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Implementing Antimicrobial Stewardship for Healthcare Providers in an Urgent Care Setting to Reduce Antibiotic Misuse for Respiratory Infections

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Implementing Antimicrobial Stewardship for Healthcare Providers in an Urgent Care Setting to Reduce Antibiotic Misuse for Respiratory Infections

A DNP Project Submitted to the
Graduate Faculty
of Jacksonville State University
in Partial Fulfillment of the
Requirements for the Degree of
Doctor of Nursing Practice

By

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Abstract

Background: Antimicrobial resistance has been identified as a major threat by the World Health Organization (WHO), and antimicrobial stewardship is a key strategy to overcome resistance. A major contributing factor to this crisis is the inappropriate use of antibiotic prescriptions in outpatient settings. Although evidence-based guidelines on appropriate treatment for acute upper respiratory infections (URIs) have been developed, the need for improving provider and patient awareness and knowledge in the urgent care setting is critical.

Purpose: The purpose of the DNP project was to implement antimicrobial stewardship guidelines in the urgent care facility to decrease the misuse of antibiotic prescribing for URIs. This project aimed to show the efficacy of implementing antimicrobial stewardship guidelines in the urgent care setting to reduce the misuse of antibiotics prescribed for URIs.

Methods: This quality improvement project consisted of a formal educational session provided to healthcare providers in an outpatient urgent/primary care facility regarding appropriate antibiotic prescribing for upper respiratory illnesses based on the Centers for Disease Control and Prevention (CDC) Adult Outpatient Treatment Recommendations. Educational visuals regarding appropriateness of antibiotics ("What's Got You Sick: Virus or Bacteria?") were also displayed in patient exam rooms. Chart audits were conducted pre- and post-intervention to assess the occurrence of antibiotic prescribing for upper respiratory tract infections, as well as pre- and post-surveys administered to healthcare providers to evaluate the effectiveness of the formal education session.

Results: Key results included a decrease in the antibiotic prescribing rates for the diagnosis of acute pharyngitis from 74.51% to 59.74% post-intervention (p=.087). A decrease in individual prescribing rates for two providers were noted post-intervention. Provider B's antibiotic

prescribing rate decreased from 90.59% to 73.39%, (p=.002), and provider C's prescribing rate decreased from 91.38% to 88.24%, (p=.696).

Conclusion: This project stressed the critical need to implement antimicrobial stewardship guidelines in outpatient settings and to offer additional training and resources to healthcare providers to reduce inappropriate antibiotic prescribing.

Keywords: antimicrobial stewardship, outpatient, antibiotic resistance, guidelines

Acknowledgments

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I would also like to thank my mother, my biggest supporter and cheerleader, my father (Rest in Heaven), my husband, family, and close friends, for their unwavering support and encouragement. Their support, patience, and motivation have gotten me through the toughest times and pushed me to be greater. Thank you.

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Implementing Antimicrobial Stewardship for Healthcare Providers in an Urgent Care Setting to Reduce Antibiotic Misuse for Respiratory Infections

The rapid rise of resistant bacteria is a worldwide issue, endangering the efficacy of antibiotics. Buehrle and Clancy (2021), Eudy et al. (2020), and Palms et al. (2018) document overuse of antibiotic prescriptions in outpatient settings as a major contributing factor in the rise of antimicrobial resistance. Outpatient prescriptions account for an estimated 85-95% of the volume of antibiotics used in individuals and are frequently overused and misused in outpatient settings (Hicks et al., 2019). Antibiotics are often prescribed for viral respiratory infections; however, antibiotics are only warranted when the infection is caused by bacteria. Antibiotic resistance leads to higher medical costs, prolonged hospital stays, and increased mortality (Centers for Disease Control and Prevention, 2013).

Antibiotic stewardship is the effort to measure and improve how antibiotics are prescribed by clinicians and used by patients. Improving antibiotic prescribing is imperative to effectively treat infections, protect patients from harm caused by unnecessary antibiotic use, and combat antibiotic resistance (Centers for Disease Control [CDC], 2021). This project aimed to enhance urgent care providers' awareness and knowledge regarding the impact of inappropriate antibiotic prescribing and provide educational information to both patients and healthcare providers regarding appropriate antibiotic treatment to decrease inappropriate antibiotic prescribing for upper respiratory infections (URIs).

Background

Antimicrobial resistance was identified as a major threat by the World Health Organization (WHO), and antimicrobial stewardship is a key strategy to overcome antimicrobial resistance. Although evidence-based guidelines on appropriate treatment for acute upper

respiratory infections (URIs) have been developed by the CDC, the need for improving provider and patient awareness and knowledge in the urgent care setting is critical. According to the Centers for Disease Control and Prevention (CDC, 2021), healthcare providers prescribed 201.9 million antibiotic prescriptions in 2020, and approximately 45.7% of all outpatient antibiotics prescribed were not beneficial or necessary. Misusing and overusing different antimicrobial agents are the leading causes of antimicrobial resistance (AMR); which not only affects patients but can have adverse impacts on healthcare and the economy (Hicks et al., 2019).

AMR compromises the capacity of an individual's immune system to fight infectious diseases and contributes to different complications in vulnerable patients such as those undergoing chemotherapy and dialysis. AMR also has financial consequences including high healthcare costs due to increased hospital admissions and drug usage. According to the CDC, in the United States alone, antibiotic resistance could add an estimated $1,400 to hospital bills for treating patients with any bacterial infections. It is projected that AMR could cost from $300 billion to more than $1 trillion annually by 2050 worldwide (CDC, 2013). Excessive costs associated with expensive and intensive treatments and escalation in resource utilization are the direct monetary effects of AMR on healthcare (Dadgostar, 2019).

Needs Analysis

The urgent care facility where the project takes place is a high-volume facility, whose mission is to provide the best healthcare in a caring environment, at times and locations convenient to the patient. The practice houses two triage areas, 11 exam rooms, and one trauma bay, and is suited to care for patients with uncomplicated, low-acuity conditions (such as acute respiratory conditions), to meet patient expectations of rapid and convenient care. The primary population is urgent care, however, primary care services for all ages are provided as well. The

company employs physicians of multiple specialties, Family Nurse Practitioners (FNPs), and Physician Assistants (PAs). There are currently no antimicrobial stewardship guidelines in place within the facility. Although inappropriate antibiotic prescribing has been a nationwide issue in all clinical settings, there are only a few antimicrobial stewardship programs that have been designed specifically for outpatient settings (May et al., 2017).

Healthcare delivery in the United States is rapidly evolving and services such as telemedicine, retail clinics, and urgent care are becoming increasingly more popular. Compared to emergency departments, urgent care has certain advantages that include expanded hours, walk-in appointments, lower costs, and shortened wait times (Stenehjem et al., 2020). Despite these increasing trends, most stewardship interventions have focused on inpatient settings and not outpatient or urgent care. Compared to primary care and inpatient settings, urgent cares have distinctive features such as high volumes with rapid patient turnarounds that may require adaptations of the design of stewardship interventions. A study conducted by Palms et al. (2018) indicated that across all healthcare settings, urgent care facilities have both the highest percentage of visits resulting in antibiotic prescriptions and the highest rate of inappropriate prescribing for respiratory tract infections, making urgent care a high-priority target for stewardship interventions.

Problem Statement

Inappropriate antibiotic prescribing is a common practice in healthcare, and the number of bacteria that exhibit resistance to antimicrobial agents has steadily risen. Antimicrobial resistance is prevalent among pathogens associated with respiratory tract infections such as *Streptococcus pneumoniae, Haemophilus influenzae*, and *Streptococcus pyogenes* (Karchmer,

2004). The morbidity and mortality associated with infections caused by these pathogens pose a significant and growing challenge to clinical practitioners (Dhingra et al., 2020).

Implementing antimicrobial stewardship practices promotes the appropriate use of antibiotics, minimizes antimicrobial resistance, and provides clinician support in the urgent care setting. The Doctor of Nursing Practice (DNP) project evaluated the implementation of antimicrobial stewardship guidelines in an urgent care setting for the reduction of antibiotic prescribing for acute upper respiratory tract infections over a 30-day period. Education on adult outpatient treatment recommendations for respiratory infections was provided to all healthcare providers within the facility, and patient education regarding virus vs bacteria was displayed in all patient exam rooms.

The question that was answered through this project was the following: for providers working in an urgent care setting (P), will implementing antimicrobial stewardship guidelines (I), compared to no guidelines (C), decrease inappropriate antibiotic prescribing for upper respiratory infections (O) over a 30-day period (T)?

Aims and Objectives

The overarching aims of this project were to:

1. Decrease antibiotic misuse for URIs in the urgent care setting within a 30-day period;
2. Implement and sustain antimicrobial stewardship guidelines in current practice setting;
3. Increase urgent care healthcare providers’ and patients' knowledge of appropriate treatment for viral and bacterial infections; and
4. Enhance provider awareness of antibiotic misuse and the rise in antimicrobial resistance.

Review of Literature

A literature review was performed with the following primary considerations: inappropriate antibiotic prescribing in urgent care, antimicrobial stewardship, and lack of antibiotic guidelines. The findings are presented here.

The databases utilized were Cumulative Index to Nursing and Allied Health Literature (CINAHL), PubMed, and Ovid. The following key terms were used: antimicrobial stewardship, antibiotic resistance, inappropriate prescribing, antimicrobial stewardship guidelines, outpatient setting; a total of 156 potential sources were found through different term combinations. After consulting with Librarian, Paula Barnett-Ellis at the Houston Cole Library, the search was narrowed after revising key terms, eliminating articles that were irrelevant to content, unavailable in full text, and not published within the last five years; yielding potential sources to 29 peer-reviewed and academic journals. Significant findings from these sources helped shape the approach of this project and are discussed below.

Improving the use of antibiotics across the entire continuum of healthcare is a national priority. Data detailing the misuse of antibiotics in the outpatient setting justifies the need for antibiotic stewardship programs (ASPs) within outpatient settings. Yet, outpatient antibiotic stewardship (AS) is still not implemented across the board. The literature review by Dobson et al. (2017) summarizes AS interventions that have demonstrated success and highlight opportunities to enhance AS in the outpatient setting. Interventions included: point of care testing (POCT), delayed prescribing, computerized decision support, audit and feedback, and educational resources (Dobson et al., 2017).

The CDC (2021) recommends a focused, well-paced approach when introducing antimicrobial stewardship (AMS) policies. Recommendations from the CDC (2021) and the

Infectious Disease Society of America (IDSA) encourage all programs to include the following four core elements of outpatient antibiotic stewardship: commitment, action for policy and practice, tracking and reporting, and education and expertise. A national survey conducted by Eudy et al. (2020) found that a minority of institutions reported fully functioning antimicrobial stewardship practices (ASP) and less than half meeting the CDC's core elements of outpatient stewardship. Seventy-eight percent expressed an interest in or current development of an ambulatory ASP, whereas only 20% reported having adequate financial resources. Lastly, results show inpatient stewardship programs to be more prevalent and consistently used compared with ambulatory ASPs (Eudy et al., 2020).

May et al. (2017) conducted 17 semi-structured interviews amongst physicians, nurses, and administrators in adult and pediatric emergency departments and urgent care centers. The authors assessed barriers and facilitators of implementation of antibiotic stewardship interventions in acute care settings and found that facilitators to implementation included the ability to display bilingual patient education materials, venues for provider education, and the use of guidelines for antibiotic use. Barriers to implementation were communication deficiencies among providers, maintaining provider awareness, timing of interventions into the clinical workflow, and concern that long wait times may increase antibiotic prescribing (May et al., 2017). New ideas included incorporating stewardship education into the triage process.

Steinkuller et al. (2021) conducted both a patient and a provider survey to assess knowledge, attitude, and behavior toward antibiotics. In addition, verbal education and a distribution flowchart were given to providers in two clinics detailing the 2010 IDSA guidelines for treatment of respiratory infections. Charts were reviewed to assess antibiotic use, pre- and post-intervention for a 6-month period. Of the 85 patient participants, 38% recognized the

relationship between over usage of antibiotics and the emergence of antibiotic-resistant organisms, and 17% of participants felt that they were wasting their time if they went to an urgent care clinic and were not prescribed an antibiotic. Providers chose guideline-appropriate treatment 56% of the time (Steinkuller et al., 2021). The study concluded that there is an unmet need to address patient and provider knowledge deficits and behaviors towards antibiotics (Steinkuller et al., 2021).

A review by Bork et al. (2020) summarizes the scope of the problem of antibiotic prescribing in different outpatient settings, the regulations and metrics for outpatient antimicrobial stewardship, a broad overview of interventions, and future directions of antimicrobial stewardship in outpatient settings. The review notes that outpatient antimicrobials account for 54-90% of all antimicrobials prescribed within a healthcare system. Furthermore,13% of ambulatory care visits result in an antibiotic prescription, and in this setting approximately 23-76% of these prescriptions are inappropriate (Palms et al., 2019). Several intrinsic factors were examined in the review by Bork et al. (2020) that affect prescription behavior, such as location; in North Carolina antibiotic use was 36% more likely in an urban setting than in a rural setting. In Tennessee rural areas were almost three times more likely to have higher prescribing rates than a metropolitan area (Staub et al., 2016).

Buehrle and Clancy (2021) report 30% of antibiotic prescriptions written in outpatient settings in the United States from 2011-2015 were unnecessary and discuss the need for greater attention to outpatient antibiotic stewardship. The authors note that a major challenge in implementing ASP is that many healthcare systems have limited resources for outpatient stewardship. Multifaceted interventions that include peer comparison, education, and decision support achieved significant and sustained reductions in overall antibiotic prescriptions in

primary care clinics and emergency departments. Other methods that demonstrated success included delayed prescribing, communication skills training, use of guidelines, and laboratory tools (Buehrle & Clancy, 2021).

Staub et al. (2016) discussed other intrinsic factors including higher prescribing rates for adults than pediatrics, increased likelihood for advanced practice providers and late career physicians are more likely to prescribe antibiotics, and patient expectations. Defining problems unique to outpatient facilities, implementing proposed interventions targeting those problems, following regulations, and tracking metrics, and collaborating with state health departments, health insurers, and healthcare systems will be essential in implementing a successful antimicrobial stewardship program (Staub et al., 2016).

Key findings from the literature review supported implementing antimicrobial stewardship practices into the urgent care facility. Interventions such as patient and provider education, chart audits and feedback, and following the CDC's recommended guidelines for respiratory infections as well as following the core elements are essential in a successful ASP. These findings have been reviewed and utilized in the formulation of the methodology of this project.

Theoretical Model

The theory utilized to guide this project is Eric Havelock's Stages of Planned Change (see Appendix A). The key components of this theory include building a relationship, diagnosing a problem, acquiring resources, choosing a solution, gaining acceptance, and monitoring the change (Havelock, 1970). Change is often challenging, especially when we are used to our conventional methods. Utilizing Havelock's theory provided a simple six-step process that acknowledged resistance to change and the need to carefully plan for change. The DNP student

applied this theory in the urgent care setting, in which relationships were already formed with fellow healthcare providers and nursing staff. The problem was identified (antibiotic misuse), and the DNP student had access to gather resources through already established credentials. The anticipated solution of implementing antimicrobial stewardship guidelines was thoroughly researched and discussed amongst fellow providers within the facility. The DNP student gained acceptance of project implementation after presenting evidence-based educational materials. Monitoring of guideline implementation was conducted through chart audits several weeks after educational training to ensure change was successfully maintained. All steps of the theory were both practical and feasible.

Methodology

This project was designed to increase healthcare provider and patient awareness of antibiotic overuse in the outpatient setting and demonstrate the efficacy of implementing AMS guidelines. The primary intervention of this project was to implement AMS guidelines within an urgent care setting. Healthcare providers were provided pre-intervention questionnaires to assess knowledge of current practice guidelines for URIs (see Appendix B). A formal training was then conducted which included the CDC's *Adult Outpatient Treatment Recommendations for URIs* (see Appendix C), definition of antimicrobial resistance and ways to combat the dilemma, and facility and national statistics of antibiotic prescribing in outpatient settings. Educational visuals regarding appropriateness of antibiotics created by the CDC entitled, "What's Got You Sick: Virus or Bacteria?" (https://www.cdc.gov/antibiotic-use/pdfs/VirusOrBacteria-Original-P.pdf) were placed in all patient exam rooms. Outcomes were measured through chart audits (see Appendix D) pre- and post-intervention to assess the occurrence of antibiotic prescribing for URIs.

Setting

The project took place at a rural urgent and primary care facility. The outpatient clinic assesses and treats all patients ranging from newborns to older adults and is designed and equipped to provide primary care, urgent care, minor emergency treatment, and occupational medicine. An array of illnesses and injuries are treated including but not limited to acute sinusitis, otitis media, acute pharyngitis, influenza, COVID-19, urinary tract infections, lacerations, bone injuries, etc. The average number of daily patient visits range from 30-80 patients daily.

Population

The population of interest were healthcare providers within the urgent/primary care setting. This included Physicians, Nurse Practitioners (NPs), and Physician Assistants (PAs). A total of five full-time and part-time providers were invited to participate in the project. The principal investigator (PI) was excluded from this project, making the total sample size four healthcare providers.

Inclusion/Exclusion Criteria for HealthCare Providers

Inclusion criteria:

- All healthcare providers (NPs, PAs, and Physicians)
- Employment status: full time and part-time

Exclusion criteria:

- Per diem providers
- Principal Investigator (PI)

Recruitment

Providers meeting inclusion criteria from the urgent/primary care facility were invited to participate and provided a consent form to review prior to enrolling in the study. The PI verbally explained the project to potential participants, following a written script to ensure all participants received the same information (see Appendix E). Participants were informed their participation was completely voluntary and the process for opting out at any point during the project was thoroughly discussed. Refreshments and educational materials were provided.

Consent

Consent was obtained from all study participants prior to project intervention (see Appendix F). It was emphasized that this was a student-led project with the sole purpose of promoting AMS guidelines within the facility to decrease antibiotic misuse. The PI leading this project had no influence over administrative responsibilities and the medical director nor the chief executive officer (CEO) of the company had any influence or participation in this project. The privacy of all participants was acknowledged, and it was reiterated that the PI would maintain confidentiality of all identifiable collected data.

Design

The project evaluated the facility's and the healthcare providers' current trends of antibiotic prescribing for URIs. A pre-intervention, retrospective chart audit was conducted on charts from patients evaluated in the urgent/primary care clinic between January 25, 2022, to February 23, 2022, to determine the rate of antibiotic prescribing for URIs. Healthcare providers were asked to complete a short eight-question questionnaire (see Appendix B) regarding practice guidelines for URIs on February 23, 2022. Questions were developed to assess provider

knowledge of the issue of antibiotic misuse and AMR (questions 1 and 3), discover what resources providers are currently utilizing to guide practice decisions (question 2), situational questions in which providers choose if an antibiotic is warranted (questions 4-7), and the definition of delayed prescribing (question 8). The questionnaire was created by the DNP student utilizing the information from the CDC's *Adult Outpatient Treatment Recommendations for URIs* and validated by the student's preceptor and faculty chair prior to implementation.

Afterwards, formal education was provided regarding AMS and evidence-based practice (EBP) recommendations, per the CDC's *Adult Outpatient Treatment Recommendations for URIs*. Educational handouts were also provided concerning these recommendations (see Appendix C). A post-intervention questionnaire was readministered for comparison. Quasi-experimental methods were utilized for data collection.

Chart Review/Audit

A pre-intervention chart review took place after Institutional Review Board (IRB) approval (see Appendix G) and 30-days prior to educational sessions were presented using a sample of 261 charts. Charts were identified for specific International Classification of Diseases, Tenth Revision (ICD-10) codes including: J02.9 (acute pharyngitis), J01.90 (acute sinusitis), J06.9 (acute upper respiratory infection), and J20.9 (acute bronchitis). The charts were reviewed for confirmed diagnoses and prescribed treatment. A post-intervention chart review took place using a sample of 309 charts to assess for a decrease in occurrence of antibiotic prescribing for the same ICD-10 codes. This review took place over the 30-day implementation period (see Appendix H).

The electronic medical record system utilized at the urgent/primary care setting was *eClinicalWorks*. The post-intervention chart review was conducted 30 days after providing the

educational session and displaying patient visuals in exam rooms. Information from chart audits included patient diagnoses only. No identifiable information such as names, age, or sex, were included. Healthcare providers were labeled by letter, not name to maintain confidentiality.

Risks and Benefits

There was only minimal potential risk for healthcare providers participating in this project, and it was regarding confidentiality. Any risk regarding confidentiality and survey responses was mitigated through the security of the survey results by the PI and assurance that participation would not affect their job status. Benefits to healthcare providers included increasing knowledge regarding appropriate AMS guidelines, increasing awareness of urgent care antibiotic prescribing practices, decreasing inappropriate antibiotic prescribing, and minimizing antimicrobial resistance.

The project adhered to all ethical standards required to protect healthcare providers involved. First and foremost, this project observed the principles of non-maleficence and beneficence by acting in the best interest of the participants while minimizing or preventing harm. The principle of autonomy was respected by honoring participant's free choices to participate in the project. The principle of justice was promoted by treating all participants equitable, regardless of their age, sex, religion, or race (Barrow et al., 2021).

Compensation

All healthcare providers were offered light refreshments and supporting handouts during their educational sessions.

Timeline

Initial phases of the DNP project included obtaining approval from the site for project implementation as well as IRB (see Appendix H). After obtaining approval, the project was

explained in detail to potential participants followed by obtaining consent. Following consent, the second phase began which included conducting chart audits for 30 days, beginning January 25, 2022. After collecting data from chart audits, questionnaires were administered to participants followed by a brief educational session. Post-intervention chart audits were conducted beginning on February 24, 2022, through March 25, 2022, for a total of 30 days. The questionnaire was then re-administered to participants for comparison and data was compiled, analyzed, and prepared for presentation.

Budget and Resources

There were minimal financial costs associated with implementing the DNP project (see Appendix I). Printing participant and patient educational information, questionnaires, and picture frames which displayed patient flyers that were displayed in patient exam rooms totaled $50. A monetary donation to the statistician of $150 was given for analyzing collected data. A $20 universal serial bus (USB) was purchased to store collected data. Light refreshments were purchased for $30 for providers participating in the project. The educational sessions were conducted during the participant's scheduled shift, when patient volume was low, to avoid after hour sessions and easy accommodations. Additional time was required by the DNP student for collecting data.

Evaluation Plan

Statistical Considerations

Due to the small sample size, descriptive statistics were utilized to allow ease of simplifying, organizing, and summarizing the data. An excel spreadsheet was used to collect data which included the patient's presenting symptoms, review of any diagnostic testing completed during visit, and whether the patient received an antibiotic or not for the following diagnoses:

acute pharyngitis, acute upper respiratory infection, and acute bronchitis. The spreadsheet (see Appendix D) was then forwarded to a statistician for formal analysis. The statistician also examined the pre- and post-questionnaires taken by the healthcare providers.

Data Maintenance and Security

Unidentifiable patient data were collected from the charts during chart audits including only diagnosis codes (ICD-10 codes). No identifiable data such as age, race, or sex was needed or collected. Healthcare providers were labeled by letter, not name, to maintain confidentiality throughout project presentation. The PI and the statistician were the only individuals with access to data information. Data was stored on a USB flash drive and will be kept by the PI for less than 3 years; after which it will be destroyed via facility policy.

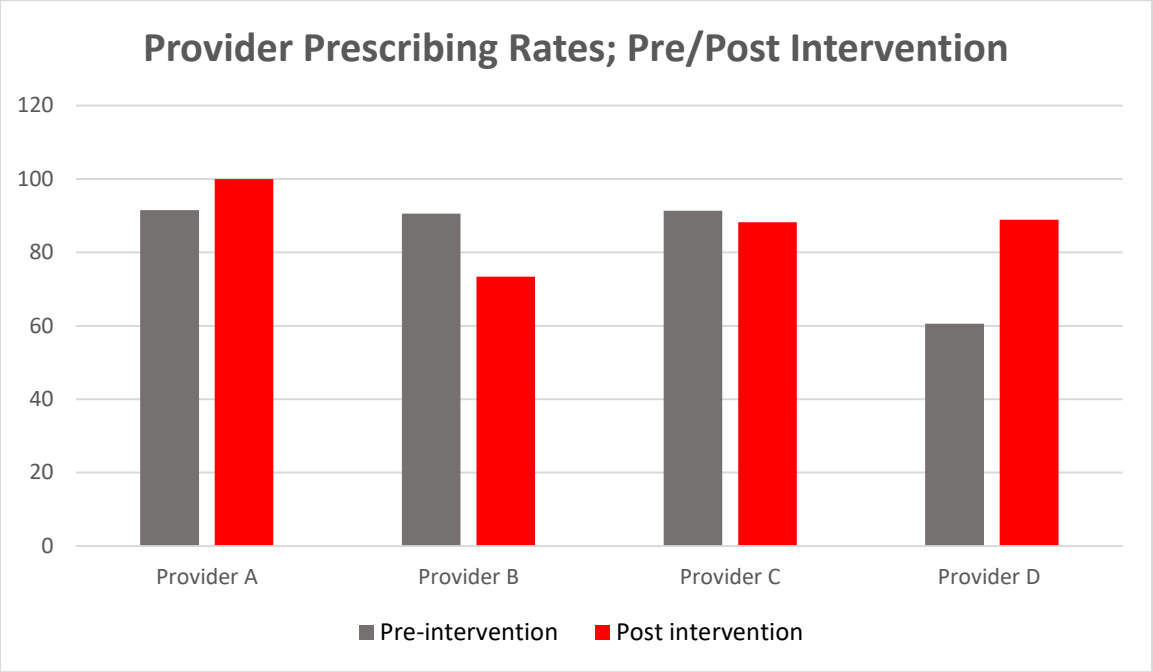
Results

This section will review the results of the data analysis which includes quantitative results from the pre- and post-intervention chart reviews. Statistician Robert L. Cochran III, instructor within the Mathematical, Computing, and Information Sciences (MCIS) department at the University analyzed all data provided by the PI. Social Science Statistics software was used to compute p-values.

A two-tailed comparative t-test was performed on each of the following using a significance level of 0.05 to determine if there was a significant change to the rates of prescribing antibiotics pre- and post-intervention. Pre-intervention, provider A had an antibiotic prescribing rate of 91.49% and increased to a rate of 100% after the intervention ($p = .016$), provider B had an antibiotic prescribing rate of 90.59% and decreased to a rate of 73.39% after the intervention ($p = .002$), provider C had an antibiotic prescribing rate of 91.38% and decreased to a rate of 88.24% after the intervention ($p = .696$), and provider D had an antibiotic prescribing

rate of 60.56%, the lowest of the group, and increased to a rate of 88.89% after the intervention (p=.000.). A power analysis was not conducted to determine a minimum sample size and further studies are needed for generalizability.

Figure 1:
Provider Prescribing Rates; Pre/Post Intervention



Pre-intervention, the antibiotic prescribing rates for the illness acute pharyngitis was 74.51% and decreased to 59.74% after the intervention (p=.087), acute bronchitis was 82.22% and increased to 88.64% after the intervention (p=.394), URI was 74.07% and increased to 92.86% after the intervention (p=.000), and acute sinusitis was 96.43% and increased to 96.63% after the intervention (p=.942). Pre-intervention, all providers answered questions number one-four, and six and seven appropriately on the antibiotic stewardship presentation questionnaire (see Appendix C). One provider answered number five incorrectly and two providers answered question number eight incorrectly. Post-intervention, questions number five and eight improved 100%.

Figure 2:
Prescribing Rates per Diagnoses-Pre/Post Intervention

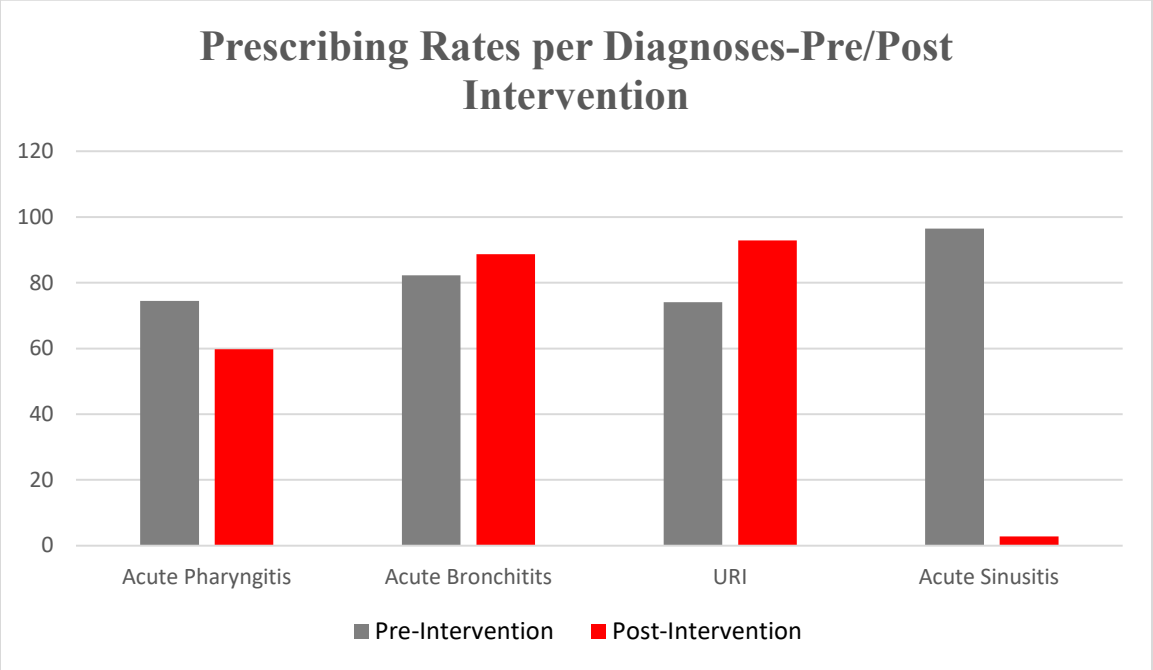
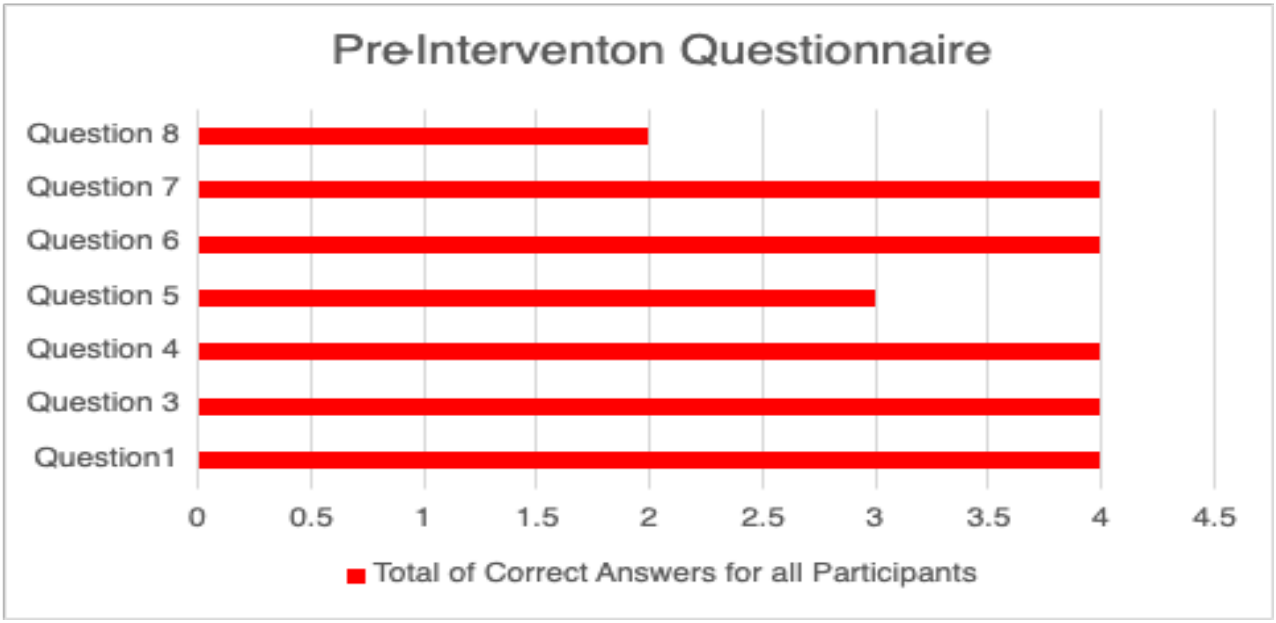
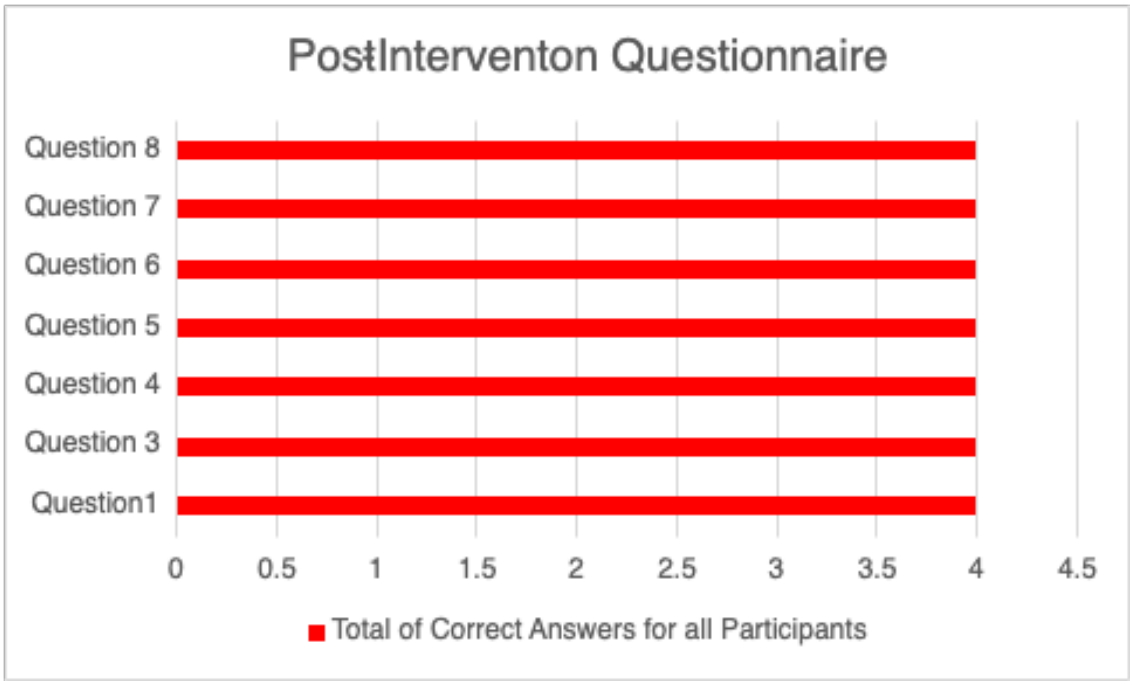


Figure 3:
Questionnaire Results (Pre-Intervention)



Question #2 omitted from graph as it was a "select all that apply" question

Figure 4:
Questionnaire Results (Post-Intervention)



Discussion

The antimicrobial stewardship program addressed the issue of overusing and misusing antibiotics in the urgent care setting for URIs. There was a moderate decrease in the occurrence of antibiotic prescribing at the project site and more importantly, an increase of provider knowledge of treatment recommendations for URIs. There were several occurrences the PI noted throughout project implementation. Acute sinusitis and URI were the most common diagnoses and 97% of the time no diagnostic testing was completed. If a patient's rapid strep test resulted negative an antibiotic was still prescribed without obtaining blood work to confirm if symptoms were due to a bacterial or viral infection.

The most common and often only diagnostic test utilized was a COVID-19 nasal swab; if negative and upper respiratory symptoms were present, an antibiotic was prescribed. Half of

providers coded specific symptoms and not actual diagnoses. For example, a patient presenting with complaints of a sore throat for two days and a rapid strep test result of negative, the provider's final diagnosis was "sore throat." Although the rapid strep test was negative and the symptoms were present for only two days, the patient received an antibiotic. Due to this common occurrence of coding symptoms as diagnoses, several charts were omitted due to not meeting diagnostic criteria. Diagnoses excluded include fever, sore throat, tonsillitis, sinus congestion, cold virus, cough, and shortness of breath.

A common occurrence noted was providers prescribing antibiotics for the diagnosis of acute sinusitis if symptoms were present for more than three days without diagnostic testing. Findings of this project include the antibiotic prescribing rate for the illness acute pharyngitis decreasing from 74.51% pre-intervention to 59.74% after implementing AMS guidelines. There was no significant change in the prescription rate of antibiotics for acute bronchitis, acute sinusitis, or URI. Post-intervention surveys showed a 100% improvement in questions number 5 (scenario determining if an antibiotic was implicated or not), and question number 8 (defining delayed prescribing).

Implications of Study

Clinical Practice

The project's aims were met by demonstrating a significant change in individual prescribing habits, enhancing provider awareness of the rise in antibiotic resistance, and improving provider knowledge of recommended treatment guidelines for URIs. This project can contribute to existing evidence showing the implementation of AMS guidelines in an urgent care setting can result in a decrease in inappropriate antibiotic prescribing.

Healthcare Policy

While there are already quality measures that urgent care facilities must meet, there is still room for improvement in the AMS department. The CDC provides a framework for antibiotic stewardship in the outpatient setting that focuses on four key elements: commitment, action for policy and practice, tracking and reporting, and education and expertise (CDC, 2021). The CDC recommends outpatient clinicians and facility leaders commit to refining antibiotic prescribing by implementing at least one element aimed at improving antibiotic prescribing practices. By demonstrating a decrease of antibiotic prescribing at the project site, a significant push may be placed on healthcare leaders to provide resources towards developing and sustaining an AMS program.

Quality/Safety

Quality and safety are imperative in healthcare. The focus of implementing AMS guidelines is to improve the safe and appropriate use of antibiotics, reduce the occurrence of antimicrobial resistance, and reduce patient harm. This quality improvement project demonstrated an overall decrease of inappropriate antibiotic prescribing. Sustaining the program and implementing it throughout the entire organization may reduce antimicrobial resistance significantly.

Limitations

There were several limitations to this quality assurance project. The project was conducted in a rural urgent and primary clinic, which may not be representative of other practice settings. Sample size of project participants were small due to a shortage of full-time providers and the inability to effectively compare prescribing rates with those who frequently worked on an as needed (PRN) basis; therefore, generalizability cannot be established. Project

implementation was relatively short with 30-day pre-intervention and 30-day post-intervention chart audits. An extended study period with multiple healthcare providers' participation will provide a more robust data sample for comparison to adequately reflect the antibiotic prescribing rate at the facility. Different seasons of the year may also play a factor in prescribing rates such as flu, allergy, and winter seasons.

Specific factors were not assessed that might have influenced prescribing practices such as patient demographics and provider characteristics (age of provider, length of practice years, MD, or NP/PA). A study conducted to identify factors that contribute to prescribing practices noted that older providers were four times more likely to prescribe an antibiotic than providers ≤30 years of age (Schmidt et al., 2018). One participant unfortunately took a 2-week leave of absence during project implementation which may have altered the comparison of overall rate decrease. Lastly, half of providers excluded relevant information from charts such as symptom onset as well as documented chief complaints as diagnoses instead of as symptoms, which excluded several charts from the study.

Dissemination Plan

The findings for this quality improvement project have been disseminated through the three P's: poster, presentation, and paper. The DNP Project was presented via poster and short presentation at the University's Annual Virtual DNP Dissemination Day on July 15, 2022. Results of the project were shared with participants as well as executive leadership within the organization. Additionally, the DNP manuscript was placed in the Jacksonville State University's Digital Commons repository.

Sustainability

The implementation of AMS guidelines did not end with the administration of post-intervention questionnaires. Educational visuals created by the CDC, "What's Got You Sick: Virus or Bacteria?" (https://www.cdc.gov/antibiotic-use/pdfs/VirusOrBacteria-Original-P.pdf) remain in all patient exam rooms, in the main lobby, and check-in areas. The *Adult Outpatient Treatment Recommendations for URIs*, from the CDC remain readily available for all healthcare providers. Through dissemination, the hope is for executive leadership to see the efficacy of implementing this protocol and expand it to all facilities within the organization.

For the implementation of AMS guidelines to continue and be effective within the facility, a multidisciplinary team should be established that consists of a pharmacist, a physician, a nurse practitioner and/or a physician assistant, and an information technologist. Developing this team will ensure providers are abreast of current treatment recommendations, guidelines are being properly followed, and chart data is collected and reported efficiently and frequently. It is the hope that further interest in this project will be found, and more resources will be allocated to implement AMS guidelines throughout the organization and in other urgent care chains.

Plans for Future Scholarship

This project adds to existing data supporting the implementation of AMS guidelines to improve antibiotic misuse and overuse in urgent/primary care settings. However, additional research is needed to support these findings. Further studies should involve extending the plan of study to evaluate the clinic's full year performance to include high peak seasons such as flu and allergy, as well as non-peak seasons such as the summertime. Inclusion criteria for participation should include full-time providers only, as the inconsistency of prescribing practices for each provider can affect overall results. This project focused solely on the prescribing rates for

specific diagnoses and ICD codes. It did not take into consideration factors such as the drug of choice or length of reported patient symptoms, which are components of the *CDC's Core Elements of Outpatient Antibiotic Stewardship.* Future studies should center on these areas to continue improving patient treatment plans.

Conclusion

The objective of implementing an AMS program was to address the issue of antibiotic misuse and overuse in outpatient settings, which is a patient and public healthcare crisis. AMS programs in the past have been focused solely on inpatient settings. However, recently, efforts have extended to include outpatient settings such as urgent cares, emergency departments, and primary care facilities. Approximately 85%-95% of antibiotic use occurs in outpatient settings, and 39% of urgent care and 14% of emergency department visits lead to an antibiotic prescription (Duffy et al., 2018). Effective evidence-based strategies, such as utilizing the CDC's *Core Elements of Outpatient Antibiotic Stewardship,* are needed in these settings to reduce the misuse of antibiotic prescribing.

Implementing AMS education in this urgent care setting decreased the antibiotic prescribing rate for acute pharyngitis by 14.7%, decreased the overall antibiotic prescribing rate for provider B by 17.2%, and decreased the antibiotic prescribing rate of provider C by 3.14%. Healthcare providers are critical in helping reduce antibiotic resistance and can bridge the practice gap by becoming aware of antibiotic misuse and knowledgeable of appropriate evidence-based antibiotic prescribing practices. Applying this program into daily practice is cost-efficient, simple to implement, and can have a substantial impact on patient outcomes.

Further research should be performed to examine the effect of implementing the program for an extended period of time with the focus of full-time providers only. A multidisciplinary

team may also be highly effective to include physicians, pharmacists, an infectious disease specialist, and an information technologist to facilitate implementation, data collection, and monitoring. The implementation of this program is recommended as a practice change both within the current facility and for other urgent care facilities.

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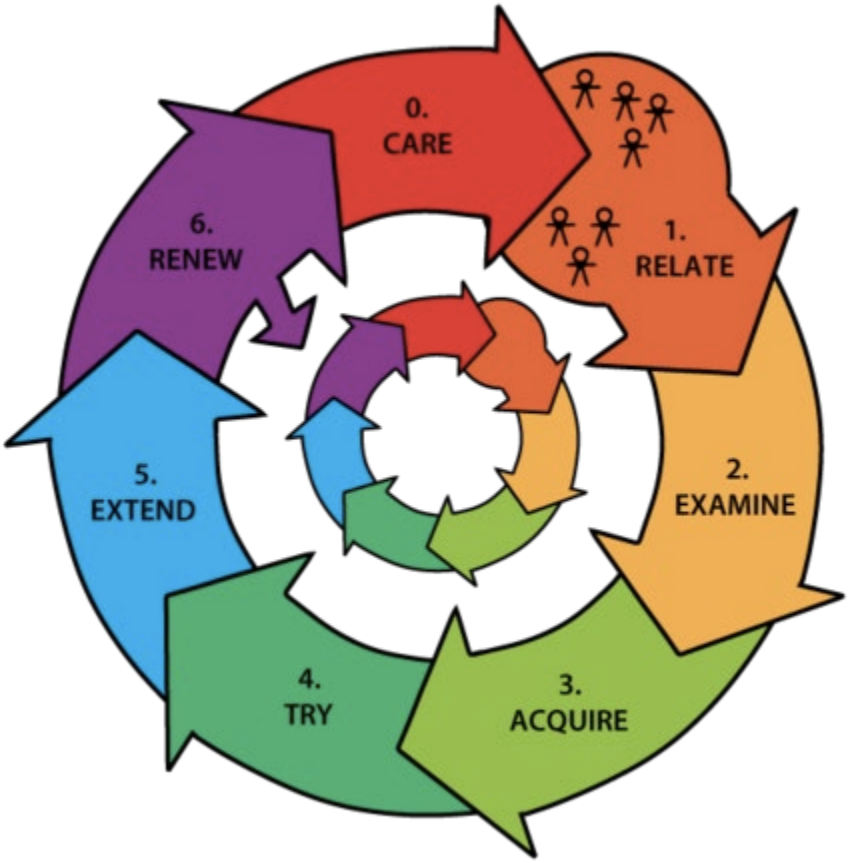
Appendix A

Theoretical Framework

Eric Havelock's Stages of Planned Change



Appendix B

Antibiotic Stewardship Presentation Questionnaire

(Circle the letter for your answer choice)

1) Overuse of broad-spectrum antibiotics can cause antimicrobial resistance. True/False
   a. True
   b. False

2) Which resources are appropriate to utilize to determine best evidence-based practice for antibiotic prescribing? Select all that apply.
   a. Centers for Disease Control and Prevention (CDC)
   b. Epocrates
   c. UpToDate
   d. Medscape
   e. Google
   f. Knowledge I obtained in Med school/NP/PA program

3) Inappropriate antibiotic prescribing is a problem in outpatient healthcare settings?
   a. Agree
   b. Disagree
   c. Neutral

4) For acute uncomplicated bronchitis, antibiotics are recommended for routine treatment.
a. True
b. False

5) A 19-year-old female patient presents to the clinic with complaints of a sore throat x 2 days. Patient reports sore throat is worse in the morning and gets better as the day continues as well as rhinorrhea and an occasional cough with green phlegm. Physical examination shows an erythematous pharynx without exudate. Patient is afebrile, lungs are clear upon auscultation, and throat swab for Streptococcus is negative. In addition to symptomatic treatment, which of the following is indicated?
   a. Penicillin
   b. Azithromycin (Z-pack)
   c. No antibiotics are needed
   d. Cephalexin

6) Mr. John, a 56-year-old male, requests a Z-pack and a steroid injection for chief complaints of: fever, rhinorrhea, myalgia, nasal congestion, and sore throat x 3 days; patient reports symptoms are improving. Influenza, COVID, and streptococcus tests are all negative. WBC=7.8 (WNL). Examination is unremarkable; no signs of a bacterial infection noted. Your final diagnosis is an upper respiratory infection (URI). Along with decongestants, antihistamines, and non-steroidal anti-inflammatory drugs to relieve symptoms, which medications are indicated?
   a. Azithromycin (Z-pack)
   b. Doxycycline
   c. Amoxicillin-Clavulanic acid (Augmentin)
   d. No further treatment is recommended

7) Antibiotics will improve the outcome of the treatment of the common cold.
   a. Yes
   b. No
   c. Depends on the circumstance

8) A strategy developed to reduce inappropriate antibiotic use when the indication is not clear, and is defined as prescribing an antibiotic for the patient to take only if symptoms do not improve in several days is called delayed prescribing?
   a. True
   b. False

Appendix C

CDC's Adult Outpatient Treatment Recommendations

The table below summarizes the most recent recommendations for appropriate antibiotic prescribing for adults seeking care in an outpatient setting. Antibiotic prescribing guidelines establish standards of care and focus quality improvement efforts. The table also offers information related to over-the-counter medication for symptomatic therapy. Over-the-counter medications can provide symptom relief but have not been shown to shorten the duration of illness. They also have a low incidence of minor adverse effects. Providers and patients should weigh the potential for benefits and minor adverse effects when considering symptomatic therapy.

Condition	Epidemiology	Diagnosis	Management
Acute rhinosinusitis (Rosenfeld et al., 2015; Chow et al., 2012)	• About 1 out of 8 adults (12%) in 2012 reported receiving a diagnosis of rhinosinusitis in the previous 12 months, resulting in more than 30 million diagnoses • Ninety–98% of rhinosinusitis cases	• Diagnose acute bacterial rhinosinusitis based on symptoms that are: ○ **Severe (>3-4 days),** such as a fever ≥39°C (102°F) and purulent nasal discharge or facial pain. ○ **Persistent (>10 days) without improve**	If a bacterial infection is established: • Watchful waiting is encouraged for uncomplicated cases for which reliable follow-up is available. • Amoxicillin or amoxicillin/clavulanate is the recommended first-line therapy. • Macrolides such as azithromycin are not recommended due to high levels of *Streptococcus pneumoniae* antibiotic resistance (~40%). • For penicillin-allergic patients, doxycycline or a respiratory fluoroquinolone (levofloxacin or moxifloxacin) are

	are viral, and antibiotics are not guaranteed to help even if the causative agent is bacterial.	**ment**, such as nasal discharge or daytime cough; or ○ **Worsening (3-4 days)** such as worsening or new onset fever, daytime cough, or nasal discharge after initial improvement of a viral upper respiratory infections (URI) lasting 5-6 days. • Sinus radiographs are not routinely recommended.	recommended as alternative agents.

Acute uncomplicated bronchitis (Albert, 2010; Irwin et al., 2006; Gonzales et al., 2001)	• Cough is the most common symptom for which adult patients visit their primary care provider, and acute bronchitis is the most common diagnosis in these patients.	• Evaluation should focus on ruling out pneumonia, which is rare among otherwise healthy adults in the absence of abnormal vital signs (heart rate ≥ 100 beats/min, respiratory rate ≥ 24 breaths/min, or oral temperature≥ 38 °C) and abnormal lung examination findings (focal consolidation, egophony, fremitus). • Colored sputum does not indicate bacterial infection. • For most cases, chest radiography is not indicated.	Routine treatment of uncomplicated acute bronchitis with antibiotics is not recommended, regardless of cough duration. Options for symptomatic therapy include: • Cough suppressants (codeine, dextromethorphan); • First-generation antihistamines (diphenhydramine); • Decongestants (phenylephrine). Evidence supporting specific symptomatic therapies is limited.
Common cold or non-specific upper respiratory tract infection (URI) (Fashner et al., 2012; Pratter, 2006)	• The common cold is the third most frequent diagnosis in office visits, and most adults experience two to four colds annually. • At least 200 viruses can cause the	• Prominent cold symptoms include fever, cough, rhinorrhea, nasal congestion, postnasal drip, sore throat, headache, and myalgias.	• Decongestants (pseudoephedrine and phenylephrine) combined with a first-generation antihistamine may provide short-term symptom relief of nasal symptoms and cough. • Non-steroidal anti-inflammatory drugs can be given to relieve symptoms. • Evidence is lacking to support antihistamines (as monotherapy), opioids, intranasal corticosteroids, and nasal saline irrigation as effective treatments for cold symptom relief.

	common cold.		Providers and patients must weigh the benefits and harms of symptomatic therapy.
Pharyngitis (Shulman et al., 2012; Cooper et al., 2001)	• Group A beta-hemolytic streptococcal (GAS) infection is the only common indication for antibiotic therapy for sore throat cases. • Only 5–10% of adult sore throat cases are caused by GAS.	• Clinical features alone do not distinguish between GAS and viral pharyngitis; a rapid antigen detection test (RADT) is necessary to establish a GAS pharyngitis diagnosis • Those who meet two or more Centor criteria (e.g., fever, tonsillar exudates, tender cervical lymphadenopathy, absence of cough) should receive a RADT. Throat cultures are not routinely recommended for adults.	• Antibiotic treatment is NOT recommended for patients with negative RADT results. • Amoxicillin and penicillin V remain first-line therapy due to their reliable antibiotic activity against GAS. • For penicillin-allergic patients, cephalexin, cefadroxil, clindamycin, or macrolides are recommended. • GAS antibiotic resistance to azithromycin and clindamycin are increasingly common. • Recommended treatment course for all oral beta lactams is 10 days.
Acute uncomplicated cystitis(Gupta et al., 2011; Colgan & Williams, 2011)	• Cystitis is among the most common infections in women and is usually caused by *E. coli*.	• Classic symptoms include dysuria, frequent voiding of small volumes, and urinary urgency. Hematuria and suprapubic discomfort are less common. • Nitrites and leukocyte esterase	For acute uncomplicated cystitis in healthy adult non-pregnant, premenopausal women: • Nitrofurantoin, trimethoprim/sulfamethoxazole (TMP-SMX, where local resistance is <20%), and fosfomycin are appropriate first-line agents. • Fluoroquinolones (e.g. ciprofloxacin) should be

		are the most accurate indicators of acute uncomplicated cystitis	reserved for situations in which other agents are not appropriate.

CDC's Adult Outpatient Treatment Recommendations References

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Appendix D

Pre/Post Intervention Retrospective Chart Audit

Pre-intervention chart audit (01/25--02/23/22)	Column2	Column3	Column4	Column5
Provider A				
	Acute pharyngitis	Acute Bronchitis	URI	Acute Sinusitis
Total of antibiotics	7	11	7	18
Diagnostic testing	3	8	6	11
Symptoms >3 days	1	8	2	9

Column1	Column2	Column3	Column4	Column5
Provider B				
	Acute pharyngitis	Acute Bronchitis	URI	Acute Sinusitis
Total antibiotics	9	11	28	29
Diagnostic testing	8	9	22	19
Symptoms >3 days	3	9	13	16

Column1	Column2	Column3	Column4	Column5
Provider C				
	Acute pharyngitis	Acute Bronchitis	URI	Acute Sinusitis
Total antibiotics	11	14	14	14
Diagnostic testing	11	9	14	3
Symptoms >3 days	2	9	6	11

Column1	Column2	Column3	Column4	Column5
Provider D				
	Acute pharyngitis	Acute Bronchitis	URI	Acute Sinusitis
Total antibiotics	11	1	11	20
Diagnostic testing	10	0	10	17
Symptoms >3 days	5	1	7	12

Post intervention chart audit: 02/24-03/25/22

Column1	Column2	Column3	Column4	Column5

Provider A				
	Acute Pharyngitis	Acute Bronchitis	URI	Acute Sinusitis
Total antibiotics	2	24	14	28
Diagnostic testing	0	13	6	7
Symptoms >3 days	1	19	8	19

Column1	Column2	Column3	Column4	Column5
Provider B				
	Acute Pharyngitis	Acute Bronchitis	URI	Acute Sinusitis
Total antibiotics	11	9	53	18
Diagnostic testing	6	5	24	5
Symptoms >3 days	3	9	30	17

Column1	Column2	Column3	Column4	Column5
Provider C				
	Acute Pharyngitis	Acute Bronchitis	URI	Acute Sinusitis
Total antibiotics	3	4	2	6
Diagnostic testing	3	2	2	2
Symptoms>3 days	3	2	2	5

Column1	Column2	Column3	Column4	Column5
Provider D				
	Acute Pharyngitis	Acute Bronchitis	URI	Acute Sinusitis
Total antibiotics	30	2	22	34
Diagnostic testing	24	1	22	18
Symptoms >3 days	21	2	11	28

Appendix E

DNP Project Verbal Consent Script

Hello, my name is Ashley Pauldin, Jacksonville State University, DNP candidate.

I'd like to ask you to participate in a study regarding implementing antimicrobial stewardship guidelines within the facility.

The rapid rise of resistant bacteria is a worldwide issue, which endangers the efficacy of antibiotics. Studies show that a major contributing factor to this crisis is the overuse of antibiotic prescriptions in outpatient settings.

If you agree to be in this study, you will be asked to complete a 5-10 question questionnaire, participate in an educational session that will take approximately 10 mins to complete, and complete a second questionnaire in 30 days after completing the educational session. I will keep all of your information confidential.

Being in this study is optional, and you can tell me if you want to stop being in the study at any time.

Do you have any questions about the study?

Would you like to participate?

If you have questions about this study in the future, you can contact me at: 205-527-6470, apauldin@yahoo.com.

Appendix F

Consent for Participation in DNP Project

Researcher's Name: Ashley Pauldin, CRNP, FNP-BC
Project Title: Implementing Antimicrobial Stewardship for Healthcare Providers in an Urgent Care Setting to Reduce Antibiotic Misuse for Respiratory Infections

Introduction

Purpose: Evaluate the effectiveness of implementing antimicrobial stewardship guidelines within the facility to decrease inappropriate antibiotic prescribing and minimize antimicrobial resistance.
Description: A brief educational training regarding antibiotic resistance and the importance of antimicrobial stewardship guidelines will be provided. Educational visuals will be displayed in patient exam rooms entitled: "What's Got You Sick: Virus or Bacteria?" Outcomes will be measured via chart audits (pre & post intervention). Chart audits will be conducted through the facility's charting system(eClinicalWorks) pre and post intervention to assess the occurrence of antibiotic prescribing for upper respiratory infections. Post surveys will be administered to evaluate if information provided was valuable, effective, and feasible to implement for continuation.
Location: Approved Agency
Time Expectation: 15-20 minutes for brief educational training. 3-5 minutes for post survey completion. Overall project implementation will occur over a 6-8-week time period.
Benefits: Provide current evidence-based education to both providers and patients regarding antibiotic stewardship. Minimize antimicrobial stewardship. Decrease antibiotic misuse.
Risks: There are no anticipated risks for the participants in this project.
Participation: You have the right to know what you will be asked to do so that you can decide whether or not to be in the study. Your participation is **voluntary**. You do not have to be in the study if you do not want to. Upper-level management does not influence or know who participates in the study. You may refuse to be in the study with no untoward effects. If you do not want to continue to be in the study, you may stop at any time without penalty or loss of benefits to which you are otherwise entitled.
Confidentiality: Information and data collected by the DNP student will be stored on a password protected drive. The DNP student will have primary access to the data. A statistician will be used for analysis purposes; however, no identifiable information will be provided to the statistician. The information contained will not be given to anyone unaffiliated with the study in a form that could identify you without your written consent. You will also be informed of any new information discovered during the course of this study that might influence your willingness to be in this study.

Who do I contact if I have questions, concerns, or complaints? Please contact DNP student, Ashley Pauldin, CRNP, FNP-BC if you have questions about the research: Email: jsu9348n@stu.jsu.edu or 205-527-6470.
A copy of this Informed Consent form will be given to you before you participate in the research.

SIGNATURE

I have read this consent form and my questions have been answered. My signature below means that I consent to participate in the study. I know that I can remove myself from the study at any time without any problems.

_____

Subject Date

Appendix G

IRB Approval Letter/ CITI Training Certificate

JSU | INSTITUTIONAL REVIEW BOARD
JACKSONVILLE STATE UNIVERSITY

Institutional Review Board for the Protection of Human Subjects in Research
249 Angle Hall
700 Pelham Road North
Jacksonville, AL 36265-1602

December 14, 2021

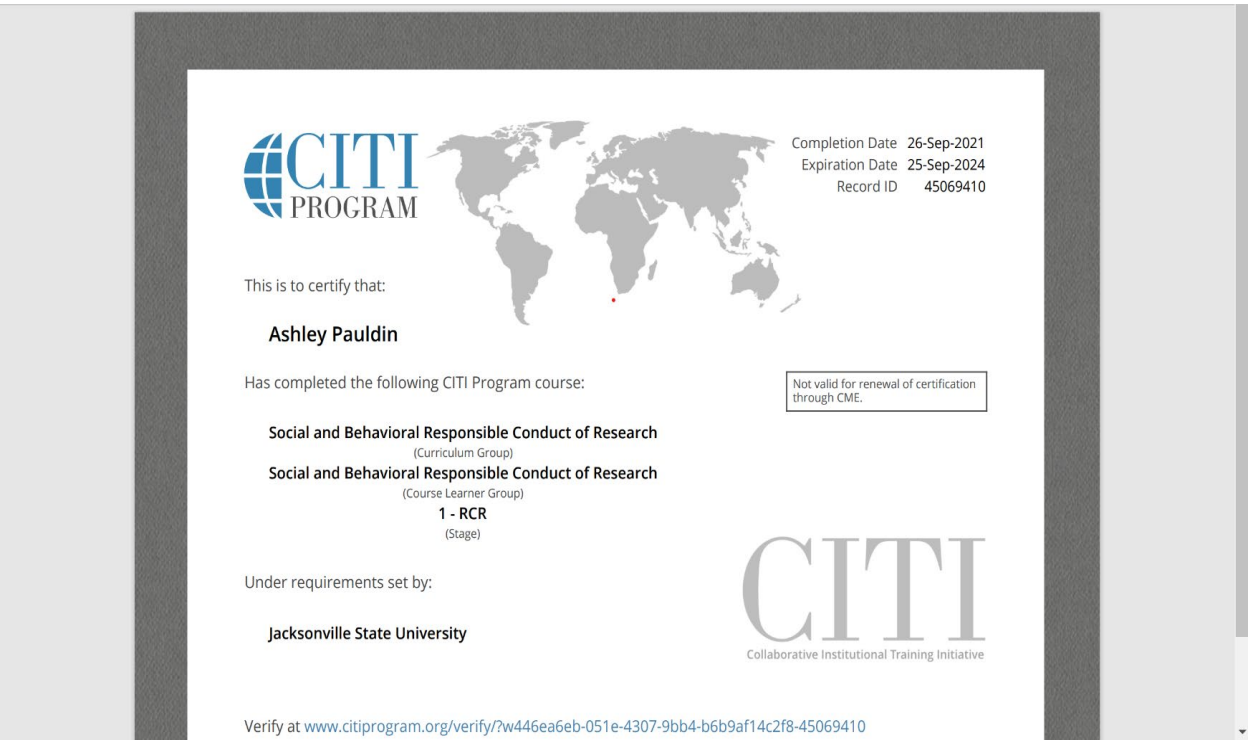
Ashley Pauldin
Jacksonville State University
Jacksonville, AL 36265

Dear Ashley:

Your protocol for the project titled "Implementing Antimicrobial Stewardship for Healthcare Providers in an Urgent Care Setting to Reduce Antibiotic Misuse for Respiratory Infections" 121420201-01 has been granted exemption by the JSU Institutional Review Board for the Protection of Human Subjects in Research (IRB). If your research deviates from that listed in the protocol, please notify me immediately. One year from the dat of this approval letter, please send me a progress report of your research project.
Best wishes for a successful research project.

Sincerely,

Lynn Garner
Associate Human Protections Administrator, Institutional Review Board



CITI PROGRAM

Completion Date 26-Sep-2021
Expiration Date 25-Sep-2024
Record ID 45069410

This is to certify that:

Ashley Pauldin

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Social and Behavioral Responsible Conduct of Research
(Curriculum Group)
Social and Behavioral Responsible Conduct of Research
(Course Learner Group)
1 - RCR
(Stage)

Under requirements set by:

Jacksonville State University

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w446ea6eb-051e-4307-9bb4-b6b9af14c2f8-45069410

Appendix H

Project Timeline

Task	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July
Project planning, site proposal, & approval	**X**	**X**	**X**							
IRB Approval		**X**	**X**							
Pre-intervention chart audits				**X**	**X**					
Pre-questionnaire for Providers					**X**					
Educational in-service to participants					**X**					
Intervention/Evaluation				**X**	**X**	**X**	**X**			
Post-test for Providers							**X**			
Analysis of outcomes						**X**	**X**			
Writing results/completing manuscript				**X**	**X**	**X**	**X**	**X**	**X**	
DNP presentation										**X**

Appendix I

Budget for the DNP Project

PROGRAM EXPENSE	COST
Salaries, wages *(Admin support, practitioners, statistics, or writing consultation)*	$150-Statistician (estimated)
Start-up costs *(copies, charts, displays)*	$50 (Copies of questionnaires and educational information/picture frames placed in patient exam rooms)
Capital costs *(hardware, equipment)*	$20 (USB flash drive for protected info)
Operational costs (heat/electricity)	NA
Other	$30 (Light refreshments for provider participation)
Total Project Expenses	**$250**