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Retail Pharmacy Clinic Antibiotic Stewardship Program and Guidelines

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Walden University

College of Nursing

This is to certify that the doctoral study by

Abdulrahman Amiri

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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Walden University
2020

Abstract

Retail Pharmacy Clinic Antibiotic Stewardship Program and Guidelines

by

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MS, University of Texas at Arlington, 2013

BS, University of Texas at Arlington, 2007

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

November 2020

Abstract

Overuse of antibiotics pose serious consequences for patient's well-being, including the risk for antibiotic resistance and adverse effects from inadequate and timely treatment. The emergence and frequency of multi-drug resistant bacteria are alarming global public health care experts, as these strains are resisting effective management of life-threatening infections. The gap in practice was that a retail pharmacy clinic did not have a practice guideline for the implementation of a wait-and-see prescription program as part of an antimicrobial stewardship program. The purpose of this project was to coordinate an interprofessional team to develop guidelines for this primary care setting. The practice-focused question addressed whether a multiprofessional team could develop tailored guidelines that would result in the adoption as a standard of care in this retail clinic. This project emphasized the implementation of the theory of planned behavior in prescribing medications, improving attitudes toward a particular behavior, altering the norm, and controlling perceived behavior, resulting in a better health outcome. A 3-member team consisting of a nurse practitioner, primary care physician, and pharmacist evaluated the evidence-based practice guideline using the Appraisal of Guidelines for Research & Evaluation II (AGREE II) tool rated on a 7-point Likert scale from *strongly agree* to *strongly disagree*. Findings showed 100% agreement as *agree* or *strongly agree* on 21 out of 23 items with *partially agree* on 2 items. No disagreement was noted. The guideline was submitted to project site leadership for adoption as a clinical standard. This guideline may be used in other retail clinics across the company and United States to reduce the overuse of antibiotics and the risk of patients developing antibiotic resistance.

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Dedication

This doctoral project is dedicated to my wife, Rose; my parents, Mr. and Mrs. Amiri; and my daughters, Jasmine and Jerina, for bringing joy, support, guidance, and motivation in helping me achieve the highest education. My parents have always been an inspiration and believed that through education, one could succeed, improve their lives, and improve the community they live in. My parents' goal was for my family and me to be independent and responsible in life. Both of my parents were hard working and worked two jobs to fulfill my educational needs. This project is also dedicated to people in the community who have limited economic means, do not have primary care doctors, and have limited cultural expectations regarding the use of antibiotics. This project could not have been possible without the motivation to improve antibiotic stewardship in my community and the support of my family. Thank you for being my family and for driving me to success.

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I would like to thank Dr. Catherine Garner for her guidance and support throughout the DNP program at Walden University. She was ready to assist me (even on holiday), answer my questions, review my project, and participate as the project chair. I would also like to thank Dr. Anne Vitale for reviewing my project.

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Section 1: Nature of the Project

The World Health Organization (WHO, 2019) ranked the problem of antibiotic resistance as a high priority. In response to this emerging public health issue, the Infectious Disease Society of America and the Society for Healthcare Epidemiology of America (as cited in Kimura et al., 2018) have established guidelines for an antibiotic stewardship program. The clinical gap in practice was the lack of an antibiotic stewardship program with clinical guidelines for nurse practitioners (NPs) to implement a wait-and-see antibiotic prescription program in a retail pharmacy clinical setting. Primary care providers (PCPs) and NPs need a better understanding of the concepts and tools to address patients about the wait-and-see approach to antibiotic use. The project included a multidisciplinary team to establish clinical guidelines specific to implementing the wait-and-see approach and the antibiotic stewardship program in the retail clinic. Implementing the guidelines may reduce antibiotic abuse and antimicrobial resistance in the patient population.

Problem Statement

Health care clinics associated with retail pharmacies are a popular source of primary and secondary care (Mehrotra et al., 2009). The most common illnesses seen are urinary tract infections, otitis media, and pharyngitis, all conditions commonly treated with antibiotics (Mehrotra et al., 2009). Unnecessary antibiotic prescriptions increase the cost of the health care industry. Overuse of antibiotics promotes a false belief that antibiotics are always the answer to illness when many diseases are viral and are not appropriate for antibiotic prescriptions (Borde et al., 2015). Overuse of antibiotics poses

serious consequences for patients' well-being, including the risk for antibiotic resistance and adverse effects from inadequate and timely treatment. The emergence and frequency of multi-drug-resistant bacteria are alarming global public health care experts, as these strains are resisting effective management of life-threatening infections (Borde et al., 2015). The WHO (2019) has ranked the problem of antibiotic resistance as a high priority on its agenda.

In response to this emerging public health crisis of antibiotic resistance, the Infectious Disease Society of America and the Society for Healthcare Epidemiology of America (as cited in Kimura et al., 2018) have established guidelines for an antibiotic stewardship program. Several strategies have been established to minimize the unnecessary use of antibiotics (Abad et al., 2019). One approach is the wait-and-see or delayed antibiotic prescription, in which a prescription is given for the patient only to take if the condition worsens or does not improve a couple of days after the clinician visit. Sargent, McCullough, Del Mar, and Lowe (2017) found that delayed prescription is one strategy that decreases antibiotic use. In their study, 93% of patients who received an immediate script filled the prescription, compared to nearly 32% who were given a delayed prescription. For patients reporting with an acute sore throat and otitis media, the immediate antibiotic script offers faster relief than a wait-and-see script, but there is an increased incidence of side effects such as nausea, vomiting, and diarrhea (Sargent et al., 2017). The success and cost-effectiveness of antibiotic stewardship programs have been analyzed in systemic reviews in hospital settings, including patients in critical care units (Lee et al., 2018).

Although the wait-and-see program has been adopted by many private PCPs, the project site retail clinic, which has approximately 7,400 patient visits annually, did not have clinical guidelines enabling its adoption by providers in this setting. This suggests that a population may not be receiving the optional antibiotic stewardship practice. Nurse practitioners have the professional responsibility to provide the best evidence-based care for their patients. Adopting existing guidelines in this expanding sector of primary care has the potential to spread across the estimated 2,800 clinics in the United States (Rand Corporation, 2018). With large retail stores such as Walmart and Target opening clinics in addition to the expansion by retail pharmacies such as CVS, ensuring that nurse practitioners have the latest evidence-based practice guidelines is important.

Purpose

The gap in practice was no antibiotic stewardship program in the clinical setting with clinical guidelines for NPs to implement a wait-and-see antibiotic prescription program. PCPs and NPs need a better understanding of the concepts and tools to address patients and parents of children about the wait-and-see approach to antibiotic use. Managing patient expectations is challenging, especially in retail clinics that have no PCPs, limited economic means, and cultural expectations regarding the use of antibiotics. The purpose of the project was to develop focused clinical guidelines specific to implementing the wait-and-see approach and the antibiotic stewardship program in this retail clinic.

The practice-focused question was the following: Will the development of clinical practice guidelines on the implementation of the wait-and-see prescription program as

part of an antimicrobial stewardship program result in the adoption of this program as a standard of care in this retail clinic? The adoption of this program has the potential to address the gap in practice and promote NP awareness of the need for antibiotic stewardship. The wait-and-see approach is the first step to a broader antibiotic stewardship program as NPs and PCPs bring change in practice during the episodes of illness. The project materials included educational resources to use for patient education. The goal is to reduce the overuse of antibiotics and the risk of patients developing antibiotic resistance.

Sources of Evidence

Journal articles from CINAHL, Medline, Cochrane Database of Systematic Reviews, and the Walden Search Center were used as sources of evidence in the project. The search words included *antibiotic stewardship*, *wait-and-see antibiotics*, *antibiotic resistance*, and *cultural norms for medication use*. The search was limited to peer-reviewed, full-text, English-only articles published in the last 5 years and included the clinical practice guidelines suggested by professional associations and the Centers for Disease Control and Prevention (CDC).

The development of the wait-and-see clinical practice guidelines followed the Walden University (2019b) Manual for Clinical Practice Guideline Development. Information from the literature and guidelines from the professional associations were reviewed and evaluated using the Grading of Recommendation Assessment Development and Evaluation (GRADE) criteria (see Appendix B). The GRADE working group established a tool called the GRADE system to grade the quality of evidence in research

and examine the strength of recommendation of the intervention suggested in the article (Phi et al., 2012). The GRADE system includes four factors to establish the quality of evidence: study design, consistency, direction, and study quality. I used the four factors to evaluate the evidence and make recommendations regarding the intensity of intervention. The GRADE is used to establish a qualitative assessment of evidence-based practice and does not include quantitative data. Phi et al. (2012) expanded the GRADE by quantifying the strength of recommendation and quality of evidence of the initial GRADE. With the expansion of the GRADE to the Ex-GRADE, researchers have a new tool to close the gap between evidence-based practice and clinical practice. This tool emphasizes the cost and benefit concerns that many clinicians and clients need clarification about before starting an intervention.

The project team met over several weeks to discuss the evidence and to develop the clinical practice guidelines. I led the discussions and wrote the drafts until the group reached consensus. At that point, another panel consisting of an NP, physician, and pharmacist from another setting reviewed the guidelines using the Appraisal of Guidelines for Research & Evaluation II (AGREE II, 2013). The purpose of AGREE II (2013) is to give a framework to assess the quality of guidelines, offer a methodological strategy for the establishment of guidelines, and offer information on what needs to be reported in guidelines. AGREE II replaces the original tool as a tool of choice and can be used with the overall results of enhancing health care. AGREE II includes 23 individual tools organized into six domains. The AGREE II instrument is scored per the instructions provided by the Agree Trust. The guideline is revised based on recommendations, and a

final report is written for dissemination to key stakeholders for approval to implement the program.

Significance

Those who may benefit from this project are adult patients and parents of pediatric and adolescent patients who have no primary care doctors, limited economic means, and cultural expectations regarding the use of antibiotics. The project could have an impact on NPs by giving them evidence-based practice guidelines to address antibiotic stewardship. The positive social changes anticipated are more appropriate antibiotic use, cost-effective practice, decreased risk of antibiotic-resistant strains of infection, change in NP practice, and a culture change in the community.

The clinic leadership at the project site was supportive of this project. The team was eager to learn more and to be one of the first to adopt this type of program in the retail pharmacy sector in this state. The mission of Walden University is to enhance, support, and facilitate research and projects that bring positive social change. This project supported the mission of Walden to promote positive change. I enlisted an NP, pharmacist, and consulting physician to promote evidence-based practice in this setting. The project may lead to this retail clinic implementing a wait-and-see antibiotic stewardship program, which may benefit NPs, patients, and the community. This implementation would be consistent with the best practice suggested for primary care nurse practitioners to promote infection prevention (American Association of Nurse Practitioners, 2019).

Summary

Overuse of antibiotics results in serious consequences for patients' health, including the risk for antimicrobial resistance and adverse effects from inadequate and timely treatment. Several strategies have been developed to minimize the unnecessary use of antibiotics (Abad et al., 2019). One approach is delayed antibiotic prescription or wait-and-see, in which a prescription is given for the patient only to take if the condition worsens or does not improve a few days after the clinician visit. The purpose of the project was to develop focused clinical guidelines specific to implementing the wait-and-see approach and the antibiotic stewardship program in this retail clinic. Once implemented and evaluated, this project may serve as a model for other retail clinics. Those who may benefit from this project are adult patients who have no primary care doctors, limited economic means, and cultural expectations regarding the use of antibiotics. The positive social changes anticipated are more appropriate antibiotic use, cost-effective practice, decreased risk of antibiotic-resistant strains of infection, change in practice, and a culture change in the community.

Section 2: Background and Context

Unwarranted antibiotic prescriptions increase expenses in health care. Misuse of antibiotics offers a wrong belief that antibiotics are the only answer to illness when most viral infections do not require an antibiotic prescription (Borde et al., 2015). Misuse of antibiotics has serious repercussions for patient health, antibiotic resistance, and side effects. The increasing number of antibiotic-resistant disease strains is a threat to global health care (Borde et al., 2015). Many strategies have been developed to overcome the unwarranted use of antibiotics (Abad et al., 2019). The use of wait-and-see or delayed antibiotic prescription is a strategy that minimizes antibiotic use (Sargent et al., 2017).

The practice-focused question was the following: Will the development of clinical practice guidelines on the implementation of the wait-and-see prescription program as part of an antimicrobial stewardship program result in the adoption of this program as a standard of care in this retail clinic? The gap in practice was the lack of antibiotic stewardship protocol at the project clinic with clinical guidelines for NPs to implement a wait-and-see antibiotic program. NPs and PCPs require more understanding of the concepts and approaches to addressing patients and parents of children on the wait-and-see concept to antibiotic use. Meeting patient expectations requires strategies to overcome challenges commonly seen in retail clinics with patients who have limited resources, have cultural expectations on antibiotic use, and do not have PCPs. The purpose of the project was to establish focused guidelines geared toward applying into practice the stewardship antibiotic and wait-and-see program in the retail clinic.

Concept, Models, and Theories

The health promotion model was established by Pender to be a “complementary counterpart to models of health protection” (Nursing Theory, 2016, para. X). The health promotion model defines health as a positive dynamic state rather than the absence of disease. Health promotion is directed at increasing a patient’s level of well-being. The health promotion model describes the multidimensional nature of the person as they interact within their environment to pursue health. The health promotion model includes four assumptions: (a) the individual seeks to actively regulate their own behavior; (b) individuals, in all their biopsychosocial complexity, interact with the environment, progressively transforming the environment as well as being transformed over time; (3) health professionals such as nurses constitute a part of the interpersonal environment that exerts influence on people through their life span; and (4) self-initiated reconfiguration of the person-environment interactive patterns is essential to changing behavior. Pender’s model focuses on three areas: individual characteristics and experiences, behavior-specific cognitions and affect, and behavioral outcomes. The theory notes that each person has unique personal characteristics and experiences that affect subsequent actions (Nursing Theory, 2016).

The set of variables for behavior-specific knowledge and effect have important motivational significance. The first part of the wait-and-see model is to assess the patient’s belief about the disease and the use of antibiotics. The variables can be modified through nursing actions. Health-promoting behavior is the desired behavioral outcome, which makes it the end point in the health promotion model. These behaviors should

result in improved health, enhanced functional ability, and better quality of life at all stages of development. The final behavioral demand is also influenced by the immediate competing demand and preferences, which can derail intended actions for promoting health.

The literature supports the utilization of psychological theories to discover facilitators and challenges to changing behavior in clinical settings (Sargent et al., 2017). The theory of planned behavior identified an eight-step guide to developing intervention using theoretical perspective. The first four measures assist researchers in clarifying the targeted behavior. The first measure is identifying and describing the problem from behavioral perspective. The second measure is selecting targeted behavior. The third measure is specifying behavior such as the when, the what, the where, the whom, and the how often. The fourth measure is identifying what must change to accomplish behavior by examining interview data with the theoretical framework. The theory of planned behavior has 14 theoretical domains showing anticipated theory-based motivators and challenges to change in behavior (Sargent et al., 2017).

The Watson (2012) theory of human caring focuses on improvement in nursing self-care behaviors and can benefit patients in several ways. Between 1975 and 1979, Watson (as cited in Zaccagnini & White, 2017) acquainted human caring theory to clarify her supposition that nursing practice, knowledge, and values center on the patient's personal encounters and healing processes. The theory's significant concepts include the caring moment, caring healing modalities, and the transpersonal caring relationship (Zaccagnini & White, 2017). Watson's 10 carative factors energize or advocate the

following: sensitivity to oneself as well as other people, helping-trusting relationship, humanistic-altruistic system, expression of feelings, faith-hope, requires satisfaction, existential-phenomenology-spiritual forces, transpersonal educating learning, creative problem-solving, and steady condition (Zaccagnini & White, 2017).

Watson advised loving-kindness practice. For example, as patients' demand for antibiotic prescriptions increases, they need additional time and require more provider attention to explain the wait-and-see antibiotic program. Tending to these practices should enhance health promotion and disease prevention. Patients living in low socioeconomic conditions, those who are uninsured, or those who do not have PCP may have spiritual and psychological needs or cultural beliefs that need to be addressed to ease health promotion and disease prevention. Watson pointed out the need to create helping-trusting relationships with those who demand antibiotics and encouraged the expression of feelings. Watson's theory suggests that nurses take part in the process of teaching and learning from the other point of view. Quality care for antibiotic stewardship requires a nurse practice environment in which the processes and use of clinic resources and services are based on individual patient care needs.

Relevance to Nursing Practice

There is an increasing need for understanding approaches for establishing intervention to change practice and the health care profession's behavior. Previous studies have shown the link between systemic reviews and primary research. The outcome of the studies was to establish pilot intervention and to combine previous studies to develop intervention recommendations supported by theory and research (Lucas et al.,

2017). The lack of guidelines in the clinical practice may contribute to poor quality of care caused by the unnecessary prescription of antibiotics intending to treat or prevent infections. Inappropriate dosing, selection, and duration of antibiotics increase antibiotic resistance. Kimura et al. (2018) argued that diagnosis and prescription are not adequately administered because of an improper sample collection technique for bacterial or fungal cultures. The comprehensive antibiotic stewardship program includes strategies that reduce the development of resistant microorganisms and improves the quality of care (Kimura et al., 2018).

Many strategies have been developed to decrease the unnecessary use of antibiotics (Abad et al., 2019). An interesting approach introduced is the wait-and-see or delayed antibiotic prescription, in which a prescription is offered for the patient to take only if the condition does not improve after the provider visit. The adoption of this program may address the gap in current practice and promote NP understanding of the need for antibiotic stewardship. The approach encourages providers to engage in implementing the wait-and-see antibiotic program and change the scope of practice (Borde et al., 2015). Outcomes from the current project may include guidelines being adopted, stewardship being enhanced, and change being implemented in the standard of care.

Local Background and Context

According to the CDC (2019), 20% to 50% of all prescribed antibiotics for acute care hospitals are inappropriate or unnecessary. In the United States, nearly 13% of walk-in visits, or about 154 million visits every year, receive antibiotic prescription (PEW,

2018). Nearly 30% of these prescriptions, or 47 million written prescriptions, are deemed unnecessary. To help solve the challenges of antibiotic overprescription, CVS Health partnered with the CDC to support the efforts of antibiotic stewardship (CDC, 2019). The U.S. government's antibiotic resistance challenge is an ongoing effort to motivate the fight against antibiotic resistance. The antibiotic resistance challenge is an attempt in which government organizations, nongovernment organizations, and private companies throughout the world try to come up with official commitment that will support and advance efforts against antimicrobial resistance. The current project took place in a retail clinic after the approval of the Walden's Institutional Review Board (# 06-05-20-0747556).

Role of the DNP Student

I used the clinical practice guidelines suggested by professional associations and the CDC. The establishment of the wait-and-see clinical practice guidelines adhered to the Walden University (2019b) Manual for Clinical Practice Guideline Development. I analyzed articles using the GRADE criteria. The GRADE working group developed a tool called the GRADE system; its purpose is grading the quality of evidence in research and evaluating the strength of recommendation of the intervention given in the article (Phi et al., 2012). Phi et al. (2012) expanded the GRADE by analyzing the strength of recommendation and quality of evidence of the initial GRADE. By advancing the GRADE to Ex-GRADE, Phi et al. developed a new tool that can close gaps between evidence-based practice and clinical practice. I used this tool to address the cost-benefit

concerns that many clinicians and clients need to understand before starting an intervention, which helps to direct individuals through the decision-making process.

The project team met over several weeks to discuss the evidence and to establish the clinical practice guidelines. I led the team in the discussion and writing of drafts until the group reached its conclusion. After this, another panel consisting of a physician, NP, and pharmacist from another setting reviewed the guidelines using the AGREE II (2013). With the use of the AGREE II instrument, the expert panel examined the guidelines to validate the content. The purpose of AGREE II is to provide a framework to assess the quality of guidelines, offer a methodological strategy for the establishment of guidelines, and offer information on what needs to be reported in guidelines. I was motivated to implement the project on antibiotic stewardship because U.S. antibiotic resistance increased to about 23,000 plus deaths every year and about 2 million illnesses (CDC, 2017).

Summary

Misuse of antibiotics has severe consequences for patient health, antibiotic resistance, and other side effects. Many strategies have been developed to overcome the inappropriate use of antibiotics (Abad et al., 2019). The wait-and-see antibiotic prescription is a strategy that minimizes antibiotic use (Sargent et al., 2017). The successful outcome and cost-effective approaches of antibiotic stewardship programs have been studied in hospitals, including retail clinics (Lee et al., 2018). Medical facilities require proper strategies that improve the growth of health care in individuals and expand the extent of medical care on diagnosis and prognosis. The three models,

including Pender's health promotion model, the theory of planned behavior, and Watson's theory of human caring, were used to advance the study of quality of care on antibiotic stewardship program (see Kamekis et al., 2018). The gap in practice was the lack of antibiotic stewardship protocol in the project site clinic, including clinical guidelines for NPs to apply a wait-and-see antibiotic program. NPs and PCPs require more understanding of the concepts and approaches to addressing patients and parents of children on the wait-and-see approach to antibiotic use. The project may lead to more cost-effective practice, more appropriate antibiotic use, decreased antibiotic resistance, and a changing culture in the community.

Section 3: Collection and Analysis of Evidence

Unnecessary use of prescription antibiotics increases the cost of health care. Uncontrolled use of antibiotics promotes a false belief that taking antibiotics is the only answer to treat an illness, when most of these infections do not need an antibiotic prescription (Borde et al., 2015). Overuse of antibiotics has serious ramifications for patients' well-being, antibiotic resistance, and adverse effects. The prevalence of antibiotic resistance poses an imminent danger to global health care (Borde et al., 2015). Many strategies have been established to address the excessive use of antibiotics (Abad et al., 2019). The use of delayed antibiotic prescriptions or wait-and-see prescriptions is an action plan that decreases antibiotic use (Sergent et al., 2017).

The practice-focused question was the following: Will the development of clinical practice guidelines on the implementation of the wait-and-see prescription program as part of an antimicrobial stewardship program result in the adoption of this program as a standard of care in this retail clinic? The gap in practice was the need for antibiotic guidelines and a protocol for NPs to implement a wait-and-see antibiotic program. NPs and PCPs need more knowledge on the concepts and strategies to educate patients and parents of children on the antibiotic stewardship programs. Fulfilling patient's needs requires an action plan to overcome challenges frequently seen in walk-in clinics for those living in low socioeconomic conditions, those who do not have enough resources, those who do not have PCPs, and those who have set cultural beliefs on antibiotic use. The purpose of the project was to develop focused guidelines to implement into practice a wait-and-see and antibiotic program in walk-in clinics.

Sources of Evidence

The sources of evidence for the antibiotic stewardship project included journal articles from Medline, CINAHL, the Walden Search Center, and the Cochrane Database of Systematic Reviews. The search words including *wait-and-see antibiotics*, *antibiotic stewardship*, *cultural norms for medication use*, and *antibiotic resistance*. The search included only full-text, peer-reviewed, and English-only articles published in the last 5 years. I used the clinical practice guidelines advised by CDC and professional organizations.

I collected information from the guidelines and literature and from professional organizations. The development of the wait-and-see clinical practice guidelines adhered to the Walden University (2019b) Manual for Clinical Practice Guideline Development. I analyzed and evaluated the articles using the GRADE criteria. The GRADE working group developed a tool called the GRADE system, which is used to grade the quality of evidence in research and examine the strength of recommendation of the intervention suggested in the article (Phi et al., 2012). The GRADE includes four factors to establish the quality of evidence: study design, consistency, direction, and study quality. The recommendation of the intensity of intervention is developed by combining the four factors and evaluating the grade of evidence. The GRADE establishes a qualitative assessment of evidence-based practice and does not produce quantitative data. Phil et al. (2012) expanded the GRADE by quantifying the strength of recommendation and quality of evidence of the initial GRADE. By expanding the GRADE to Ex-GRADE, Phil et al.

established a new tool that can be used to close gaps between evidence-based practice and clinical practice.

The project team included an NP, physician, and pharmacist who were chosen to review the guidelines using the AGREE II (2013). Using the AGREE II instrument, the expert panel reviewed the guidelines to validate the content. I chose these health care professionals based on their skills, abilities, integrated knowledge, and anticipation for nursing practice (see Melnyk & Fineout-Overholt, 2019). Competencies are necessary to deliver high-quality care, especially in an era when antibiotic stewardship accompanied by antibiotic resistance is increasing by about 23,000 plus deaths each year in the United States (CDC, 2017). The use of competencies may improve variability in health care systems and enhance the education of clinicians by introducing a clinical guideline for practice change.

The retail clinic leadership was supportive of this program as part of the overall total quality improvement mission of the organization. Team members and the review team participated voluntarily and were informed of the purpose, scope, and outcome of the project. Their individual identities were protected. All participants consented to participate using the consent for anonymous questionnaires in the DNP Staff Education Manual. This project was approved by the Walden Institutional Review Board.

Analysis and Synthesis

I led the discussions and wrote the drafts until the group reached consensus. The team met over 3 weeks to discuss the evidence and to develop the clinical practice guidelines. At that point, another panel consisting of an NP, pharmacist, and physician

from another setting were asked to evaluate the guidelines using the AGREE II (2013). Using the AGREE II instrument, the expert panel analyzed the guidelines to validate the content. The purpose of AGREE II is to provide a framework to examine the quality of guidelines, offer a methodological strategy for the establishment of guidelines, and offer information on what needs to be reported in guidelines. AGREE II replaced the original tool as a tool of choice and can be used with the overall objective of improving health care. AGREE II includes 23 individual tools organized into six domains (AGREE II, 2013). The AGREE II instrument is scored per the instructions provided by the Agree Trust. I revised the guidelines based on the expert panel recommendations, presented a final report with the guidelines to the team for their endorsement, and provided the final report to key stakeholders for approval to implement the program.

Summary

Overuse of antibiotics has serious ramifications for patients' health, including the risk for adverse effects and antibiotic resistance from inadequate and timely treatment. The prevalence of multi-drug-resistant bacteria is frightening global public health care experts, as these strains are resisting the successful management of life-threatening infections (Borde et al., 2015). The WHO (2019) has categorized the problem of antibiotic resistance as a high priority on its agenda. In this section, I explored many sources of evidence to address the practice problem.

Section 4: Findings and Recommendations

Antibiotics are a class of medications that are often used to treat bacterial infections. Their overuse poses serious consequences for patients' well-being, including the risk of antibiotic resistance and adverse effects from excessive use (Borde et al., 2015). In this project, I sought to develop a guideline that would enhance advanced practice nurses' knowledge, attitude, and perceptions about the use of antibiotics and decrease the development of antibiotic resistance.

Purpose

The purpose of this project was to develop clinical practice guidelines with a multidisciplinary team to implement the wait-and-see antibiotic stewardship program (ASP) in a retail clinic. PCPs and NPs need a better understanding of the concepts and tools to address patients about the wait-and-see approach to antibiotic use.

Sources of Evidence

The development of the wait-and-see clinical practice guidelines followed the Walden University (2019b) Manual for Clinical Practice Guideline Development. The information was gathered from the literature and from guidelines from the professional associations. The following sources of evidence were searched: journal articles from Medline, CINAHL, and the Cochrane Database of Systematic Reviews. The following keywords were used: *antibiotic stewardship*, *wait-and-see antibiotics*, *cultural norms for medication use*, and *antibiotic resistance*. The search included only full-text, peer-reviewed, and English-only articles that were published in the last 5 years. The clinical

practice guidelines published by the CDC and professional organizations were used to gather information.

The articles were reviewed using the GRADE approach. A working group established this tool to grade the quality of evidence in research and to examine the strength of recommendations (Phi et al., 2012). In 2012, GRADE was expanded to Ex-GRADE and the focus was on quantifying the strength of recommendation and quality of evidence of the initial GRADE (see Appendix B). This expansion of the GRADE (Ex-GRADE) resulted in the creation of a new tool that can produce data and possibly bridge the gap between evidence-based research and clinical practice. This new tool was used to emphasize the cost and benefit that many clinicians and clients need to understand before starting an intervention. Ex-GRADE helps guide individuals through the decision-making process.

The first draft of the guideline was presented to the review team via Google docs. Their comments were reviewed and incorporated into the proposed final guideline (see Appendix A). This final guideline was circulated with an accompanying AGREE II assessment. The assessment results are presented in Table 1. In summary, 12 areas were rated strongly agree by 66% and agree by 33%. Nine areas were rated strongly agree by 33% and agree by 66%. Only two of the 23 items were rated partially agree, agree, and strongly agree by 33%. Those two items were systematic methods used to search for evidence and the criteria for selecting the evidence. A copy of the final guidelines and the results of the AGREE II tool were forwarded to clinical leadership for final approval before implementation.

Table 1

AGREE II Instrument Rating of Clinical Practice Guidelines

Domain	SA	A	PA	N	PD	D	SD
1. The overall objective of the guideline is specifically described	1	2					
2. The health question covered by the guideline is specifically described	1	2					
3. The population to whom the guideline is meant to apply is specifically described	2	1					
4. The guideline development group includes individuals from all the relevant professional groups	2	1					
5. The views and preferences of the target population have been sought	1	2					
6. The target uses of the guidelines are clearly defined	1	2					
7. Systematic methods were used to search for evidence	1	1	1				
8. The criteria for selecting the evidence are clearly described	1	1	1				
9. The strengths and limitations of the body of evidence are clearly described	1	2					
10. The methods for formulating the recommendations are clearly described	1	2					
11. The health benefits, side effects and risks have been considered in formulating the recommendations	2	1					
12. There is an explicit link between the recommendations and the supporting evidence	2	1					
13. The guideline has been externally reviewed by experts prior to its publication	2	1					
14. A procedure for updating the guideline is provided	2	1					
15. The recommendations are specific and unambiguous	2	1					
16. The different options for the management of the condition or health issue are clearly presented	1	2					
17. Key recommendations are easily identifiable	2	1					
18. The guidelines provide advice and/ or tools on how the recommendations can be put into practice	2	1					
19. The guidelines describe facilitators and barriers to its application	1	2					
20. The potential resource implications of applying the recommendations has been considered	1	2					
21. The guidelines present monitoring and/ or auditing criteria	2	1					
22. The views of the funding body have not influenced the content of the guideline	2	1					
23. Competing interests of guideline development group members have been recorded and addressed	2	1					

Note. Rating scale: (1) strongly agree, (2) agree, (3) partially agree, (4) neutral, (5) partially disagree, (6) disagree, (7) strongly disagree.

Summary of Guidelines

The expert panel was compliant with the GRADE in establishing other guidelines, which incorporated systemic weighing of quality of evidence and strength of recommendation using the GRADE system. The summary of guidelines includes the use of ASP, educating NPs, audit of antibiotic use and feedback reports about ASP, using ASP guidelines that are on ASP based on epidemiology, using published data, reviewing data, and computerized surveillance that will discourage mixing antibiotics in a patient. The guidelines may encourage using pharmacokinetics monitoring, oral antibiotics, shorter-duration treatment, rapid viral testing, monitoring costs, and patients' cultural consideration and sensitivity in prescribing antibiotics.

Recommendations

- The use of the wait-and-see approach or delayed antibiotic prescription, in which a prescription is given to a patient to take only if the condition worsens or if it does not improve few days after the clinician visit.
- ASP education sessions to NPs using lectures or posters to teach providers and clients about the beneficial aspects of ASP intervention for reducing inappropriate antibiotic use.
- Use of ASP guidelines and algorithms, based on epidemiology, by retail clinics to standardize prescription practices for common infections to improve antibiotic use and patient outcomes (see Appendix A).
- Chart audits and the audit tool in the ASP program (see Appendix C).

- Implementation of monthly quality improvement summary form (see Appendix D).
- Strategies including the use of published data on prescriber-led, routine review of antibiotic regimens to enhance antibiotic prescribing and wait-and-see prescribing.
- Use of pharmacokinetic monitoring and dose adjustment for aminoglycosides antibiotics to reduce side effects, reduce cost, and improve outcome.
- Use of oral antibiotics to decrease the cost.
- Use of a shorter duration of therapy or specifying the duration of therapy at the time of antibiotic ordering.
- Use of microbiology laboratory or susceptible culture test results in prescribing antibiotics in common clinical conditions.
- Rapid viral testing. If the test results are viral, supportive therapy follows; if the test results reveal a bacterial infection, 24 hours of wait-and-see antibiotic prescription is suggested.
- Measuring antibiotic costs depending on prescriptions or administrations rather than on purchasing data.
- Use of rapid diagnostic testing with culture and sensitivity testing for antibiotic prescribing.
- Implementation of a computerized surveillance system to synthesize data from electronic medical records and other data sources to improve the work of ASP by recognizing an opportunity for intervention.

Roles and Responsibilities for Implementation

The next step is implementation of the wait-and-see approach at the project site clinic. The physician will supervise training, monitor intervention, and provide training, surveillance systems, algorithms, and monthly logs. The physician will ensure that the collected data are accurate. The NP will offer education sessions, audits, and feedback reports; collect algorithms data; collect surveillance system data; answer questions; collect the monthly logs data; and work with other providers to ensure that the data collected are accurate, complete, and identified prior to receiving them. The NP will ensure follow up when the laboratory reports are needed, delays are encountered, culture and sensitivity orders are needed, and rapid viral testing reports are available and will assist the person who is designated to identify and collect the data for the project. The pharmacist will monitor the mixing of antibiotics, pharmacokinetic and dosage-adjustment monitoring, shorter antibiotics use, and use of oral antibiotics to decrease cost.

Strengths and Limitation of the Project

The first strength is that the project team was fully committed to the project and worked together to develop the ASP. Lessons learned from implementing the guidelines into practice may inform changes to the guidelines. The limitation is that the guidelines were developed for one retail clinic. The guidelines will need to be implemented and evaluated to determine their efficacy.

Section 5: Dissemination Plan

The ASP guidelines were presented to the stakeholders and management team as a written report. The report included the use, education, audit, and feedback reports. The ASP guidelines were based on epidemiology, published data, review, and computerized surveillance, and discouraged mixing antibiotics. In addition, findings including the monthly reports, quarterly logs, audits completed, compliance with ASP guidelines, policies and procedures, and areas requiring improvement were added to the report. Furthermore, the report included recommendations for future practice and a request for a 24-month evaluation following a 2-year period for publication. The audience and settings that would meet the criteria for the dissemination of the project are CVS retail clinics, Walmart clinics, Walgreens clinics, and Target retail clinics. The forum would be divided into the NP monthly briefing sessions, ongoing analysis assessment, and roundtable meeting with other retail clinics to discuss global influence and opportunities.

Analysis of Self

The main thing I have learned about myself while working on this project was that I enjoyed the concept of quality improvement and evidence-based clinical practice. During my DNP program, I have played the role of an intellectual by researching current evidence-based practice resources and implementing them to ASP at the retail clinic. My role included project leader and provider. Through the work conducted by the ASP, many staff members established a better understanding of the concept and are decreasing the overuse or misuse of antibiotics. I feel I made an impact on the providers I work with, as their clinical practice has improved in the retail clinic setting. This project has

encouraged me to play an active role in the ASP at the retail clinic and become an advocate in the community. I learned that I need to use my professional leadership skills to work with providers and practice managers to conduct the DNP project. I discussed the ASP with providers to gain a better understanding and went to the practice managers with what was discussed. I was able to build the ASP team with providers whom I needed for the project. Another strategy I used was buying the staff donuts and coffee, which provided positive reinforcement as the staff became supportive and friendly. In conclusion, I feel that I am skilled, prepared, and willing to implement further projects in nursing practice and I am motivated to continue conducting research and improving practice.

Completion of the Project

The completion of the ASP project had some challenges. One challenge was that the retail clinic DNP project approval committee took a long time to approve my project. The DNP project committee meets once a month, and projects are reviewed on a first-come-first-served basis. It took the committee members about three months to approve my project, which was also during the initial COVID-19 outbreak. One way I overcame this challenge was to approach one of the committee members who acknowledged she had time to communicate and discuss what was needed for the project. Her response to this approach was positive and supportive. The clinical educator showed little interest in the project and was not cooperative in establishing a working relationship. Her availability was limited, and her interest was diminishing. One strategy that I used to overcome this obstacle was to approach her with an appointment when she had time to

speak and discuss what was required for the project. Her reaction to this approach was friendly and welcoming. I learned that at times, even patience, diligence, and using all the clinical skills may not be sufficient, and leadership may need to support and get involved.

Summary

Implementing this DNP project has offered me the opportunity to learn, practice, evolve, and become more proficient in the competencies of the DNP project. This has been a unique experience and has been challenging. It gave me an opportunity for growth and development to contribute to the profession, and to implement research in nursing practice after graduation.

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Appendix A: Antibiotic Stewardship Program (ASP) Guidelines

I. Does the Use of Wait-and-See or Delayed Antibiotic Prescriptions by ASP Improve Antibiotic Use and Patient Outcome?

Recommendations

The guideline recommends the use of wait-and-see or delayed antibiotic prescription, in which a prescription is given for the patient only to take it if condition worsens or does not improve few days after the clinician visit.

II. Is Education a Useful ASP Intervention for Decreasing Inappropriate Antibiotic Use?

Recommendations

The guideline suggests offering education sessions using lectures, or posters on teaching providers and clients the beneficial aspect of ASP intervention for reducing inappropriate antibiotic use.

III. Should Retail Clinic Develop and Implement ASP Guidelines Based on Epidemiology to Standardize Prescription Practices?

Recommendations

The guideline recommends that the retail clinic use ASP guidelines and algorithms based on epidemiology to standardize prescription practices for common infections to improve antibiotic use and patient outcomes.

IV. Do Strategies to Enhance Prescriber-Led Routine Review of Appropriateness of Antibiotic Regimen, Improve Antibiotic Prescribing?

Recommendations

The guideline recommends strategies including the use of published data on prescriber-led, routine review of antibiotic regimen to enhance antibiotic prescribing, and wait and see prescribing.

VII. Should ASPs Advocate for Retail Clinic to Use Alternative Dosing Strategies Based on Pharmacodynamic Principles to Enhance Outcome, Decrease Cost and Side Effects for aminoglycosides?

Recommendations

The guideline suggests the retail clinic to utilize pharmacokinetic monitoring and dose adjustment for aminoglycosides antibiotics to reduce side effects, reduce cost, and improve outcome.

VIII. Should ASPs Incorporate Interventions to Increase Oral Antibiotics Use as a Strategy to Enhance or Decrease Cost?

Recommendations

The guideline recommends the use of oral antibiotics to decrease the cost.

IX. Should the ASPs Implement Interventions to Decrease Antibiotic Therapy to the Shortest Duration?

Recommendations

The guideline suggests the use of the shorter duration of therapy or specifying the duration of therapy at the time of antibiotic ordering.

X. Should ASPs Work with the Microbiology Laboratory to Reporting of ASP Culture and Sensitivity Test Results?

Recommendations

The guideline recommends the use of microbiology laboratory or susceptible culture test results in prescribing antibiotics in common clinical conditions.

XI. Should ASPs Advocate for Use of Rapid Viral Testing to Reduce the Use of Unwarranted Antibiotics?

Recommendations

The guideline suggests rapid viral testing. If the test results are viral, supportive therapy follows, or if the test results reveal a bacterial infection, 24 hours wait-and-see antibiotic prescription is suggested.

XII. What is the Best Measure of Cost on Antibiotics to Assess the Impact of ASPs and its Intervention?

Recommendations

The guideline recommends measuring antibiotic costs depending on prescriptions or administrations, rather than on purchasing data.

XIII. Should ASPs Advocate for Use of Rapid Diagnostic Testing Together with Culture and Sensitivity Testing for Antibiotic Prescribing?

Recommendations

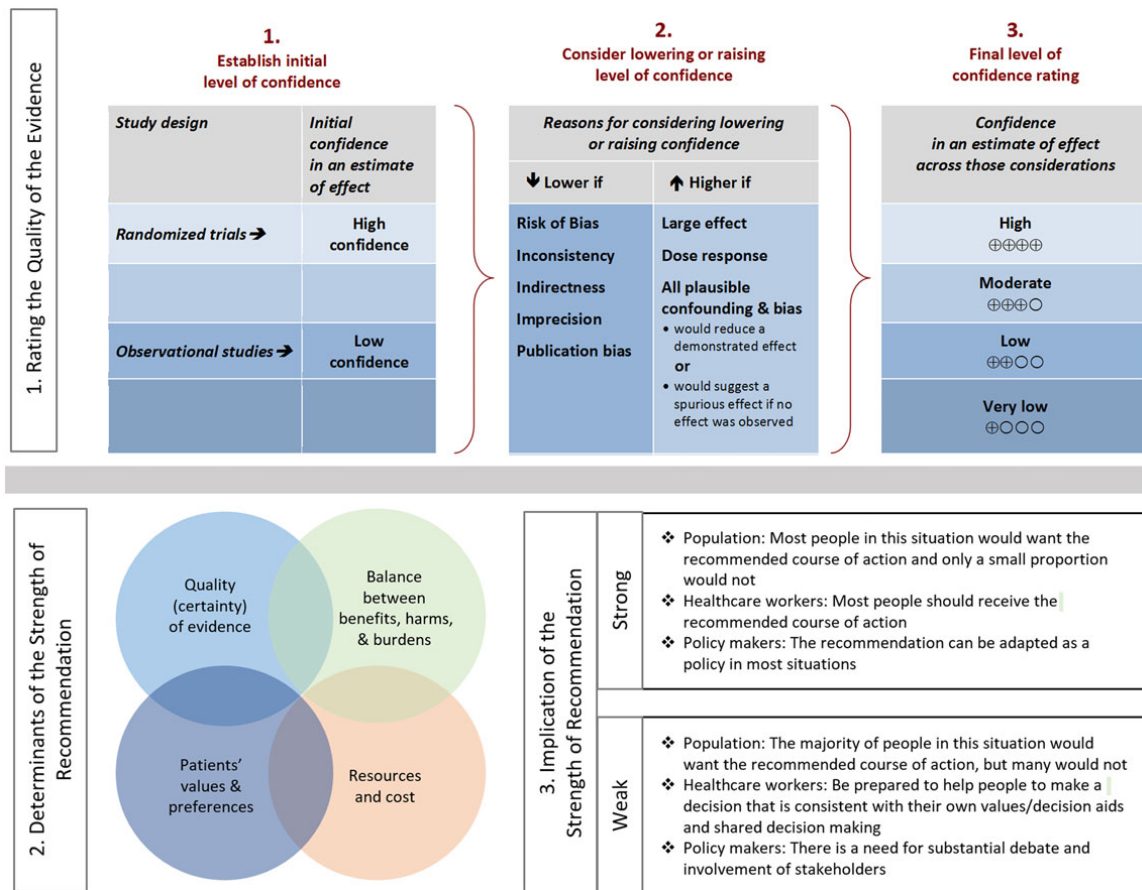
The guideline suggests the use of rapid diagnostic testing together with culture and sensitivity testing for antibiotic prescribing.

XIV. Should Computerized Clinical Decision Support Incorporated at the Time of Prescribing into ASPs?

Recommendations

The guideline suggests the implementation of a computerized surveillance system that synthesizes data derived from the electronic medical records and other data sources that can improve the work of ASP by recognizing an opportunity for intervention.

Appendix B: Approach and Implication to Rating Quality of Evidence and Strength of Recommendation Using the Grading Recommendations Assessment, Development and Evaluation (GRADE) Methodology



Appendix C: Chart Tool

New Antibiotic Start

Effective Feb 21, 2021

Instructions: Please complete the following assess the ASP. The tool is completed weekly on all

patients who received antibiotics by NP. The completed tool is forwarded to physician for quality assessment.

Week of _____ (Week of: that is Monday to Sunday Jan

Feb March April May June July Aug Sep Oct Nov Dec

Patient Name	Date Antibiotic Started	Diagnosis for Antibiotic	Duration of Antibiotic	Results of lab	Pathogen growing
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

Appendix D: Chart Tool Monthly Results

New Antibiotic Start Monthly Results

Data Collected

by _____

First Name. Last Name. Title. Date

Monthly Totals _____ Jan Feb March April May June

July Aug Sep Oct Nov Dec

Threshold for compliance: %

Number of New Antibiotics Ordered	Number of patients and duration of number of days Antibiotics ordered	Number of patients with diagnosis to support Antibiotics orders	Number of patients with culture ordered to confirm diagnosis for Antibiotics	Number of culture results received prior to ordering Antibiotics
For Example: 8	6/8	6/8	5/8	4/8
Monthly Results:				
% compliance				
For Example:	88.5%	88.5%	74%	63.5%
Monthly %				