

Knowledge and understanding of patients and health care workers about multi-resistant organisms

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Abstract. *Background:* We have perceived a deficit in both patients' and health care workers' (HCWs) knowledge and understanding of multi-resistant organisms (MROs) which may influence care and compliance with infection control precautions. We aimed to explore the knowledge and understanding of patients and HCWs about MROs.

Methods: Between September 2011 and April 2012, a purposive sample of 19 newly identified and existing patients with MROs were recruited. A 15 to 20 min taped interview was conducted and analysed to identify common themes. In addition, 55 HCWs completed a questionnaire to assess knowledge regarding MROs.

Results: Almost half (47%) of the patients reported they 'know very little' or 'do not know anything' about terms including MRO, MRSA and VRE. Patients reported they were not provided with sufficient explanation regarding colonisation or infection. While seeing single-room accommodation as an advantage, some felt like an 'alien' and were 'lonely'. Precautionary measures used by HCWs were noted by patients but they were unaware of the reasoning behind them. HCWs (76%) explained the terms MRO, MRSA and VRE adequately. Only 36% of them adequately explained colonisation and infection. Only half of the RN and Medical Officer respondents informed patients about their MRO status. Explanation about the type of MRO, its spread, risk factors and preventative measures were the topics HCWs perceived as important to discuss with patients.

Conclusion: Our findings suggest that patients' knowledge of their MRO status is poor. Given the major role in educating patients, our study identified a deficit in HCWs' knowledge regarding MROs. The information patients and HCWs perceived as important will assist in the development of future educational resources.

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Introduction

Multi-resistant organisms (MROs) including methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant enterococci (VRE) and extended-spectrum β -lactamase (ESBL)-carrying Enterobacteriaceae are an ever-increasing problem worldwide. Many of these MROs are difficult to treat and persist inside and outside the healthcare environment. Patients in the health care setting are typically at an increased risk for the acquisition of MROs due to the presence of multiple risk factors such as being elderly with co-morbid conditions, acutely ill with lines and catheters and on multiple antibiotics. It is therefore important that patients and HCWs have an understanding of MROs in order to minimise their transmission and severe consequences.

There is an abundance of literature exploring patients' knowledge and understanding of MRSA, but very little focusing on other MROs.^{1,4,5,6} The effects of isolation have been the major focus of many such studies.^{2,5,7–10} There are only a few studies based in Australia: one explored the patients' perception of infection and impact on quality of life,⁷ and more recently, a meta-synthesis explored the effects of source isolation on patients including changes in their lifestyle.¹⁰ Overwhelmingly, patients reported being diagnosed with MRSA as a negative experience.^{5,11} The literature also suggests that the quality of the patients' knowledge was poor^{1–3,10} and often based on media reports.^{1–3}

Similarly, research into the knowledge and perceptions of HCWs of MROs has found that the quality of knowledge is

Implications

- Training courses should continuously build and reinforce healthcare worker (HCW) knowledge and confidence with communicating information about multi-resistant organisms (MROs) to patients.
- Policies should include protocol for HCW responsibilities in patient education about MROs.
- Factsheets, for example, should be used to support patients and HCWs knowledge and fill gaps.

poor. While HCWs are aware of basic infection-prevention practices such as hand hygiene, isolation precautions, the use of personal protective equipment (PPE) and cleaning, this knowledge is not always reflected in infection-prevention practices adopted by HCWs.^{12–15} Inadequacy of HCWs' knowledge has also been reported as a barrier in their role as advocates in the promotion of infection-control practices.^{16,17}

At Liverpool Hospital, Infection Prevention and Control staff notify the ward nursing staff or the patient's medical team, who are then responsible for informing the patient of their MRO status and providing education. It has been perceived that there is a gap in the patients' knowledge and understanding of their MRO status which may influence their compliance with their care. This is based on recent patient complaints of not being informed of their MRO status. We sought to determine patients' and HCWs' knowledge and understanding of MROs such as MRSA, VRE and ESBL.

Methods

Liverpool Hospital is a principal teaching referral hospital with capacity for 875 beds. There is an average of 80 patients per day in residence who have either been previously or newly identified to have acquired a MRO. Thirty-five new cases of MROs per 10 000 occupied bed days (OBDs), including acquisitions within the hospital and cases detected on admission to the hospital, are reported each month; this includes MRSA, VRE, ESBL and other emerging MROs.

Between September 2011 and April 2012, a purposive sample (i.e. participants based on selected criteria) of previously and newly identified patients with MROs aged 18 years or over and identified as English-speaking were selected from the 'Daily Inpatients by Infection Control' list which was generated from Cerner electronic medical record (eMR). The eMR is an integrated database that provides real-time access to patient results and clinical information across care disciplines. The hospital's Infection Control Microsoft Access database was also used to extract information regarding the patients MRO history such as: type of MROs, date and type of acquisition (i.e. new case, on admission or readmission). A 15–30 min taped semi-structured interview was conducted. A taped interview was used as it is optimal for collecting data on individuals' histories, perspectives and experiences. The participants were

able to respond freely and express different opinions rather than being restricted to coded opinions.¹⁸ Two pilot interviews (included in the results reported in this study) were conducted in order to test the validity of the interview schedule. The interview schedule included a question relating to 'what patients know and understand' about their MRO status (i.e. words and terms such as MRSA, VRE etc.). Follow-up questions were provided such as: (i) by whom and when they were told; (ii) difference between colonisation and infection; (iii) effect of MROs and changes they have made in their daily activities; and (iv) precautions undertaken by HCWs as well as the precautions they utilise at home to prevent the spread of MROs (Appendix 1). Questions were encouraged, and recommendations and comments were also sought. All interviewed patients were provided with a thorough explanation of their MRO status and an information sheet.

The interviews were transcribed verbatim. The framework approach was used to analyse the data.¹⁸ Briefly, the transcripts were read by one investigator multiple times and recurrent themes noted (familiarisation stage). Emergent and *a priori* themes were then used to establish an initial coding framework (identifying a thematic framework stage). Themes and subthemes from the initial framework were identified and discussed. Systematic coding was conducted (indexing and charting) after which patterns, commonalities, differences and meanings were identified using a data matrix (mapping and interpretation).¹⁸

A self-report questionnaire was used to assess HCWs' knowledge regarding MROs. The questionnaire included a combination of the following types: open-ended, multiple choice and questions using a six-point *Likert* scale. Answers to open-ended questions were grouped into themes and frequency and cross tabulations were used where appropriate.

Approval to conduct the project was granted by the local district's Human Research and Ethics Committee.

Results

Nineteen patients were interviewed with a total interview time of 7.1 h, an average of 22.4 min per interview. The mean age of participants was 54 years (range: 18 to 85 years), more than half were female ($n = 11$, 58%). The majority of patients had MRSA ($n = 10$, 53%), followed by VRE ($n = 6$, 32%), both MRSA and VRE ($n = 2$, 11%) and ESBL ($n = 1$, 5%). Almost half of the patients had a combination of the following co-morbidities: chronic airways limitation, hypertension, Type 1 diabetes mellitus and renal conditions.

Knowledge and understanding of the terms multi-resistant organisms, MRSA, VRE, ESBL, colonisation and infection

Almost half ($n = 9$, 47%) of the patients reported that they 'know very little' or 'do not know anything' about the terms MRO, MRSA and VRE. For patients, information they received seemed to have been inadequate and unsatisfactory;

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