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12-2018

Direct care nurses (DCN) as antimicrobial stewards: Summary

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Office of Evidence Based Practice (EBP) – Critically Appraised Topic: Antimicrobial Stewardship

Specific Care Question

What methods have been tried to increase the engagement of staff nurses in antimicrobial stewardship?

Question Originator

Nurse Residency Program

Literature Summary

Background. Antimicrobial stewardship programs (ASP) encourage the appropriate use of antibiotics in hospitals that can improve patient outcomes, reduce microbial resistance, and decrease the spread of infections caused by multidrug-resistant organisms (CDC, 2017). Staff nurses can play an essential role in ASPs, but their part is not well understood or clearly defined (Monsees, Goldman, & Popejoy, 2017). The American Nurses Association (ANA) and The Center for Disease Control and Prevention (CDC) recommend that hospitals (a) provide antibiotic stewardship education for the bedside nurse, (b) include nurses in stewardship rounds, (c) develop specific content and messages to raise awareness for nurses, and (d) encourage nurse antibiotic stewardship champions at the unit level (ANA, 2017).

Study characteristics. The search for suitable studies was provided by Elizabeth Monsees, Ph.D., RN, CIC, FAPIC. Eight articles were provided by Dr. Monsees believed to answer the question. After an in-depth review, none of the studies answered the question.

Key results. Research of nursing's role in ASPs is largely unstudied or qualitative (Monsees et al., 2017). A systematic review (Monsees et al. 2017) identified questionnaires, surveys, and qualitative studies reported a knowledge gap when it comes to nurses' role as antibiotic stewards. Based on these findings, there is a need to enhance nursing knowledge, education, and information support to strengthen ASP practices within the nursing profession.

The ANA and the CDC (ANA, 2017) released a White Paper with recommendations for the roles registered nurses can play in hospital ASPs. Six roles in which bedside nurses can participate within ASPs are: (a) obtain appropriate cultures, and using proper technique; (b) use microbiology results in discussions with peers and other professions; (c) help inform the initiation of antibiotics through recognition of bacterial infections; (d) ensure good antibiotic practices are embedded in quality improvement work; (e) participate in antimicrobial utilization measures; and (f) assess and document each patient's allergy history. The ANA (2017) also suggested five areas of education and training resources that organizations should provide to assist bedside nurses including (a) microbiology education, (b) education about infection versus colonization, (c) assertiveness training to engage in antimicrobial discussions, (d) development of IV to PO antimicrobial switch criteria, and (e) training on taking an in-depth allergy history.

Search Strategy and Results ([see PRISMA diagram](#))

Search provided by Elizabeth Monsees, Ph.D., RN, CIC, FAPIC.

EBP Scholar's Responsible for Analyzing the Literature

David Kemper, BHS, RRT-NPS, C-NPT

EBP Team Member Responsible for Reviewing, Synthesizing, and Developing this Document

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Acronyms Used in this Document

Acronym	Explanation
ANA	American Nurses Association
CDC	Center for Disease Control and Prevention
ASP	Antimicrobial stewardship programs

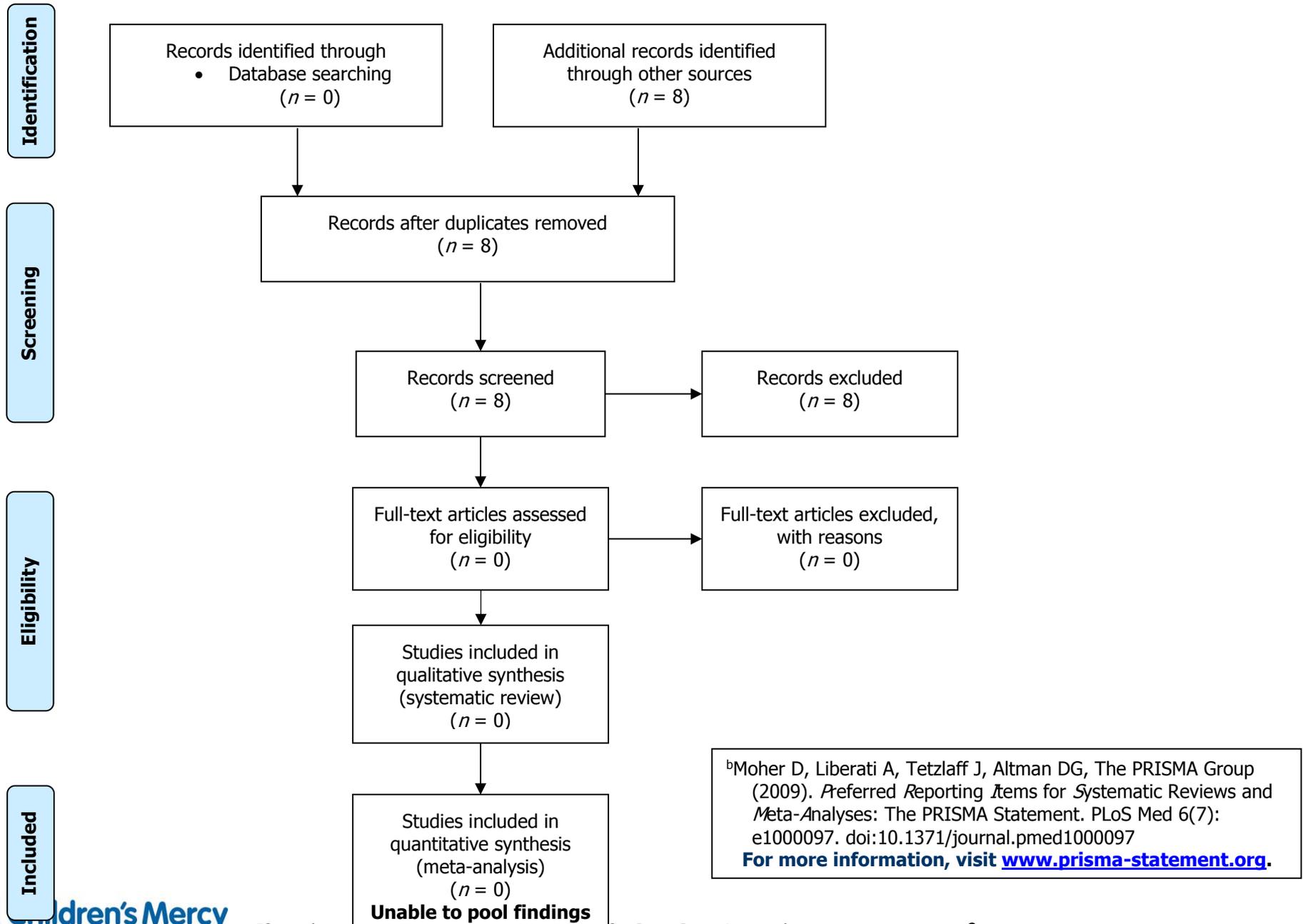
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ABR	Antimicrobial bacterial resistance	
IV	Intravenous	
PO	By mouth	

Date Developed/Updated December 2018

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Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)^b



^bMoher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097
For more information, visit www.prisma-statement.org.

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Table 1
Characteristics of Studies

Monsees 2017

Design	Qualitative Synthesis
Objective	<p>An analysis occurred on antibiotic stewardship programs (ASPs), which reviewed overall knowledge of the following points:</p> <ul style="list-style-type: none"> • Nursing knowledge • Nursing education • Information needs • Patient safety • Organizational factors influencing antibiotic management
Methods	<p>Eligibility Criteria. Three medical databases were searched, and the search focused on inpatient staff nurse involvement in antibiotic stewardship programs (ASPs).</p> <p>Information sources. PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), and Scopus. The search was limited to 2007 to June 4th, 2016. English only.</p> <p>Search. See the full article for search results.</p> <p>Study Selection. The process for article selection included removing duplicates and using inclusion criteria to assess citation titles and abstracts for full-text review. Initially, two authors then verified the articles met inclusion criteria. And finally, all three authors agreed on eligibility and data extraction results. Most of the articles were descriptive with a focus on (a) nursing knowledge of antimicrobial bacterial resistance (AMR), (b) nursing roles and activities in antibiotic stewardship programs (ASPs), (c) e-health decision support systems on improving nursing access to antimicrobial information, and/or 4) hierarchal determinants influencing nurses' involvement in antibiotic stewardship program involvements.</p> <p>Risk of bias (RoB) across studies. Risk of bias was not assessed.</p> <p>Synthesis of results</p> <ul style="list-style-type: none"> • Nursing knowledge, education, and information needs • Patient safety, and organizational factors influence antibiotic management
Results	<p>Study Selection.</p> <p>Number of articles identified: $N = 13$</p> <ul style="list-style-type: none"> ○ Full-text articles assessed for eligibility: $n = 468$ ○ Studies included in qualitative synthesis: $n = 4$ ○ Studies included in quantitative synthesis: $n = 8$ ○ Studies included in a mixed synthesis: $n = 1$ <p>Synthesis of results.</p> <ul style="list-style-type: none"> • Nursing knowledge, education, and information needs <ul style="list-style-type: none"> ○ Some staff feel they have not received current information on antimicrobial resistance [68.5% ($n = 144$) nurses, 13.5% ($n = 5$) physicians, 29.7% ($n = 41$) practitioners].

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	<ul style="list-style-type: none"> ○ A low number of nurses and physicians have antibiotic stewardship program training [9.3% (<i>n</i> = 36)] ○ Antibiotic stewardship programs should include detailed information about: <ul style="list-style-type: none"> ● Obtaining cultures ● Interpreting microbiology results ● De-escalating antibiotics ● Recognizing colonization and infection ● Assessing for infection ● Developing a questioning attitude ○ Nurses with university degrees had higher perception of antimicrobial bacterial resistance in their hospital [<i>OR</i> = 3.62; 95% <i>CI</i>, [1.058, 12.396]; <i>P</i> = .040. ○ Specialized hospitals (e.g., pediatrics), correlated with higher perception of antimicrobial duration as antimicrobial bacterial resistance cause, <i>OR</i> = 2.93; 95% <i>CI</i>, [1.175, 7.305]; <i>P</i> = .021. ○ Nurses consider antimicrobial bacterial resistance a problem, but a small number consider it a problem within their hospital [62% and 45% respectively, <i>P</i> < .001] ● Patient safety, and organizational factors influence antibiotic management <ul style="list-style-type: none"> ○ The following limitations exist: <ul style="list-style-type: none"> ● Decision-making autonomy ● Policy limitations ● Culture of hierarchy ○ Nurses rely on policy driven protocols ○ Identified the need for other disciplines within the hospital to participate in antibiotic stewardship programs ○ Health care disciplines are hesitant to question their fellow staff members even when knowledge exists <ul style="list-style-type: none"> ● Prior to intervention, questioned antibiotic order from 71%, 95% <i>CI</i>, [62.1, 80.0]; to 91%, 95% <i>CI</i> [86.6, 98.2], <i>p</i> < .001]
<p>Discussion</p>	<p>Summary of evidence.</p> <ul style="list-style-type: none"> ● The study was to determine if nursing antibiotic stewardship programs could bridge the gap and/or need in the health care setting today. ● Nurses and physicians responded that they do not have the necessary education and/or are not part of an ASP. ● Even those in programs, who have the necessary training, often fail short for educating others and/or questioning something that doesn't look right. ● Others in the hospital setting should be included in the antibiotic stewardship program for a multi-disciplinary approach to battling antimicrobial resistance. <p>Limitations.</p> <ul style="list-style-type: none"> ● An investigator-developed study was developed without evaluating psychometric soundness. ● The study was conducted in a pediatric, academic center with access to infectious disease physicians and an established stewardship team, which may limit generalizability. ● The sample size and response rates were rather low, but it should be noted that a wide array of nurses from different clinical settings participated. ● International studies were also analyzed.

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Funding	Funding. No funding information was provided; however, it should be noted that Patient Care Services Research, Children’s Mercy Hospital, Kansas City, MO participated in both the primary and secondary study, and thus their employees are paid hourly wages.
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References

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- Center for Disease Control and Prevention. (2017). *Core elements of hospital antibiotic stewardship programs*. Retrieved from <https://www.cdc.gov/antibiotic-use/healthcare/implementation/core-elements.html>
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