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Patient Assessment and Provider Education Regarding Antibiotic Use in the Treatment of Viral URIs in the Urgent Care Setting

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Introduction to the problem

Antibiotic-resistant bacteria is a growing problem in the United States. According to the Centers for Disease Control (CDC) and the Center for Disease Dynamics, Economics and Policy, the misuse and/or overuse of antibiotics is being considered the leading cause of this new generation of antibiotic resistance (CDC, 2018). Antibiotics prescribed for upper respiratory infections (URIs) accounted for three-quarters of all antibiotic prescriptions written by providers (Schroeck et al., 2015). The exposure of these viruses, to unnecessary antibiotics, is what lead to the creation of these resistant microbes.

Due to increase in URIs being treated with antibiotics and the increase in Urgent Cares, throughout the country, collaboration with a local Urgent Care system was created, to implement a program designed to help decrease the amount of unnecessary antibiotics prescribed for viral illnesses. Through this, a Quality Improvement (QI) project was created with two components. One, included the assessment of patients' knowledge regarding antibiotics, and providing them with education regarding the proper use of antibiotics. Part two included educating providers regarding antibiotic misuse, in viral URIs, and promoting adherence to antibiotic stewardship, by the use of knowledge assessments.

Literature Review

Many microbes including bacteria, fungi, viruses, and parasites can cause severe infections, unless treated with the appropriate medication. These drug classes include Macrolides, Cephalosporins, Fluoroquinolones, and Beta-lactams (CDC, 2014). As of 2014,

Penicillin remained the most widely prescribed drug class, at 60.7 million, followed by Macrolides, at 49.0 million, Cephalosporins, at 35.7 million, and Fluoroquinolones, at 32.8 million (CDC, 2014). Currently, Azithromycin and Amoxicillin are the two most highly prescribed antibiotic agents in outpatient settings in the U.S. (CDC, 2017). Due to the overwhelming amount of prescriptions, these microbes have grown and changed their genetic structure, resulting in resistance (World Health Organization, 2016). These infections or mutations are then labeled as "superbugs," and treatment options begin to intensify to find appropriate, safe, and effective treatment (World Health Organization, 2016).

Outpatient settings are the key contributors when it comes to antibiotic prescriptions for acute URI complaints (Manning, Pfeiffer, & Larson, 2016). The CDC states that approximately 90-98% of all acute rhinosinusitis cases are viral in etiology (2017). Meanwhile 266.1 million antibiotics were reportedly prescribed in outpatient settings (2017). Resistance to medical treatment, up to 12-months, was seen when a URI was treated with an antibiotic (Llor and Bjerrum, 2014).

Lack of patients' knowledge and awareness of antibiotic use played a significant role is the issue of antibiotic resistance, while inappropriate adherence to antibiotic treatment guidelines also impacted the issue. To decrease antibiotic prescription rates, thus overall reducing the number of antibiotic-resistant bacteria, it is necessary that providers assess patient knowledge regarding antibiotic use, and provide proper education about illnesses and antibiotics.

Zajmi, Berisha, Begolli, Hoxha, et al., (2016) reported 42.5% of patients thought antibiotics were effective in treating a viral illness. Schroeck et al., (2015) reported providers contribute to issue by succumbing to patients' requests, leading to a fallout in prescriptive guidelines, set by the CDC. Schroeck et al., (2015, p.3851) also stated that non-recommended

antibiotic therapy is generally prescribed to patients, due to 3 reasons: "(1.) non-recommended antibiotics are more likely to cure an infection, (2.) patient satisfaction, and finally (3.) fear of complications when not treating an infection".

Zajmi et al., (2016) studied patient education in correlation with antibiotic prescriptions, and 32% of patients reported after proper education, their mindsets were changed about antibiotics. Llor and Bjerrum (2014) reported a 32% decrease in antibiotic prescription, after the use of patient education and handouts.

Project methods

The goal of this QI project was to use an assessment of patient knowledge to change the providers' process of antibiotic prescribing in acute care walk-in clinics for the treatment of upper respiratory tract infections, and improve the knowledge of patients with the use of education, regarding appropriate antibiotic use. Thus, providing a directly positive impact on patient care and well-being. These were obtained by implementing the use of a need's assessment tool, used for evaluation of patient care, the development of an educational pamphlet for patient's, and providing continued education to staff and providers to promote adherence to antibiotic stewardship.

This project took place at four Walk-in Clinic Prompt Cares, located in Central Illinois. An IRB application was submitted to request IRB exempt approval from Southern Illinois University Edwardsville. Upon IRB review, it was determined that this protocol was considered a Quality Improvement Project (QIP) and does not constitute human subjects research as defined under 45CFR 46.102(I). Project results were disseminated as QIP findings.

Evaluation

Tools/measures/methods

The screening tool used during this project is referred to as the ABUSE (Antibiotic-Use Screening Evaluations) tool. The patient part of the survey focuses on personal knowledge and behavioral beliefs about antibiotic use, as well as their goal for seeking treatment. Patients rated each item on a severity scale of "never/almost never" to "always/almost always."

Providers completed the second portion of the ABUSE screening tool survey. Five questions were taken from the ABUSE tool with the addition of eight questions created by the authors of this project. Questions taken from the ABUSE tool are related to the provider's typical behaviors and follow the same Likert scale. Additional questions, added by the authors, gathered information on antibiotic prescription and their thoughts of the project's impact in current care.

The ABUSE screening tool was administered to adults aged 18 and over, presenting to acute care walk-in clinics with URI complaints. The questionnaire included unidentifiable patient health information. Demographic data included age, sex, and ethnicity. The patient questionnaire served as an informative tool, later assisting the providers in understanding their patient's knowledge regarding antibiotics. Completion of the survey by the patient served as implied consent to for participation in project.

Based on the patients answers, the provider discussed the appropriate use of antibiotics with the patient, based on their history of presenting illness and physical exam. During patient-provider discussion, four talking points were used: 1) Verbally review exam findings with the patient and include negative test results 2) Explain diagnosis and treatment plan. 3) Validate the patient's illness. 4) Focus on what will make them feel better and how they have been helped today. An educational pamphlet was then given to the patient, emphasizing appropriate antibiotic use and treatments for viral URIs.

Education regarding the screening tool and the educational pamphlet was provided to the staff and providers, using PowerPoint, including key topics that should be discussed during each visit. These included important facts on the pamphlet that should be understood by the patient, without difficulty. If needed, more simplistic education was offered to patients regarding antibiotic therapy.

Outcomes

Of the 26 patients that were evaluated, 88% (n=22) stated they did not ask for an antibiotic during the visit, regardless of their symptoms, and 92% (n=24) denied the need for another provider's opinion, of their illness. With regards to antibiotic safeguarding or keeping antibiotics and using them when needed, 73% (n=19) stated they never saved antibiotics for future use, while 8% (n=2) stated that they would almost always save antibiotics for future use. The 8% of patients that answered they would almost/always save antibiotics for future use correlates with the 8% (n=2) that would stop antibiotic therapy early their symptoms would resolve. Surprisingly, 81% (n=21) of the patient surveys reported they would take the full prescription for the recommended length of time.

In the patients seen in the clinics, only 12% (n=3) presented with a fever or reported a fever at some point, while 62% (n=16) of the patients seen still received an antibiotic. It can be concluded that proper antibiotic prescription was not fulfilled when compared to the CDC guidelines for bacterial rhinosinusitis.

When providers were asked whether they believed that their antibiotic prescription rates decreased after assessing the patient's knowledge regarding antibiotics, 52% (n=13) said yes, they felt assessing patient's knowledge aided in a reduction of antibiotic prescriptions, while 48% (n=12) stated they felt it did not change their plan of care. Concurrently, 54% (n=14) of

providers stated that they felt their rates of antibiotic prescriptions would decrease after the implementation of this project.

Limitations

Limited patient participation was evidenced by only acquiring 26 completed surveys, out of the target sample size of 100, to achieve statistical significance. The nursing staff confirmed a lack of patient participation. The nursing staff also reported a decreased provider buy-in, due to time constraints in completing the surveys. These limitations decreased the number of surveys that could have been collected, making it unknown whether true statistical analysis was achieved.

A lack of supporting literature for the ABUSE evaluation tool impacted this project, due to decreased support regarding the validity and reliability of the questions that were presented to the providers and patients. Having supporting literature would help to assure that assessing the provider's and patient's knowledge regarding antibiotic prescription, promotes antibiotic stewardship.

Impact on Practice

Local practices were impacted, by bringing awareness to providers' current antibiotic stewardship practices, and patients' perceptions of antibiotics. This projected indicated patient education is essential in promoting awareness of appropriate antibiotic therapy. This project also indicated that provider self-awareness positively impacted their stewardship towards antibiotics.

Predicted long-term impact will be dependent on diligence from providers. Continued assessment of patients' knowledge will be important in instilling proper education regarding appropriate antibiotic therapy. Utilizing the four-talking-points will also help to improve patient-provider relationships, resulting in trust about illness improvement without antibiotics.

Further study opportunities include, supportive literature about the ABUSE screening tool providing substantial clinical significance; other sources of knowledge assessment tools; and complete provider and patient buy-in. Together, these would aid in providing statistical.

Conclusions

Antibiotic stewardship is essential in decreasing antibiotic resistance. Our results concluded that 50% or more of the providers involved in the project stated that they felt that assessing their patient's knowledge of antibiotics, before the visit, the outcomes of the visit allowed for an antibiotic prescription to be supported by current treatment guidelines. Yielding, a positive impact on the local communities.

This positive impact can lead to increased awareness about antibiotics, contribute to the communities' knowledge, and support antibiotic stewardship, thereby decreasing antimicrobial resistance.

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