Antimicrobial stewardship and the hospital nurse and midwife: how do they perceive their role?

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ABSTRACT

Objectives Our aim was to determine the views of nurses and midwives in an acute hospital regarding a potential role in an antimicrobial stewardship programme.

Methods An online survey about antimicrobial stewardship was distributed to nursing and midwifery staff at the Royal Cornwall Hospitals NHS Trust. Descriptive statistics were used for analysis.

Results Eighty responses were received. Forty-three (54%) claimed to have heard the term antimicrobial stewardship. Only seven (9%) had cause to look at the hospital's antimicrobial guidelines at least once a week. Between 47 (60%) and 68 (87%) respondents agreed they should be involved in a range of stewardship roles. Constraints of time and workload, lack of knowledge and lack of adequate staff training were the three main perceived challenges to a wider role.

Conclusions Staff in this survey recognise the potential for wider antimicrobial stewardship roles. They also identify challenges to undertaking these roles. Some of these barriers could be overcome by provision of education and support; hospital pharmacists may be able to assist with this role development.

INTRODUCTION

The emergence of antimicrobial resistant organisms is recognised as a growing public health and patient safety threat.^{1,2} Antibiotics are among the most commonly used medicines in hospital practice, with one in three patients receiving an antibiotic during their inpatient stay. However, it is acknowledged that antibiotic prescribing in acute care hospitals is unnecessary or inappropriate in up to 50% of prescriptions.³

'Antimicrobial stewardship' relates to the careful and responsible management of antimicrobial use, and stewardship programmes aim to optimise antimicrobial therapy, prevent antimicrobial misuse and minimise antimicrobial resistance (AMR). Antimicrobial stewardship (AS) programmes are interdisciplinary and typically involve physicians, pharmacists, control of infection staff, nurses, other healthcare workers and support personnel. NICE (National Institute for Health and Care Excellence) guidelines define the term 'antimicrobial stewardship' as 'an organisational or healthcare-system-wide approach to promoting and monitoring judicious use of antimicrobials to preserve their future effectiveness'.⁴

The Department of Health Advisory Committee on AMR and Healthcare Associated Infection identified senior nurses as core members of the hospital's AS management team.⁵ In 2011, it was

argued that although nurses are the most consistent providers of care at the bedside, their involvement in AS programmes has often been limited.⁶ More recently, it is contended that all healthcare professionals can have an active role in recognising, implementing and sustaining the principal aims of AS programmes.⁷ A 2013 paper describes the potential role of the nurse in an inpatient setting in optimising antibiotic therapy through AS, though the paper did not report on what routine activity nurses did actually undertake.⁸ A more recent American paper notes that although the role of staff nurses in AS programmes has not formally been recognised, they have always performed numerous functions that are integral to successful AS.⁹ This American view sees nurses as antibiotic first responders, central communicators, coordinators of care, as well as 24-hour monitors of patient status, safety and response to antibiotic therapy. Indeed, in promoting an international collaborative, multidisciplinary approach to optimising the use of antibiotics, it is argued that AS models need to evolve from infection specialist-based teams to develop and use cadres of healthcare professionals—including pharmacists, nurses and community health workers—to meet the needs of the global population.¹⁰

Though the strategy and aspiration might be that all nurses should contribute to AS activities, a Scottish study of nursing and midwifery staff (of which approximately half worked in an acute setting) reported that only one in five had heard of AS, and that the main challenge to nurses and midwives becoming more involved with AS to be lack of time due to workload pressures.¹¹ Others have found similar low levels of engagement activities with an AS role caused by low awareness of the components of AS programme and a need for appropriate education.¹²

As a 750-bed teaching district general hospital we already have an AS programme that fulfils many of the criteria outlined in national standards,¹³ though there is little active engagement with the general nursing profession. We set out to identify the views of nurses and midwives working at our hospital towards their potential role in an AS programme with the aim of developing future engagement strategies that would enable and support the nurse to take on a wider more prominent AS role.

METHOD

Questions for the survey were developed by the authors based on a review of the literature and were piloted with a small number of nurses. Questions were mainly closed questions with predetermined answers. Responses to the pilot were not incorporated into the results but did influence the final

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Table 1 Potential antimicrobial stewardship roles

	n=78
Supporting implementation of care bundles that cover antibiotic use such as sepsis, pneumonia, COPD	68 (87%)
Prompting medical staff about intravenous to oral switch	63 (81%)
Prompting medical staff to review those patients who do not have a clear antibiotic plan in the medical notes within 48–72 hours of antibiotic starting	62 (80%)
Ensuring appropriate collection and sending of samples/cultures	58 (74%)
Educating patients/public about antimicrobial stewardship	53 (68%)
Prompting medical staff to review patients who appear to be on protracted antibiotic courses	50 (64%)
Ensuring appropriate antimicrobial use in accordance with Trust guidelines (MicroGuide)	48 (62%)
Role model/raising awareness of the importance of stewardship activities in the hospital	47 (60%)
Don't know	6 (8%)
Other	1 (1%)

COPD, chronic obstructive pulmonary disease.

survey questions. A link to the survey on SurveyMonkey was delivered via email to ward managers and matrons for cascading to their nursing and midwifery teams, as well as being included on two occasions in a general hospital bulletin emailed to all staff. The survey remained open for a 4-week period in early 2017.

RESULTS

Eighty responses were received (76 nurses and 4 midwives) with the largest proportion (60%) of respondents working in a medical specialty. Band 5 nurses represented the largest group of respondents (35, 44%), then 22 (28%) at band 6, 19 (24%) at band 7, and 4 (5%) at band 8.

In relation to how they rate their knowledge of antibiotics, 2 (3%) answered very good, 23 (29%) good, 41 (52%) average, 11 (14%) limited and 2 (3%) minimal. Forty-three (54%) staff claimed to have heard the term AS, of whom 32 (74%) expressed confidence in understanding what it means.

When asked how often they have cause to look at the hospital's antimicrobial guidelines available on the intranet or as a mobile phone application, 43 (54%) responded never, 30 (38%) once a month, 6 (8%) once a week and 1 respondent (1%) answered daily. Forty-eight (60%) of respondents thought that the extent of omitted doses of antibiotics across the Trust is a problem, 11 (14%) thought it not a problem and 21 (26%) did not know.

When asked what type of AS roles a nurse/midwife should be involved in, responses are shown in [table 1](#), where the respondent could tick as many answers that apply.

The 'other' free text response described a role of correct administration of antibiotics.

The challenges that respondents anticipate personally in accepting and embedding the AS roles are shown in [table 2](#).

Table 2 Perceived challenges to a wider antimicrobial stewardship role

	n=79
Time constraints/workload	62 (79%)
Lack of knowledge/keeping knowledge up to date	54 (68%)
Lack of adequate staff education/training	52 (66%)
Confidence in challenging medical staff/prescribing decisions	41 (52%)
Changing practice/habits/attitudes of other nurses	37 (47%)
Patient/family expectations and attitudes	26 (33%)
Not sure that this is relevant to my role	12 (15%)
Other (please specify)	7 (9%)
None	1 (1%)

Of the 'other' free text responses, four identified challenges with the reluctance of junior doctors to change prescribing unless prompted by a senior doctor, and one described the nurse's lack of awareness as to why antibiotics are prescribed. Two respondents answered 'other' but did not enter any text.

As regards ongoing support needed to take forward an AS role on the ward (where staff could tick all that apply), 68 (85%) wanted protected time for teaching/learning, 59 (74%) wanted support from various sources such as colleagues/line manager/clinicians; continued education was wanted either by email (49, 61%) or by regular safety briefings (51, 64%); 45 (56%) wanted an expert contact/mentor; and 8 (10%) gave other responses that actually related to protected time for education. Only 6 (8%) gave suggestions as to who the expert contact or mentor should be, nominating either a pharmacist, a senior nurse or an infection control nurse.

DISCUSSION

Our survey was based solely in an acute hospital setting so results cannot be easily compared with other surveys from across an acute and community/primary care work setting,¹¹ or from other countries.¹² We found only 25 (32%) of our staff rated their knowledge of antibiotics as 'good' or 'very good', similar to the proportion (36%) in a Scottish study.¹¹ Forty-three (54%) of our respondents had heard the term antimicrobial stewardship compared with only 22% from the Scottish study. As the latter study was undertaken in 2014, it is to be expected that more staff would recognise this term in 2017 due to its promotion and publicity over the past few years,¹⁴ though as McGregor *et al* commented in 2014, and others since then, there still remains scope for education to improve knowledge in this area at undergraduate level and beyond.^{11 15} Thirty-two (74%) of the 43 staff who had heard the term AS said they were confident in their understanding of what it meant, though we did not ask them to describe its meaning.

Over half (43, 54%) of our staff noted that they never look at the Trust's antimicrobial guidelines, with only seven (9%) respondents looking at the guidelines at least once a week. This contrasts with the question about potential AS roles, where two-thirds of respondents acknowledged 'Ensuring appropriate antimicrobial use in accordance with Trust guidelines' as a role, for which reference to the guidelines would be necessary. This disparity between nurses/midwives currently not referring to the antimicrobial guidelines whereas they would need to be fully aware of the guidelines as part of an AS role needs further exploration.

Forty-eight (60%) respondents perceived omitted antibiotic doses as a problem. Over the past 2 years there has been considerable activity within the Trust around omitted doses of antibiotics. For instance, between March 2015 and September 2015, monthly emails were sent to senior nurses detailing the frequencies of antibacterial omitted doses per ward per month, highlighting those omitted due to medication unavailability and requesting action if rates were deemed inappropriately high. Those wards with relatively high rates of omitted doses received a visit from a pharmacy technician to discuss their performance compared with other wards and how performance could be improved. Hence, it may be considered worrying that 32 (40%) of staff responded that either antibiotic dose omission is not a problem or they did not know it was a problem.

The two most popular responses relating to potential AS roles were 'Supporting implementation of care bundles that cover antibiotic use' and 'Prompting medical staff about IV to oral switch'. Interestingly though the role options offered in our survey do not fully map over to the answers offered in the Scottish study,¹¹ there does seem to be much greater recognition in our small study for the nurse to take on an AS function. For instance, 53 (68%) of our respondents see 'Educating patients/public about antimicrobial stewardship' as a role whereas only 22% in the Scottish study saw 'Educating colleagues/patients/public' as a role. NICE guidelines recognise the need to make people aware of how to correctly use antimicrobial medicines and the dangers associated with their overuse and misuse, though there is no specific mention of action to be taken in a hospital setting.¹⁶ In our survey, the main challenge foreseen in accepting and embedding an AS role was 'Time constraints/workload', ticked by 62 (79%) respondents, with the next two biggest challenges being 'Lack of knowledge/keeping knowledge up to date' and 'Lack of adequate staff education/training'.

Most respondents acknowledged that they would want support and education to take forward an AS role, though how best to deliver the necessary skills and development requires further study.^{17,18} One study shows that following education, nurses were able to articulate the risks of treatment with intravenous antibiotic therapy and were aware of the benefits to actively promote switching to oral antibiotics.¹⁹ In further support of this AS role, Broom and colleagues reiterate the point that nurses are central to the delivery of infection care, administering antibiotics and monitoring potential or actual infections 'at the bedside'.²⁰ From their interviews with nurses the authors conclude that nurses influence the everyday use of antibiotics, holding significant power and authority in operationalising so-called medical decisions. They argue that this places nurses as importantly situated in terms of shaping prescribing behaviour and antibiotic use.

Likewise, Olans and colleagues note that throughout the inpatient stay, the nurse is the central communicator among doctors, the pharmacy, the laboratory and discharge planner.¹² The nurse is also a primary information source for patients and families, reinforcing and updating information from physicians, and providing education about medications and their appropriate use. These authors comment that between 25% and 50% of patients will receive an antibiotic during any given hospital stay (it is approximately a third of our inpatients in our hospital who receive an antibiotic), and given the risk of acquiring an antibiotic-resistant infection, it is certain that every nurse will directly confront the consequences of antibiotic resistance.

In their paper looking at how hospital electronic prescribing systems could be used to promote and support the appropriate use of antibiotics,²¹ the authors comment that the studies they

reviewed did not describe how these data were used to trigger action across members of the multidisciplinary team other than prescribers. We would argue that outputs from such systems, for example, prescription surveillance of missed doses,²² could also prompt action from nursing staff, though potential barriers to interprofessional collaboration have to be overcome. In addition, Wentzel *et al* note that to perform the complex antimicrobial-related tasks well, nurses need to consult various information sources on a myriad of occasions, and comment that hospital information infrastructure may be unsupportive of AS programme-related tasks, mainly because information is not structured to match nurse tasks, is hard to find, out of date and insufficiently supportive of AS programme awareness.²³

The main limitations of this study were the small sample size from just one hospital, and the fact that we do not know how many staff saw the survey link and chose not to respond. We acknowledge that respondents might have given false answers aiming to fulfil certain expectations, though to mitigate this response bias, questionnaires were anonymised. In addition, the chosen survey items have not been validated, though the questions were adapted from a previous survey,¹¹ and we piloted the survey to evaluate comprehensibility of the questions.

CONCLUSION

Enhancing the role of the hospital nurse in AS has to be the next initiative to promote judicious antibiotic prescribing and to combat AMR. Coaching and mentorship for nurses are key to an AS role and hospital pharmacists may be able to assist with this role development. As such, a suitably resourced pharmacy department is ideally placed to nurture and support nurses to take on roles such as prompting intravenous to oral switching and prompting the review of patients without a clear action plan 48–72 hours after commencement of antibiotics. In line with NICE guidelines, pharmacy in tandem with infection control teams can assist in the development of information for patients on antibiotics as nurses see the education of patients and public about AS as a pivotal role. However, the best way to educate nurses in AS activities, including helping them to grow confidence in challenging the practice of others, requires further study so that operational constraints—time and resources for the delivery of the education to the nursing staff, including agency nurses—can be overcome.

What this paper adds

What is already known on this subject

- ▶ Antimicrobial resistance is a global problem.
- ▶ Antimicrobial stewardship programmes should involve all healthcare professionals. Nurses and midwives in a hospital setting may have a wider stewardship role than currently provided.

What this study adds

- ▶ Nurses and midwives recognise there are additional stewardship functions they could undertake.
- ▶ Time and workload constraints are seen as a barrier. Pharmacists may be able to help nurses and midwives overcome the identified challenges of education and training to take on this role.

Competing interests None declared.

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