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Major Article

Exploring the nurses' role in antibiotic stewardship: A multisite qualitative study of nurses and infection preventionists

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Background: There is a growing recognition of the need to partner with nurses to promote effective antibiotic stewardship. In this study, we explored the attitudes of nurses and infection preventionists toward 5 nurse-driven antibiotic stewardship practices: 1) questioning the need for urine cultures; 2) ensuring proper culturing technique; 3) recording an accurate penicillin drug allergy history; 4) encouraging the prompt transition from intravenous (IV) to oral (PO) antibiotics; and 5) initiating an antibiotic timeout.
Methods: Nine focus groups and 4 interviews with 49 clinical nurses, 5 nurse managers, and 7 infection preventionists were conducted across 2 academic pediatric and adult hospitals.
Results: Nurse-driven antibiotic stewardship was perceived as an extension of the nurses' role as patient advocate. Three practices were perceived most favorably: questioning the necessity of urinary cultures, ensuring proper culturing techniques, and encouraging the prompt transition from IV to PO antibiotics. Remaining recommendations were perceived to lack relevance or to challenge traditionally held nursing responsibilities. Prescriber and family engagement were noted to assist the implementation of select recommendations. Infection preventionists welcomed the opportunity to assist in providing nurse stewardship education.
Conclusions: Nurses appeared to be enthusiastic about participating in antibiotic stewardship. Efforts to engage nurses should address knowledge needs and consider the contexts in which nurse-driven antibiotic stewardship occurs.

Antibiotic resistance is a global health threat, and both national and international efforts have underscored the need to slow antimicrobial resistance. In 2014, the Centers for Disease Control and Prevention (CDC) called for hospitals to have antibiotic stewardship programs,[1] defined as coordinated evidence-based efforts to optimize antibiotic use.[2] In 2016, at the 71st United Nations General Assembly, world leaders pledged to combat the spread of resistance,[3] and since 2017, hospitals have been mandated by the Joint Commission to implement antibiotic stewardship programs.[4] However, the implementation of stewardship programs has principally focused on prescribers and pharmacists. Nurses have been largely absent from stewardship efforts, with 1 multisite study finding that only 38% of inpatient, clinical nurses were aware of the phrase "antibiotic stewardship."[5]

Recently, several editorials have advocated for the formal inclusion of nurses in antibiotic stewardship efforts.[6-9] This is due to nurses' widespread involvement in activities that directly relate to antibiotic use and the belief that an absence of partnership with nurses limits the success of antibiotic stewardship programs. Nurse-driven antibiotic stewardship can involve a host of activities

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(eg, effective assessments, antibiotic de-escalation, and timely culturing practices). However, nurses' perspectives on the specific stewardship activities that should be targeted and strategies of how to best engage nurses in stewardship efforts are limited.

In July 2016, the CDC and the American Nurses Association (ANA) cosponsored a full-day conference in Silver Spring, Maryland, in which 30 nurses from around the United States discussed strategies to promote nurse-driven antibiotic stewardship and to identify specific nurse-driven antibiotic stewardship activities. A report of the conference, as well as activities of the working group, are detailed in the white paper copublished by the CDC and the ANA.[10]

The purpose of this descriptive qualitative study was to explore the attitudes of nurses and infection preventionists (IPs) toward 5 of the nurse-driven antibiotic stewardship activities recommended by the ANA/CDC working group. Specifically, that nurses may play a major role in optimizing antibiotic treatment by: 1) questioning the medical necessity of urine cultures; 2) ensuring proper urine and blood culturing techniques; 3) initiating the switch from intravenous (IV) to oral (PO) antibiotics; 4) obtaining and recording an accurate penicillin drug allergy history; and 5) initiating an antibiotic timeout. These practices were selected beccause they offer a comprehensive approach to improved antibiotic use. In particular, proper culturing procedures foster patients' receipt of indicated targeted therapy; the prompt switch from IV to PO may result in shorter inpatient stays[11]; accurate drug allergy histories promote optimal therapy[12]; and antibiotic timeouts have been shown to decrease empiric antibiotic therapy.[13] We were interested in 1) participants' attitudes regarding the belief that nurses should play a major role in antibiotic stewardship; 2) challenges to nurses' ability to perform recommended practices; and 3) ways to address identified challenges. We also spoke with IPs, all of whom were trained nurses and held nursing education responsibilities, since they would likely offer a unique perspective on this topic.

METHODS

From March to May 2017, we conducted focus groups and semi-structured interviews with clinical nurses, nurse managers, and IPs who worked in general intensive care units (ICUs) and medical-surgical units of 2 academic hospitals that provide care to adult or pediatric populations in New York City. Convenience sampling was used to recruit participants; nurses and IPs of participating medical-surgical units and ICUs were informed of the study via email distributions and flyer postings. To accommodate participants' varied work schedules, we provided the option of participating in either a focus group or a semi-structured interview in person and in a private room (ie, conference room, staff lounge, or personal office) that was convenient and accessible to participants. Clinical nurses were interviewed separately from nurse managers to facilitate open and honest dialogue. We ceased study recruitment when we reached theoretical saturation, meaning that participants' contributions were repetitive of earlier conversations, and no new information was obtained.

To assist conversation, we used an interview guide piloted by clinical nurses prior to formal data collection. A nurse researcher with a background in qualitative methods (E.C.) led the interviews and focus groups. An advanced practice nurse (A.S.) was present at focus groups and took field notes of contextual information and general impressions of discourse. Discussions were recorded and transcribed using a professional transcription service. All transcriptions were reviewed for accuracy.

Data were coded by 3 members of the research team (E.C., A.S., and A.B.) using a conventional content analysis in which data were grouped according to codes derived from transcripts in NVivo software (http://www.qsrinternational.com/nvivo/nvivo-products). To ensure consistent coding procedures, nearly 25% of transcripts were independently coded by 2 researchers; the application of codes was compared and discrepancies were discussed and resolved by consensus. This study was deemed exempt by Columbia University Medical Center's institutional review board.

RESULTS

We conducted 9 focus groups and 4 interviews with 49 clinical nurses, 5 nurse managers, and 7 IPs. All IPs had worked as clinical nurses. Thirty-seven (61%) participants worked in the adult setting, and 24 (39%) worked in the pediatric setting. All participants had obtained a bachelor's degree, and 13 (21%) had obtained a master's degree. The clinical experience among participants was: 29 (47%) >10 years; 15 (25%) 1-5 years; 14 (23%) 6-10 years; and 3 (5%) <1 year.

Overarching attitudes regarding the nurses' role in the optimization of antibiotics

Participants agreed that nurses should play a major role in antibiotic stewardship. They reasoned that nurses' contributions to optimize antibiotics were an extension of the nurses' role as patient advocate. A nurse manager said, "Our responsibility is to advocate for the patient, so if we could find a way to limit the amount of. . . antibiotics that go into the patient. . .we should. . .it's highly important that we get involved." Participants also maintained that nurses are ideally positioned to optimize antibiotic use given that they are the principal administrators of antibiotics and a constant presence at the patient's bedside. A pediatric nurse in the ICU stated, "We're the ones at the bedside that are. . .questioning things and catching things. . .if we were more involved, we would. . .advocate for the patient and. . . appropriate use."

However, a minority of participants expressed reservations regarding the role of nurses in antibiotic stewardship, noting that patients in their care were acutely ill and required antibiotics. A pediatric medical-surgical nurse said, "By the time [patients] get here, they're. . .in danger of meningitis. . .[In the] outpatient, [antibiotic stewardship is] super-important. . .[for a] cough or sneeze. . .people [are] taking Z-Pak. . ..Here, it's kind of hard." Participants questioned nurses' ability to make valuable contributions to antibiotic stewardship due to nurses' limited role in antibiotic prescribing and the belief that antibiotic orders are vetted by multiple personnel (eg, prescribers, pharmacists, and infectious disease) prior to a nurses' administration of antibiotics.

We report participants' perceptions toward each of the 5 recommended nurse-driven antibiotic stewardship practices separately below. Because findings were consistent across IPs, nurse managers, and clinical nurses, we present a summary of findings across professional roles. Regarding recommended practices, certain perceptions differed between participants in the adult and pediatric setting and are described below.

Recommendation #1: Nurses may play a major role in antibiotic stewardship by questioning the medical necessity of urinary cultures

In the pediatric setting, this recommendation was noted to lack relevance as participants reported that urine cultures were obtained only when medically indicated. In the adult setting, this recommendation was met with general support but was perceived to present 2 major challenges: unaddressed knowledge needs and prescriber pushback. Regarding knowledge needs, participants described uncertainty regarding the indications for urine cultures, especially among patients unable to express symptoms of