetuating ineffective practice \(^9\). Knowledge and education are closely linked and there is support throughout the literature for multidisciplinary infection control education \(^15,16,22,33\).

In some circumstances, additional precautions are impractical; this also impacts on the implementation of guidelines and protocols \(^5,15,33\). Inadequate accommodation facilities, the need to maximise bed usage, and methods of patient management are cited as barriers or difficulties \(^4\). Doubts among health care professionals about the efficacy of infection control strategies have also been found to affect implementation \(^5\).

The transmission of organisms from people previously infected with multi-resistant pathogens impacts the health of other susceptible in-patients, as well as the use of health care resources. Thus, it is imperative that the factors that influence the accommodation of this high-risk group of patients are clearly identified and appropriate strategies are designed to overcome the barriers to protocol implementation.

This paper explores findings from one section of a larger study into the factors influencing the application of additional precautions. The larger study was a mixed methods study. The study reported in this paper examined the research question, What factors influence the accommodation of people who are admitted to hospital, when they have a history of infection or colonisation with a multi-resistant organism?

Methods
Design
A qualitative case study approach was employed in this phase of the project. Data were generated in semi-structured interviews conducted with health professionals employed in a single health care facility. Case study method is a present-orientated approach used to study contemporary phenomena. It is particularly useful in the study of programmes \(^6,23\). The phenomenon of interest is examined as a unit of analysis and is intensively studied in single case or multiple cases. A single case approach is used where the case represents a typical case or when it may be a revelatory case \(^6\).

Case studies use multiple data sources to document and analyse the phenomenon. In the larger study, there were three data sources; a database audit, survey and interviews. In this paper, the findings of the interviews will be reported. The findings are generalisable to theoretical propositions rather than universals and populations \(^6\).

The setting for the case study was a regional tertiary hospital. Prior to data collection, ethics clearance was obtained from both Hospital and University Human Research Ethics Committees.

Sample
Interviews were conducted with key informants in the case facility. Seven people were interviewed; five clinical staff and two staff with administrative positions. Sampling was purposive and used snowball methods \(^2\). Individuals, who were judged by the researcher to be well informed about infection control policy and practices, were approached to ascertain their interest in participating. In addition, individuals who were suggested by other participants were also approached. After gaining written informed consent from each participant, interviews were conducted at a mutually agreed upon time and place within the hospital.

Interviews
The process used in the facility to admit and accommodate patients with a previous history with a multi-resistant organism was explored in semi-structured interviews. All interviews were audiotape recorded and later transcribed verbatim. For the participants with a clinical role in the facility, the interview was structured around an hypothetical scenario. Participants were asked to describe the processes they would undertake in response to the scenario presented and to provide their reasons.

Participants with a management role in the facility were asked to discuss aspects of the facility's infection control policies and issues associated with their implementation.
They were asked to comment specifically on issues identified in the survey phase of the study. Broadly, these issues were the admission policy and processes, difficulties with patient segregation, knowledge of infection control policy and procedures and specific experiences with the management of patients with a history of colonisation with an HAI.

Data analysis
The seven interview transcriptions were first compared to the audiotapes to check for transcription accuracy. The data were organised using word processor techniques and then analysed using qualitative content analysis. To do this, each transcript was read and significant statements were identified, extracted into a separate word table and labelled. These labelled statements were categorised according to their central point and then collated. Before proceeding further, the extracted statements were checked with their location in the original transcripts to ensure the meanings remained consistent with the context in which the statements had been made during interview. Each transcript was treated in this way. The categorised statements from each transcript were compared and collated within common category groups. Six categories were generated from this process. In the final procedure, the collated, categorised statements were examined and themes generated which illuminated patterns and informed the interpretation.

Findings
Six categories of significant statements were generated. These were resources, the patient, clinical reasoning, roles and responsibilities, expectations of speciality units, and policy. From this analysis, a thematic interpretation synthesised the findings.

Central theme
The central theme is named shouldering responsibility and bearing responsibility. It was derived from the words of one of the interview participants, who commented:

...so it [infection control] is sort of shouldered by everybody and borne by nobody, the responsibility for these things.

Analysis revealed three interdependent elements or dimensions of this theme – the patients (infectious and others), space and territory, and accountability. Figure 1 presents a diagrammatic representation of the findings. The theme and its elements capture an inherent tension that was associated with accommodating potentially infectious patients in the case facility. These findings are discussed below. Verbatim quotes are provided without a participant key in an effort to protect the identity of the participants, who could be placed at social risk if comments were linked to them.

The patients (infectious and others)
"Infectious patient(s)" was the term use by participants when referring to individuals previously infected or colonised with specific organisms. It was, essentially, a negative construction, 'infectious patients' drawing comparison with other patients. Infectious patients were seen as problematic, complex and medically chronic, well known to the facility as people who "bounce back all the time", a risk to "other patients" and a burden to staff. One clinical staff participant explained the burden in the following terms:

I think every ward has had their goutful of these patients and they do the round of the wards, and they are not supposed to come back again, and their reaction is 'I am not having this patient'......

Another clinician also described the way infectious patients were seen:

And it is not uncommon to say about the patient, that this patient is a real 'grot' or whatever.

Participants provided key insight into accommodation allocations. They discussed where they thought patients, both infectious and others, should be accommodated and for what reasons. Clinicians identified a range of patient needs that necessitated single room accommodation. As one participant said:

Major surgery needs single rooms; dying patients, extremely noisy patients and disruptive patients need a single room... There is a need for a lot of single rooms really and we just don't have them.

Further, it was suggested that 'infectious patients' might take a low priority:

The clinicians at ward level tend to place infection control risk as their lowest priority.

These illustrations also highlight the second issue, space and territory.

Figure 1. Factors influencing the accommodation in hospital of individuals with a history of infection or colonisation with a multi-resistant organism.

<table>
<thead>
<tr>
<th>Issues</th>
<th>Tensions</th>
<th>Bearing the responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shouldering the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>responsibility</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Space and territory</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accountability</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Space and territory

The material resources of the hospital presented a major issue linked with accommodating potentially infectious patients in accordance with the hospital protocol. There was a perception that there was a lack of adequate space to isolate patients, in line with the policy. While recognised as a 'desirable' action, the demands for single rooms was high and, as illustrated above, the ways of prioritising need for the available space did not necessarily place infection control at the top. Participants provided some insight into the reasons for infection control needs being prioritised lower than other considerations. As one participant commented:

... therefore if they use those rooms for patients who are colonised or infected with multi-resistant organisms they [the clinical staff] can't comply with their traditional practice.

“Traditional practice” was not clearly explained by this participant. When the phrase is examined in its context, it appears to refer to the value judgements made by clinicians concerning what problems or what people they perceived as most deserving of single room accommodation. The participants also identified individuals with visible disorders or behaviours as ones worthy of single room accommodation. Such patients may be more difficult to nurse and may be more disruptive, in shared accommodation, than infectious patients whose problems are less visible or disruptive. Meeting demands within the resource limitations was a source of frustration:

We might have someone who has come in with a history of whatever it was and we don't have a single room, like we have five single rooms and there is no possibility of moving any of those patients out for whatever reason... you try and you try and you try... we ring the coordinator and they say there is no possibility of getting a bed... and the patient may be sitting in a bay with other people, that happens.

One of the participants, who was a member of the administrative staff, commented on the space problem at a hospital level and in terms of occupancy rates:

You can only put the right patient in the right bed if you have enough beds, and if you have an occupancy of beds that is not 100% all the time. No hospital works efficiently with an occupancy rate of more than 85-90% because... soft fluctuations... and people end up as outliers in other wards and that is a particular problem with nosocomial patients.

With such demands and priorities to be responded to, a territorial dimension was identified whereby space in wards was designated and protected:

... each nurse, clinician or NPC [nurse practice coordinator] is looking only at their own ward and their own patients and their own needs...

One of the results of this issue is that the 'infectious patients' were likely to be transferred, that is, moved around and between wards within the facility. This was a means of managing the problems. As one participant commented:

... they [clinical staff] just wanted the patient moved as they don't want them to be their problem anymore.

Accountability

Participants' discussion of space issues also revealed that they had perceptions about which staff had accountability for implementing contact precautions. Various people were identified as having this role, from clinical staff to hospital administrators and logistics managers. In addition, there was confusion about the process by which accommodation was allocated for the affected group. There was a protocol, which extended from the point of admission through hospitalisation to discharge, but participants did not clearly or consistently describe it. The first point of contact, often the emergency ward was identified:

I think when the patient gets admitted downstairs [ED] and if there has been a previous admission, there should be an alert on it and they should pick that up. So whether the clerks are doing that, and saying 'hey this patient has an alert' or whoever, I don't know.

Not only clerks but also the emergency department medical officers were identified as responsible for implementing contact precautions. Among the participants, there was recognition that all clinicians at the coalface of clinical care and treatment bore some responsibility, but difficulties in enacting this responsibility were also identified. These related to perceptions of individual accountability and also to workloads:

... we could have 20 new admissions, that includes new patients coming in, going home and going to other wards. So things can be really, really busy so staff don't have time and things are overlooked.

Knowledge was also associated with accountability. There was a range of opinion among participants concerning the infection control knowledge of clinical staff. The application of knowledge in the clinical situation, rather than theoretical knowledge or knowledge of principles, was identified as an issue, particularly in the pressured environment described elsewhere. In this example, processes that may or may not occur as part of an admission were commented upon:

If you have a junior nurse and they've got the after hours coordinator or some other person in authority saying 'you are getting a patient from X ward, a transfer for you', 'oh yes of course', whereas senior staff will say, 'sure' but they will look into it first...
"Looking into it" involved examining the bed situation, knowing the policy and understanding the notification and alert processes and applying them.

Accountability related to what was done, by whom, for what reasons and with what knowledge but also because of the consequences of not implementing the infection control policy consistently. The risks posed to other patients in the facility by not implementing contact precautions were acknowledged and accountability for consequences was set out by one participant:

I see it as a serious adverse event. You can never identify how many people are actually affected as a result of the adverse event. To me, it is as serious as giving the wrong drug or giving a drug to which a patient is allergic.

Discussion
These findings show that while the responsibility for accommodating potentially infectious patients in accordance with contact precaution guidelines is shouldered by the facility and its employees, there are issues concerning the manner in which this responsibility is borne. These issues are multifaceted and appear to relate to a complex interaction of clinical values, material resources and administrative accountability.

Clinical values have been identified in other research. In an intensive care context, Macbeth found that nursing practice values, such as demonstrating clinical competence and proficiency in prompt response to alarms, at times displaced infection control as a priority. In the present study, values were again evident as a factor that mediated infection control practices. Clinicians prioritised the use of single room accommodation based on their perceptions of patients as having difficult illnesses, terminal illness or bothersome behaviours. It was the needs of these patients that competed with infection control needs.

The findings also provided some evidence of the negative construction of patients who were potentially infectious. They were, in effect, a challenge to patient-centred health care ideals. This is problematic in that these are people who, as vulnerable in-patients during previous hospitalisation, and in circumstances beyond their control, have been infected or colonised with resistant organisms.

The type of patient who acquires antibiotic resistant organisms is clearly described in the literature. These patients are often elderly, immuno-compromised or have invasive devices or surgical wounds. It is often because of these conditions that they are re-admitted to hospitals rather than because of their history of colonisation or infection with an antibiotic resistant organism, which is, however, a compounding issue. They present on re-admission, not as vulnerable chronically ill individuals, but rather as a threat to the containment of multi-resistant organisms associated with HAIs in the hospital.

A lack of sufficient accommodation of the type indicated in the protocols was presented as a significant factor influencing the placement of potentially infectious patients. In the survey of nursing and medical clinicians that was conducted as part of the larger project, this was identified as the most influential factor that prevented accommodation of such patients in accordance with contact precautions. Again, this finding supports other research and literature from the Society for Healthcare Epidemiology of America (SHEA) and The Infectious Diseases Society of America Joint Committee on the prevention of antimicrobial resistance in hospitals (IDSA). However, the findings of the present study also identify a territorial element to material resources issues. Value judgements affect clinical decision making and if infection control imperatives are displaced in the process, the challenges of preventing HAIs are compounded.

Recommendations
Together, these factors provide a partial but new insight. While the scope of the findings is limited in that they apply to a single facility, important aspects of the problem are highlighted. These aspects potentially have relevance in like-contexts and can be subjected to further scrutiny. The issues appear to be multi-faceted, whereby practice and organisational issues interdependently influence the implementation of a specific infection control strategy. In order to advance a creative, clinical response to the problem of how responsibilities might be borne, a multi-disciplinary, developmental and systematic approach is suggested. Further, it is argued that, in order to advance practice, there is a need to look beyond the well-worn framework of surveillance and compliance.

A practice development model has the potential to be harnessed to promote lasting change. This change model seeks to advance effective, patient-centred care, via an approach wherein the intersection of practice, strategy and organisational factors is identified and worked on. It is patient and practice centred but also strategic. This differs to infection control surveillance and compliance approaches which tend to begin with a policy and cast down and outward, toward strategy, practice and the patient; this is in the search for issues and problems as well as ways of attaining compliance with protocols. In distinction, practice development is strategic yet begins at the patient-practice interface and works outward, developing the skills and knowledge of health care teams towards responsive, accountable practice.
The findings of this study help to show what is happening in practice, to patients who may potentially be the source of pathogens. It shows what clinical issues surround such patients' accommodation and how these fit with the imperatives of strategic protocols such as additional precautions. A practice development model provides a good starting point for working on creative solutions to accommodation issues. To assist this, further research is needed into multiple contexts and, with practitioners involved, into the complex underpinnings of clinical decision making which are the starting and end points to preventing HAIs.

References


20. Courtenay M. A little knowledge is a dangerous thing. Nurs Times 1997; 93(29):76.


