ATYPICAL ANTIPSYCHOTICS AND METABOLIC SIDE EFFECT MONITORING: A QUALITY IMPROVEMENT PROJECT

by

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ABSTRACT

Second-generation antipsychotics (SGAs) have increasingly been utilized by psychiatric providers for patients experiencing a wide array of psychiatric disorders. Originally, SGAs were approved for patients 18 years of age and older; they now have been more consistently utilized in patients under the age of 18. SGAs have significant benefits for many patients, although metabolic side effects from the medication can be detrimental to patients' overall sense of wellbeing. The doctor of nursing practice (DNP) quality improvement (QI) project aimed to improve the metabolic screening rates of adolescent patients admitted to an inpatient residential unit at a pediatric psychiatric hospital. This was done by implementing a paper screening tool that outlined which screening laboratory values had been completed, which needed completing, and when each of these laboratory values were ordered for completion, highlighting a fasting lipid panel, hemoglobin A1c, weight, and blood pressure. A four-week implementation period took place from February 4, 2022 to March 4, 2022. Participants in the project included four psychiatric providers: two psychiatric mental health nurse practitioners (PMHNP) and two psychiatrists. Procedures that took place included (1) providers were educated on the purpose of the QI project and the importance of metabolic screening, (2) the paper screening tool was completed for patients prescribed SGAs, (3) laboratory studies were ordered based on the provider's discretion after completing the paper document, and (4) the paper document was stored and scanned into the patient's chart upon discharge. The results indicated that 75% of patients prescribed SGAs had paper screening tools completed, 85% of patients prescribed SGAs had metabolic screening laboratory studies ordered, and 55% of patients prescribed SGAs had metabolic screening laboratory studies completed. These findings mirrored current literature regarding metabolic screening in patients taking SGAs, suggesting that with the implementation of consistent education, completion of a physical paper screening tool, and systematic ordering of metabolic screening laboratory values, metabolic screening rates improve. The QI project showed success in the preliminary stages and throughout the four-week implementation timeframe, indicating that continuing the project will likely have benefits for adolescent patients prescribed SGAs in residential psychiatric units.

CHAPTER ONE

ATYPICAL ANTIPSYCHOTICS AND METABOLIC SCREENING IN ADOLESCENTS

Introduction

The prevalence of atypical antipsychotic use has rapidly increased in the last decade, especially in the adolescent population (Coughlin et al., 2018). These medications are often utilized for organic symptoms of psychosis but also for many off-label uses as well, such as mood stabilization and antidepressant effects. With increased prescribing of atypical antipsychotics, there is also an increase in side effects. Metabolic side effects commonly associated with second-generation antipsychotics (SGAs) include weight gain, increased body mass index (BMI), elevated triglycerides, hyperlipidemia, elevated hemoglobin A1c, hypertension, and abdominal obesity (Hirsch et al., 2017). While SGAs offer significant psychiatric and mental health benefits, metabolic side effects, which are inconsistently monitored, increase morbidity and overall negative health outcomes. Whether it is a psychiatrist or psychiatric mental health nurse practitioner (PMHNP) prescribing the SGA, it is imperative for adolescent health that the prescriber incorporates routine assessment for metabolic side effects when SGAs are used. This doctor of nursing practice (DNP) project aimed to optimize metabolic side effect monitoring for adolescents who are prescribed SGA therapies while inpatients at this specific hospital.

Background and Significance

Atypical Antipsychotics in Adolescents

SGAs first emerged in the 1980s and quickly became a popular choice for psychiatric medication due to decreased side effect profiles and increased efficacy for symptom reduction (Solmi, 2017). While first used only in adults due to a lack of approval for use in patients under 18, SGAs are now routinely utilized in patients under 18. Across the United States, there has been a 59% increase in the use of atypical antipsychotic medication in the adolescent population in the last 20 years (Almandil et al., 2013).

Negative Outcomes

Atypical antipsychotics can be life saving for some patients, creating substantial improvements in symptomatology. However, up to 30% of patients taking these medications can have significant negative outcomes as a result of the side effects (Jibson, 2021). Commonly cited side effects for SGAs include extrapyramidal symptoms, echocardiogram (ECG) changes, hypotension, sexual dysfunction, weight gain, and sedation. In addition to these, more serious side effects such as tardive dyskinesia, neuroleptic malignant syndrome, hyperprolactinemia, seizures, and increased morbidity are also a cause for hypervigilance when patients are initiated on SGAs (Jibson, 2021). SGAs have a well-known impact on metabolic processes causing some patients to experience weight gain, increased hemoglobin A1c (HbA1c), increased triglycerides, increased cholesterol, and increased waist circumference, each contributing to increased morbidity and placing them at risk for metabolic syndrome (Vandenberghe et al., 2018). When metabolic syndrome occurs, potentially lifelong illnesses such as heart disease and type 2 diabetes can develop, increasing the cost of healthcare, chronic medication use, and higher

morbidity. Weight gain can also complicate body image, which can increase emotional distress leading to disordered eating (Blouin et al., 2008).

Vandenberghe et al. (2018) and Almandil et al. (2013) report that, on average, patients have a 4% weight gain in the first four to eight weeks of use with many patients, especially adolescents, experiencing more than a 4% weight gain. Coughlin et al. (2018) note that there is insufficient metabolic monitoring of weight gain as well as other parameters that lead to the development of metabolic syndromes. Jibson (2021) states that prevention of these serious metabolic syndromes can only occur with proper monitoring for side effects in all age groups.

Lack of Metabolic Monitoring

Within the adolescent population, it appears that even fewer patients have completed metabolic screening prior to initiating SGAs. Pereira et al. (2019) report that based on the American Diabetes Association, American Psychiatric Association, American Association of Clinical Endocrinologists, and North American Association for the Study of Obesity screening for metabolic panels should occur prior to starting SGAs and then at four, eight, and twelve weeks post-SGA therapy in addition to longer-term evaluation as well. Connolly et al. (2015) describe that only 16.1% of patients who were initiated on SGAs had a glucose test in the six months prior to beginning the antipsychotic medication regimen. Furthermore, only 1.5% of these patients had HbA1c testing completed from six months before up to six months after the initiation of the SGA. Another study conducted by Fornari et al. (2020) determined that only 26.9% of adolescent patients initiated on SGAs had any form of metabolic screening, in this case, an HbA1c and a lipid panel.

Identification of Project Site and Problem

Project Site

The site for this QI project is a children's hospital specializing in psychiatrics in the northwestern United States. The pilot unit serves adolescent patients between the ages of 12 and 18 and can house up to 24 patients at a time. The patients on this unit have psychiatric diagnoses including, but not limited to, major depressive disorder, generalized anxiety disorder (GAD), schizophrenia, bipolar disorders, attention deficit hyperactivity disorder (ADHD), and disruptive mood dysregulation disorder (DMDD). The average length of stay for patients in this unit is two to three months and multiple different therapies are offered throughout the stay. Therapy types include individual,; family,; group,; recreational, art, and music therapy. The patients also participate in an accredited school at the facility year-round with credits that translate over to their school of choice once discharged from the facility. On average, patients are seen twice weekly by a psychiatrist who prescribes medications and evaluates their effectiveness. In addition to the psychiatrist, there is a comprehensive team including nurses, mental health technicians, teachers, dieticians, pharmacists, and medical providers caring for these patients.

Problem

This children's psychiatric hospital sees over 4,000 patients each year with many of them being initiated on atypical antipsychotics during their inpatient stay. In addition, many patients are admitted to the hospital on atypical antipsychotics prescribed by primary care providers or other psychiatric providers. Upon admission, the following labs are obtained: complete blood count (CBC), comprehensive metabolic panel (CMP), pregnancy test, and urine drug screen. To combat the development of metabolic syndrome, patients should also receive a baseline

assessment of a lipid panel, HbA1c, and a thyroid-stimulating hormone with reflex-to-free T4 (TSH, FT4), although these are not routinely drawn. Barriers to routinely drawing these labs include providers forgetting to order them and patients refusing to allow their blood to be drawn. Without these laboratory values, there is no baseline metabolic screening for patients who are currently taking or are being initiated on atypical antipsychotics.

While investigating this issue further, the provider on the unit commented that she was unable to locate metabolic labs on a patient taking high doses of atypical antipsychotics experiencing rapid weight gain (L. Ponfick, personal communication, September 2021). Along with this, the dietician has made note of many patients who are taking quetiapine, olanzapine, and aripiprazole and who are struggling with disordered eating after significant weight gain (K. LaLiberty, personal communication, August 2021). In addition to these single case examples, in September 2021, seven of the nine patients on the pilot unit were taking SGAs, and only one had previous metabolic screening lab values. This demonstrated the need for a standardized metabolic screening process for adolescents on SGAs within the inpatient psychiatric setting.

CHAPTER TWO

REVIEW AND SYNTHESIS OF THE LITERATURE

Introduction

A comprehensive literature review was conducted focusing on data from 2011-to 2021, although some high-level resources were included from as early as 2008. Information was obtained from databases, including CINAHL, Medline, PubMed, and UpToDate. To identify usable resources, search terms included “metabolic monitoring,” “second generation antipsychotics,” “atypical antipsychotics,” “adolescents,” “metabolic side effects,” and “metabolic screening.” These searches produced a combination of high-level evidence ranging from randomized controlled trials to comprehensive literature reviews and meta-analyses of large volumes of published research. In total, 17 sources were utilized for the synthesis of literature with levels of evidence assigned based on Melnyk and Fineout-Overholts’s (2015) hierarchy of evidence.

Limitations were noted throughout the research process as the evidence focuses on the adult population rather than the adolescent population. Despite these limitations, adequate information was identified or extrapolated from the current resources available to adults, allowing for process initiation recommendations to be applied to adolescents.

Metabolic Monitoring in Patients on Atypical Antipsychotic Regimens

Screening Recommendations

Metabolic monitoring in patients taking atypical antipsychotics has been widely recognized as a priority intervention in the adult population (Solmi et al., 2017). Hirsch et al. (2017) emphasize that metabolic side effects are one of the most consistently reported negative impacts from SGAs despite having screening tools that could assist in the prevention of these side effects. Knowing this, prescribers should obtain metabolic labs prior to the initiation of SGAs. Many different labs can determine a patient's metabolic status including weight, waist circumference, blood pressure, HbA1c, lipid panel, liver function panel, and BMI calculation. According to Jibson (2021) and Pereira et al. (2019), baseline metabolic screening should include weight; waist circumference; blood pressure; HbA1c,; lipid panel; and liver function panel.

Jibson (2021) identified several different medication-specific guidelines for metabolic screening. In contrast, Mamo (2020) provided a comprehensive tool applicable for all SGAs, including weight; waist circumference; HbA1c; lipid panel; and liver function panel. Weight and blood pressure should be completed at each appointment with HbA1c and lipid panel completed at four, eight, and twelve-week intervals (Mamo, 2020). Pereira et al. (2019) identify that best practices for metabolic monitoring come from a combination of sources including the American Diabetes Association, American Psychiatric Association, American Association of Clinical Endocrinologists, and North American Association for the Study of Obesity. According to these four organizations, metabolic screening should be completed prior to initiation of the medication

at four, eight, and twelve weeks after beginning the medication and then quarterly, yearly, and every five years once metabolic levels are stable and acceptable (Pereira et al., 2019).

Process Recommendations

Addressing metabolic monitoring in adults, Richardson et al. (2016) explain that adherence to screening is multifaceted and often phasic. Their study consisted of three phases, starting with provider education, followed by patient education, and finally utilizing an electronic medical record (EMR) flag reminding the healthcare provider that screening needed to be completed. Cohen et al. (2020) also utilized an active EMR flag that would appear during the medication order entry and indicate that metabolic screening should be completed. Richardson et al. (2016) found there was a 25% adherence rate in the pre-intervention group and an 80% adherence rate in the post-intervention group, although providers indicated that the majority did not find the EMR flag significantly helpful in improving adherence. These providers indicated that the education surrounding metabolic screening was more impactful than the electronic reminder. Interestingly, Cohen et al. (2020) found that the active alert was more beneficial than a passive alert within the chart. An active alert will have the greatest impact on increasing metabolic monitoring, as it forces the prescriber to acknowledge and act on the prompt once the flag is deployed rather than a passive alert that does not require an action to be completed for prescribing to conclude.

Kioko et al. (2016) explored implementing a metabolic screening tool that consisted of a paper document that highlighted pre-therapy and post-therapy metabolic screening results. Included in the document were guidelines to determine metabolic risk, recommendations for screening, and frequency of screening based on risk as well as interpretation of lab findings.

With the implementation of this documentation tool, provider adherence rates for metabolic screening of patients on SGAs increased from 22% to 62%. Melamed et al. (2019) suggest that utilizing a paper document in the patient's chart as a physical reminder to complete metabolic screening is highly beneficial in increasing adherence. With both studies emphasizing the use of a paper document, the first step for process change at this location is a paper tool as a change in the EMR can be extensive, costly, and needs proof of success prior to permanent electronic changes.

Regarding education, Velligan et al. (2013) explored the concept of providing education to providers who are working in the clinic to increase rates of metabolic screening. The education included training on metabolic monitoring to a specific point person at one site who would then disseminate the information to others within the clinic. This included best practices for when to complete metabolic screening for patients taking SGAs, as well as normal values for these labs. Richardson et al. (2016) agree that education is vital to increase rates of metabolic screening, although their work indicates that both providers and patients require education to provide meaningful increases in screening. For this project, provider education was embedded within the distribution of the paper screening tool. With increased provider education, as well as a physical reminder tool, metabolic screening is expected to increase.

Application

For the project setting, meeting the minimum necessary standards for metabolic screening was the first step. If the metabolic screening presented too great of a burden in cost, time, or workload, the organization would forgo a practice change. Therefore, a change must balance evidence with feasibility. A strength of the inpatient setting was that weight and vital signs are

monitored weekly per current unit policy, and the ability to draw labs was easier than in an outpatient setting due to the patients being on-site with nurses available to complete the procedure. Knowing this, prior to the initiation of SGAs, it was recommended that fasting lipids and an HbA1c be drawn with follow-up labs drawn at four-, eight-, and twelve-week intervals.

There was limited published evidence surrounding successful metabolic screening processes in adolescents, so it was important to look at successful processes in adults. After considering the cited references above, it was imperative to provide a simple process that put metabolic monitoring at the forefront of providers' thinking when they were initiating SGA treatment in adolescents. With a paper document initiated at this project site, it would serve as a low-cost reminder to complete metabolic screening prior to the initiation of SGAs. With the successful implementation of the paper document, an active EMR flag could be created for project sustainability in the future. Whether this is through a flag in the EMR or a readily available document, any reminder to initially screen and follow-up on metabolic laboratory values will be a first step in the necessary adolescent metabolic screening process change.

Advanced Practice Registered Nurse Involvement

At the project site, more advanced practice registered nurses (APRNs) are being hired to be the primary psychiatric provider for many of the inpatient patients. This is a huge step forward in care models at this hospital and has already shown promise in improving hospital-wide patient outcome. According to Hoover et al. (2020), the educational foundation of nurses and APRNs provide them with the skills to promote and advocate for policy change to improve patient outcomes. Possessing these skills and qualities at any nursing level plays a vital role in creating long-lasting practice change that will ultimately benefit all patients in the system.

Especially at the doctorate level and in combination with the National Organization of Nurse Practitioner Faculties (NONPF), which provides competencies that each Doctorate of Nursing Practice (DNP) educated professional fulfills, there is such a capacity for nurses to be agents of change (NONPF, 2017). As an agent of change, quality improvement should be at the forefront of psychiatric practice, including improving patient outcomes in the adolescent population through metabolic screening and consistent monitoring for patients prescribed SGAs.

Brown et al. (2018) speak directly about how APRNs specializing in psychiatry can provide positive impacts on metabolic screening. The study suggested that prior to APRN involvement, 2% of patients who were admitted to the acute care mental health unit had their BMI calculated, and only 1% had their waist circumference collected. After the nurse practitioner became involved, BMI calculation increased to 67% of patients, and waist circumference collection increased to 68% (Brown et al., 2018). This study was conducted in an acute inpatient psychiatric unit, suggesting that patients were severely mentally ill and likely taking SGAs. As more APRNs join the workforce, there is a great chance for practice change, especially regarding metabolic monitoring for patients taking SGAs.

Barriers

Several barriers to metabolic monitoring in patients taking SGAs are cited by resources found in the review of the literature. First, a large barrier to metabolic screening in adolescents occurs due to the prescribing provider being the primary care physician (PCP). PCPs play a vital role in caring for adolescents, especially in rural areas, although many do not have psychiatric expertise. Inconsistent metabolic monitoring occurs as a direct result of the lack of training in

psychiatry and limited knowledge of the effects that SGAs can have on the body (Morrato et al., 2011).

Another barrier to consistent metabolic monitoring is the sheer lack of process and policy. Fornari (2020) reports the lack of an established and accepted process for metabolic screening on initiation of SGAs and throughout SGA treatment is causing a disservice to patients, especially adolescents, in regard to metabolic side effects. Richardson et al. (2016) and Kioko et al. (2016) support having an established policy that would be beneficial in preventing and treating metabolic side effects, although literature remained lacking in regard to the steps to create these desired processes.

A third barrier that can be extrapolated from experience and the literature is the difference in initiating SGAs while patients are in an inpatient rather than an outpatient psychiatric setting. Jibson (2021) identified that most SGAs are initiated on an outpatient basis, especially for the adolescent population. With inpatient stays, new medications can be started more easily, and labs can be obtained on-site, which allows for easier access to baseline metabolic screening. Unfortunately, the inpatient prescribing represents a small population of patients who are being initiated on SGAs.

Conclusion

In conclusion, baseline metabolic monitoring at the project site should include blood pressure, weight, HbA1c, lipid panel, and a liver function panel all of which should be completed prior to the initiation of SGA regimens (Jibson, 2021; Mamo, 2020; Pereira et al., 2019; Solmi, 2017). These laboratory tests should be repeated at , eight, and twelve weeks and then quarterly if the patient has not yet been discharged home (Pereira et al., 2019). To standardize this process,

a paper document was distributed that aimed to assist in reminding the prescribing provider to complete baseline and follow-up screening (Kioko et al., 2016). Education was embedded within the distribution of the document to enhance adherence (Richardson et al., 2016). The document also served as a guide for which screenings should be completed and when they should be completed. In addition to the screening process initiation, the increase in APRN involvement at the hospital was thought to assist in improving adherence to metabolic screening prior to and throughout SGA use.

CHAPTER THREE

FRAMEWORK AND METHODS

Introduction

This project was designed as a quality improvement (QI) project aimed at improving adherence to metabolic screening for adolescent psychiatric patients who were initiated on SGAs during inpatient hospitalization. The project utilized two frameworks: one that supported change within the providers and patients, and one that guided the QI practice change. The Health Decisions Model (HDM) emphasized using provider involvement and practice to improve patient beliefs and successfully implement change (Eraker et al., 1984). The QI model of the Plan-Do-Study-Act (PDSA) enabled multiple change cycles to facilitate organizational improvement. Utilizing each of these models supported the change necessary to achieve the overarching project goal of improved metabolic screening for adolescents prescribed SGAs. Utilizing each of these models ultimately benefited the changes idealized within the goals of the project.

Framework

The theoretical framework most closely aligned with this project was the HDM. The HDM combined aspects of the Health Belief Model (HBM) with patient preference and knowledge (Heale & Noble, 2019). The HBM was grounded in the patient's thoughts and beliefs surrounding the level of risk associated with their current diagnosis (Jones et al., 2015). With greater perceived risk comes increased willingness to take action to preserve one's health. A deeper look at the HDM revealed that in addition to the HBM, the integration of informed

decision-making and behavioral compliance influenced choices that patients made regarding their health (Eraker et al., 1984). Informed decision-making is rooted in the provider's ability to educate the patient on options for care, information about the diagnosis or treatment, and benefits or risks from treatment, enabling the patient to make decisions regarding their medical care that most aligns with their personal preferences. Finally, HDM emphasizes five different determinants as factors that impact health care: sociodemographics, social interactions, knowledge, personal experience, and specific health beliefs (Heale & Noble, 2019).

Tailoring the HDM's five determinants to the younger patient population supported the providers' efforts to influence the health behaviors of this population. Specifically, three determinants most impacted adherence to metabolic screening in this population: knowledge, personal experience, and specific health beliefs. During the adolescent years, there is significant brain development that enables providers to educate these patients in order to increase their knowledge of metabolic side effects and screening. The greater the knowledge of metabolic side effects, the greater the likelihood that the patient will begin to advocate for metabolic screening. Personal experience is also influential as adolescents tend to use the experience as their guide. If a patient has a negative experience in the past, they will likely not subscribe to that experience again. Likewise, if a patient has a positive experience, they will continue to engage in activities that elicit that positivity. Considering this project, patients who have had a positive experience on an SGA and have had minimal metabolic side effects due to screening, the higher the likelihood that they agree to metabolic screening and continue the medication. Specific health beliefs are closely linked to personal experience as well. If the patient trusts the education from the provider

regarding metabolic side effects, the patient is likely more willing to follow through with metabolic screening as well as medication adherence.

With this in mind, the provider can interview and educate the patient to determine their level of understanding and commitment to their health. The provider also has the opportunity to determine the patient's perceived level of risk from taking an SGA. If the patient's perceived level of risk is high, the likelihood of metabolic screening increases as the patient and provider collaborate on minimizing this risk. Utilizing one document to both serve as a reference for the provider and an educational tool for the patient will support adherence to metabolic screening and minimize risk to the patient. This combination of education, intervention, and follow-up ideally will improve adherence to metabolic screening by the provider and by the patient.

Project Site

This DNP QI project site was an adolescent psychiatric hospital in the northwestern United States. This hospital has both acute and residential units, although this project targeted the residential unit that treats patients ages 12–18. This unit holds up to 24 patients and treats numerous psychiatric conditions. After meeting with stakeholders and the primary psychiatric provider, it was clear that SGAs were being utilized for a multitude of diagnoses, including bipolar disorder (BPD), major depressive disorder (MDD), schizoaffective disorder, and oppositional defiance disorder (ODD). At the time of the first stakeholder meeting, seven of the nine patients on the pilot unit were taking SGAs and only one patient had preliminary metabolic screening completed, indicating that there was a significant need for intervention to increase metabolic screening and follow-up.

Stakeholders

From August 2021 to January 2022, the DNP student engaged multiple stakeholders to develop project support and development. The primary stakeholders included the unit supervisor for the middle school residential unit, the one psychiatric provider for this unit, and the four nurses on this unit. Other stakeholders included the program director for both residential units, the dietician, allied therapy members, and three family nurse practitioners (FNPs) that provide medical care for the patients as well as the patients' families. The stakeholder engagement outline is listed below. During pre-project implementation each stakeholder's level of engagement was identified and operationalized as follows: 1) inform—the DNP student provided information to the stakeholder; 2) consult—the DNP student gained information from the stakeholders; 3) involve—the DNP student worked with the group to drive the project; 4) collaborate—the DNP student and stakeholders worked together to drive the project. The tasks of each stakeholder are as follows:

- Unit Supervisor: collaborative, meetings held each week, feedback given and received in order to alter the project so it can be more effective and efficient
- Psychiatric Providers: involved, weekly check-ins (brief, informal interactions for basic updates and questions), meetings held every week during rounds (structured updates with all team members present)
- Unit Nurses: involved, weekly check-ins, meetings held weekly during rounds
- Program Director: involved, meetings held weekly
- Dietician: informed, meetings held every other week
- Allied Therapy: informed, meetings held weekly during rounds

- FNPs: involved, meetings held weekly during rounds
- Families: informed, made aware of the project with no follow-up unless the family had questions

Buy-in was determined through word-of-mouth and during a preliminary meeting between the stakeholders, excluding the patients and their families. Conversations were held surrounding limited knowledge about patients' current metabolic status and the negative impact that it was having on their mental health. The project aimed to increase metabolic screening, which each stakeholder concluded would be beneficial to the patients that they serve. The main proponents of this project were the DNP student, the unit supervisor, and the psychiatric provider of the pilot unit.

Project Implementation Barriers and Facilitators

Barriers

Multiple barriers were expected when implementing this QI project. The first barrier was that patients could not be forced to have their blood drawn in order to complete the metabolic screening labs. Despite the ability to understand the benefits of metabolic screening, children are often fearful of needles at this young age. Patients are granted autonomy while in an inpatient unit, and unless the blood draw is for an immediate, urgent, or life-saving measure, staff are unable to implement medical holds. If the patient refuses the blood draw, staff can attempt to incentivize the patient with small tokens or treats, which can sometimes be successful, but not always.

Another anticipated barrier to metabolic screening was the initial use of SGAs as a PRN medication. Providers occasionally use SGAs on an as-needed basis in response to patient

escalation or anxiety. When ordered as a PRN, the goal is infrequent use, so metabolic screening is not initiated. If occasional use of the SGA is effective, PRN usage often transitions into a daily medication order. When transitioned from a PRN to a daily dose, the metabolic screening is overlooked and commonly ignored altogether.

Finally, ease of practice change by the provider was an anticipated barrier. Metabolic screening had not previously been a consistent practice, so the provider anticipated the need for reminders, even when using the screening tool. While this was a barrier, provider awareness through pre-implementation education and with the reminder from the paper document encouraged further self-awareness and reflection.

Facilitators

The most impactful facilitator for this project was the buy-in from the stakeholders. All stakeholders expressed an interest in improving patient outcomes through a change of practice regarding metabolic screening. The unit supervisor and program director both expressed dedication to this project to better serve the population of patients who were cared for at the site. The dietician also expressed dedication to serving this project and seeing it through to assist patients in their healing.

Another factor that aided in the facilitation of this QI project was that the proposed tool was a paper document that could be easily printed and copied. This forewent a long wait time for the creation of the document in the EMR. The paper document could be completed by the nurse and provider and then sent to medical records after the patient's stay to be scanned into the patient's chart. This lessened both finances and wait times for project implementation.

The final facilitating factor was that the DNP student piloting the project worked for the hospital and had an established rapport with the stakeholders. This combination of factors was beneficial to the company as it will save both time and money while implementing the changes. Employment by the DNP student avoids the need for orientation, access, and compensation. A total of $8,650.80 was saved due to the DNP student's nursing wage of $32.04 per hour multiplied by the 270 required project hours, which were required over the Fall 2021 and Spring 2022 semesters.

Screening Tool

The project implemented a printed screening tool that was readily available to the provider and accessible upon SGA initiation. The paper document was ideal for process initiation in this site as it is a basic reminder for providers to easily grab from the file portfolio when the decision was made to start a patient on an SGA (See Appendix B for screening tool). This document was also utilized for patients who were on SGAs at project implementation. The screening tool outlined metabolic labs including weight; blood pressure, HbA1c, lipid panel, complete metabolic panel, and a liver function panel. The provider had the ability to fill in which labs were previously ordered and their results, currently ordered labs, pending labs, labs and dates recommended for follow-ups, and fasting or non-fasting status of all labs. Once the provider completed the document, it was sent to medical records to be scanned into the patient's EMR, making it part of the permanent medical record. Based on project adoptions or adaptations, the screening tool can be formatted into the EMR as a smart phrase or dot phrase, which would promote sustainability by providing a faster, more readily available tool for providers to use when starting patients on SGAs.

Method: Plan-Do-Study-Act

This QI project was framed around the Plan-Do-Study-Act model. This model has been utilized many times for QI projects, especially in healthcare due to its similarities to the scientific method (Leis & Shojania, 2017). The phases of the model include plan, do, study, and act, which are cyclical and can be repeated. This is helpful for projects such as this that have short implementation timeframes but need to be able to be modified if data indicate (Leis & Shojania, 2017). (See Appendix C for timeline.)

Plan

For the QI project, the initial phase began in August 2021 and ended in mid-January 2022. The DNP student created the screening tool, which was then given to the provider to review. Once created and approved by the provider, the DNP student engaged the unit supervisor, program director, FNPs, floor nurses, and other stakeholders to provide education on why metabolic screening is important.

Education regarding the screening tool and its use was given to the providers, the unit supervisor, and the program director. Due to changes within the scheduling system in the hospital, multiple providers had to be educated by the DNP student on the screening tool prior to their weekly rotations. Education included the importance of metabolic screening for patients taking SGAs, the basic outline and purpose of the screening tool, the process for utilizing the screening tool, and integrating the tool into practice for all patients taking SGAs. This was done the week before implementation during the weekly team meeting that occurred routinely in the unit. Providing education to more than just the prescriber supported encouragement from team members and accountability from the provider.

Do

The “do” portion of the project began in mid-January, 2022, when the paper tool regarding metabolic screening was distributed to the residential unit. The screening tool, printed on salmon-colored paper, was available in a file folder at the provider’s desk and was easily identifiable. Once distributed, the tool was completed by the prescribing provider for each patient who was currently on an SGA. Once completed, the provider ordered the labs that had not yet been completed or urgently needed to be drawn, ordered labs for the future for values that needed follow-up, and reviewed any labs that had been previously collected. For patients who were started on SGAs, the provider utilized the tool to determine whether any labs had been drawn and which labs needed to be drawn prior to initiation. This tool also encouraged the provider to order metabolic screening labs for patients who had standing orders for PRN SGAs. Baseline screening for PRN usage is highly valuable as it assisted in determining overall metabolic side effect risk factors early on in SGA use. For patients who were transitioning from PRN SGA use to scheduled SGAs, this tool was used to follow-up on any labs that were not previously drawn as well as to schedule labs to be drawn in the future.

During the “do” phase, each round of the project lasted four weeks. After implementation, data collection occurred every week synchronously with meetings held with the providers at the beginning of weekly rounds due to the consistency of this schedule rather than the consistency of the provider. During these meetings, education was provided for the current provider, who changed weekly. Check-ins were provided to the unit supervisor to determine what assistance was needed to continue to utilize the tool and make the tool more helpful. At the end of the four-week cycle, a larger meeting was held to include more of the stakeholders, including the unit supervisor, the prescribing providers, unit nurses, and program director.

During this meeting, improvements to the screening tool were proposed as well as improvements to the overall process in order to continue to increase adherence to metabolic screening, although no changes were made based on the desire to trial the initial plan.

Study

Study is the third step in the PDSA model. During this phase, data were collected and analyzed in order to determine whether goals were met or if revisions needed to be made to the project (Leis & Shojania, 2017). For this project specifically, the second and third phases happened simultaneously. Data was collected every week, and the analysis allowed for modifications to be made if needed.

Data collection and analysis. During the initial phase of project implementation, the do phase and the study phase occurred simultaneously through weekly DNP chart reviews due to the longevity of patients in the residential unit. At each data collection point, the DNP student collected the total number of patients on SGA therapy and if metabolic screening labs were completed on these specific patients. Data collection began with a chart review of each patient specifically looking at current medication lists to determine the number of patients initiated on SGAs. For all patients on SGAs, the chart review was expanded to identify if metabolic screening labs were ordered. If ordered, it was further noted whether they were collected or not, and if not, the reason for not being collected was also noted.

At the end of the collection time frames, the total number of patients on SGAs and screened for metabolic labs was divided by the number of patients initiated on SGAs. This provided the DNP student with the percentages needed to determine whether goals were met. In addition, the number of screening tools completed by the provider were collected and then

divided by the total number of patients taking SGAs. This measured the success of the DNP project process.

Goals. The goals that were created by the DNP student for the project site were SMART goals, which included several specific, measurable, achievable, realistic, and time-bound goals. The first short-term SMART goal was that the prescribing provider would order metabolic side effect screening panels on 50% of patients who were on SGAs prior to their first dose being administered in the first four weeks of project implementation. The second short-term SMART goal was that 50% of patients on SGAs would have metabolic screening completed prior to the administration of their first dose within the four weeks of project implementation.

The first intermediate SMART goal was that 70% of patients on SGAs would have metabolic screening completed prior to their first dose being administered within eight weeks of project implementation. The second intermediate SMART goal was that, with both short-term goals met, the screening tool could be implemented on a second residential unit within twelve weeks of project implementation and would be implemented by the unit supervisor.

The long-term SMART goal was that 100% of patients who were on SGAs while in the residential unit would complete metabolic screening prior to administration of SGA first dose and would be monitored on an ongoing basis after the project completion date. Ongoing evaluation would continue by the program supervisor of the unit.

Act

At the conclusion of the do and study phases, the act phase occurs and included the DNP student and stakeholders deciding whether interventions were abandoned, adopted, or adapted. If the project failed to meet project goals in metabolic screening adherence for patients taking

SGAs, along with the provider subjectively viewing the screening tool as having little significance, the project was abandoned. If the project partially met the project goals in metabolic screening adherence and there were ideas for improvement from the stakeholders, the project was adapted. Lastly, if the project showed great increases in metabolic screening adherence and the provider subjectively affirms the utility of the tool, the project was adopted and eventually expanded to other units of the hospital.

Subjects

Confidentiality

For this QI project, all data were deidentified and stored in an Excel spreadsheet. Each piece of data was labeled by a number, and each number had an indicator to note if metabolic screening was ordered and completed, was not ordered, or was ordered and not completed at the initiation of the SGA. The patient's MRN numbers were linked to the corresponding number in an Excel sheet that was password protected and only accessed through a personal badge. In addition to this, the data were only accessible at the project site.

The data were HIPAA compliant, as no actual patient data was collected or stored at any time. The screening tool itself was sent to medical records and served as another document in the patient's chart. This was approved by the program director, as several other paper documents were stored in secure files on the unit until the patient was discharged. Once the patient was discharged, the documents were scanned into the chart as a media file, making the paper document a permanent piece of their chart that contributed to project adherence.

IRB

Montana State University applied for Institutional Review Board exempt approval in January 2022. The identified project site was approved for this project and elicited that IRB approval through Montana State University is acceptable. No other reviews were conducted prior to initiating this QI project.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

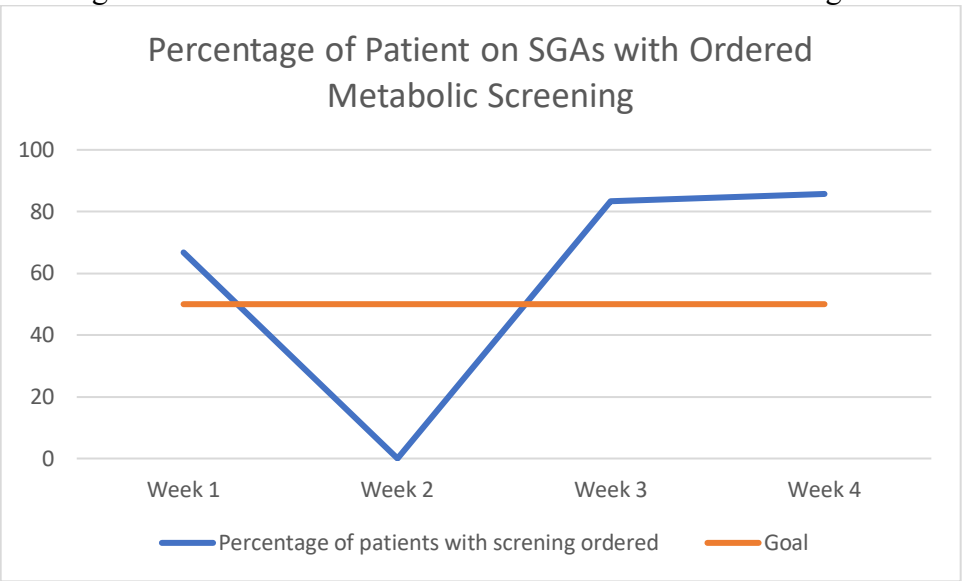
This QI project implemented by the DNP student had one main goal: increase metabolic screening in adolescent patients who were prescribed SGA therapy while on an inpatient psychiatric unit. Specifically, the DNP student aimed to have the provider obtain metabolic screening panels prior to the initiation of an SGA. To assist in facilitating this, the DNP student developed a screening tool that guided metabolic labs and monitoring. Therefore, the DNP student collected data on the number of patients who received SGAs, the number of patients who received metabolic screening, and the number of metabolic screening tools completed. This improvement process was conducted over four weeks and engaged four different providers, although the level of commitment to the QI project varied between providers. Despite the varying engagement of these providers, positive outcomes were presented.

Results

In total, 13 of the 20 patients who were prescribed SGAs during the four-week implementation period had metabolic screening ordered. Each week had varying degrees of success based on which provider was rounding that week. During week one, two out of three patients on SGAs had metabolic screening ordered; week two found zero out of four patients on SGAs with metabolic screening ordered; week three had five of six patients on SGAs with

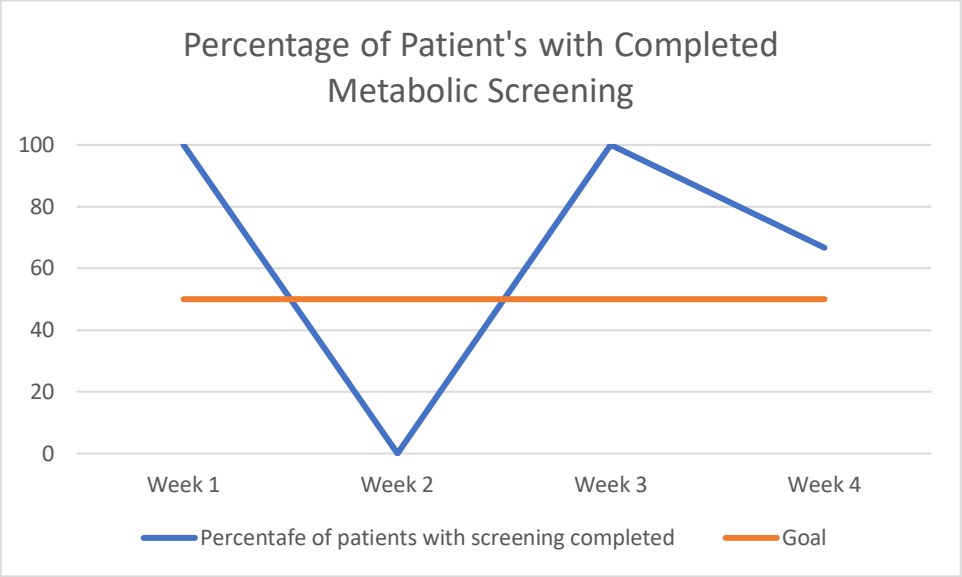
metabolic screening ordered; and week four had six out of seven patients on SGAs with metabolic screening ordered.

Figure 1. Percentage of Patients on SGAs with Ordered Metabolic Screening



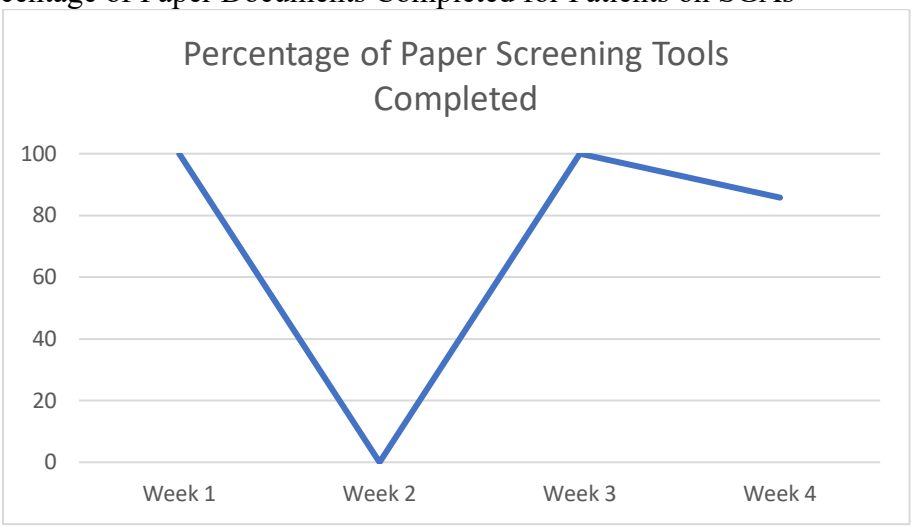
Eleven out of the 13 patients (85%) with metabolic screening labs ordered had those labs completed during the first four weeks of implementation. This means that 11 out of 20 (55%) patients who were prescribed SGAs had metabolic screening completed during the four-week implementation period. Week one had two out of two patients with metabolic screening being completed; week two resulted in zero patients having metabolic screening completed, although zero had metabolic screening ordered; week three had five out of five patients with completed metabolic screening; and week four had four out of six patients having metabolic screening completed.

Figure 2. Percentage of Patients with Completed Metabolic Screening



Finally, out of the 20 patients who were prescribed SGAs during the implementation period, 15 (75%) had screening tools completed. Week one had three out of three patients with completed paper documents; week two had zero paper documents completed; week three had six out of six patients with completed paper documents; and week four had six of the seven patients on SGAs have the paper document completed.

Figure 3. Percentage of Paper Documents Completed for Patients on SGAs



Discussion

An average of 37.5% of patients prescribed SGAs had metabolic screening ordered, although week two was a significant outlier. The second week showed a significant decrease in metabolic screenings ordered, which the DNP student attributes to the provider who was assigned to the residential unit that week. This provider was accepting of the education surrounding metabolic screening and of the paper screening tool, although expressed limited interest in assisting with the QI project including completion of screening and evaluation of labs. Weeks 3 and 4 had increased percentages of metabolic screening ordered suggesting that the paper document was helpful in improving the number of metabolic screens ordered by the providers on the unit, despite the second week being an outlier. Taking a look at the patients who had metabolic screening ordered, an average of 66.67% of patients who had metabolic screening labs ordered also had them completed. Weeks 1 and 3 had 100% success rates of patients having completed metabolic screening labs, while week 4 had a 66.67% success rate of metabolic screening completed. As previously stated, week 2 is considered an outlier, as there were no metabolic screening labs ordered this week and thus, no metabolic screening labs were completed.

Taking a closer look at these results, weeks 1 and 3 had the same nurses scheduled for the mornings that the metabolic screening labs were ordered. Week 4 had different nurses scheduled which could be part of why labs were not completed that week. This could be for a number of reasons: patients having better rapport with other nurses, nurses being less comfortable with blood draws, or even availability of lab supplies.

The results from the first 4 weeks of project implementation indicated over 70% of patients who were prescribed SGAs had metabolic screening completed. Based on this data and the education regarding metabolic screening and the screening tool to each of the providers, it is likely that this trend will continue. These four providers will continue to rotate through the unit, likely continuing the pattern of three out of four weeks with good adherence to metabolic screening. The first 4 weeks suggests that the paper document will likely continue to provide benefit on metabolic screening rates of patients being prescribed SGAs and, perhaps, become a standardized piece of the unit process, regardless of which provider is covering the unit.

Taking into consideration the small successes that this paper document had in regards to metabolic screening, translating this document to another residential unit would be the next step in the QI project. Unfortunately, the second residential unit in the hospital is not open, although the current residential unit supervisor agreed to educate the other residential unit supervisor on the paper document once the unit re-opened. There was no date set for re-opening although it was indicated that it will likely be in late 2022.

When taking a closer look at which metabolic screening tools were completed, there was a fairly even distribution of weight, blood pressure, HbA1c, lipid panels and TSH. Jibson (2021) and Pereira et al., (2019) indicated that waist circumference and liver function panels should also be completed, although in this setting, it was determined that waist circumference had a greater negative impact on self-esteem so it was omitted. The liver function panel was also often times omitted due to the cost of running multiple blood tests, although if the provider saw it necessary, this lab was also completed.

In regard to Kioko et al (2016) who found that implementing a paper document increased metabolic screening rate by 40%, this QI project had similar findings. Both Kioko et al., (2016), Mamo (2020) and the QI project indicated that metabolic screening rates increased after the implementation of the screening tool. Unfortunately, the QI project did not have hard data on previous metabolic screening rates. Comparing one data point which illustrated that only one out of seven patients who were prescribed SGAs had metabolic screenings completed prior to the implementation of the QI project, it is clear that there was a significance increase in metabolic screening rates at the project site after the implementation of the paper document. Both studies were relatively small-scale studies, however, both studies suggested that the paper document increased metabolic screening rates which shows clinical significance.

Limitations

Throughout the implementation of this QI project, several limitations were observed. COVID-19 led to a staffing crisis at this hospital, which led to staffing changes and unit closures. The proposed unit for project implementation was closed, and the provider that originally aided in project formulation was transferred to outpatient services. This forced the DNP student to change project units and engage an alternate primary stakeholder less than one month prior to project implementation.

The staffing crisis also led to changes in provider coverage on the unit. Instead of having one stable provider, the unit shifted to rotating providers with a new provider each week. This created barriers to project success as some providers were very interested in the project, while others were dismissive of the project. Most providers were willing to hear the education and be

trained on the paper screening tool, although one provider was completely dismissive and resulted in the strong outlier in data for week two.

Finally, due to changes in staffing, the patient population in the unit changed. Without stable staffing, higher acuity patients, such as those with acute psychosis or aggressive tendencies, were not admitted. Instead, patients with lower acuity, like those with MDD, GAD, and OCD, were admitted to the unit. These three diagnoses tend to rely more on selective serotonin reuptake inhibitor (SSRI) treatments rather than SGA treatment. Based on admitting fewer adolescents who had higher acuity diagnoses, fewer SGAs were prescribed during the time of implementation. Each of these limitations was not foreseen or anticipated and could not be accounted for during the project design or implementation.

Lessons Learned

Throughout the implementation process, multiple lessons were learned. The first lesson learned related to the rotation of providers in the unit. Initially, one provider was scheduled to remain consistent for the duration of the project. As a result of the staffing crisis, however, providers rotated weekly. While this was a limitation, it also proved to be of benefit to the project. As providers rotated weekly, the DNP student was able to provide education on metabolic screening for adolescent patients on SGAs. In accordance with Velligan et al. (2013), providing education to the providers who were covering the unit would increase adherence to metabolic screening. Due to frequent changes in providers, an unintended benefit happened. More providers were educated on the positive effects of metabolic screening for adolescents taking SGAs, which translated to more providers who could change their consistent practices when patients were prescribed SGAs. Taking into consideration Richardson et al.'s. (2016) study

that indicated that adherence to screening is phasic, education for both the provider and the patients proved to be highly beneficial in adherence to metabolic screening.

While using a paper document to guide metabolic screening decisions initially proved helpful, providers indicated that translating the information into a dot phrase, which provides a template for completion in the progress note, would be more ideal, just as Richardson et al. (2016) had indicated. Qualitative feedback from the providers also indicated that there was already a dot phrase in the EHR that pulled results of the most recent metabolic screening labs into the progress note, so merging the proposed paper document with the already created metabolic screen result would be the most beneficial.

A third lesson learned by the DNP student was that, due to the inpatient nature of the unit, providers trialed SGAs for treatment-resistant MDD and GAD. These cases typically had SGAs trailed on a short-term basis, sometimes even singular doses. The DNP student learned that this was an opportune time to assist providers in the decision-making process of ordering metabolic screening labs. Overall, the patients who were prescribed singular doses of SGAs did not have metabolic screening labs completed, although future practice could include the ordering of metabolic screens for any patient who is prescribed an SGA.

Finally, this project highlighted the importance of flexibility and adaptability. Many changes happened rapidly at an organizational level, and without the ability to adapt, the project would have failed immediately. While the results may not be what the DNP student had hoped for the project, the biggest lesson learned was that education is the most important tool in improving patient outcomes. These providers were reminded and educated on the importance of

metabolic screening, especially in adolescents, which could impact their choices in caring for adolescent patients who are prescribed SGAs currently and in the future.

Future Practice Recommendations

Based on the data collected and analyzed, it is clear that further studies need to be conducted to determine the true efficacy of the addition of the paper document outlining metabolic screening for patients taking SGAs. While some weeks showed success, other weeks showed minimal improvements in metabolic screening. This indicated that further study of this paper document is necessary to demonstrate clinical effectiveness.

Additionally, based on feedback from the providers, integration of the paper document in the EHR is more ideal than strictly having the physical document available. Providers agreed that it was important to begin with the paper document to create a routine but reported that after the routine was established, having it accessible in the EHR would be easier to follow. The majority of providers agreed on the addition of a dot phrase in the future to promote continued practice change regarding metabolic screening for patients on SGAs. This change will necessitate additional resources, but with advocacy from multiple providers, the company will be more inclined to make the change.

Ideally in the future after more success from this QI project, the screening document will be shared with multiple units within the hospital. Eventually, this project would be shared with the acute unit, which would promote metabolic screening of patients prior to their referral to residential treatment. With the metabolic screening completed prior to residential treatment, the provider would have a better understanding of the patient's metabolic health, which could guide SGA use while they are inpatient.

Conclusion

In conclusion, the implementation of this QI project met the aim of the project: to improve metabolic screening rates in adolescent patients who were prescribed SGAs while in an inpatient residential unit. Both short-term SMART goals were met after the omission of the week two outlying data: (1) 78.57% of patients who were prescribed SGAs in the inpatient adolescent unit had metabolic screening ordered, and (2) 88.89% of patients who were prescribed SGAs on the inpatients adolescent unit who were prescribed SGA and had metabolic screening ordered had the metabolic screening completed. Both intermediate SMART goals were outside the project implementation timeframe, although preliminary data suggest that both goals will be met. Finally, the long-term SMART goal would likely be met based on preliminary data, although due to unit closures, the expansion of the project is halted. Once another residential unit can be opened, the unit supervisor will coordinate the expansion of the paper tool to further promote increased metabolic screening of adolescent patients prescribed SGAs in the residential units of the hospital.

CHAPTER FIVE

DNP ESSENTIALS

Introduction

Throughout my time in the DNP program at Montana State University, as well as during the implementation of this QI project, I was able to meet the competencies for the doctoral education for advanced nursing practice. These competencies are produced by the American Association of Colleges of Nursing (AACN) and provide the framework for quality and ethics within APRN practice to aid in determining APRNs who are ready to practice (AACN, 2006). There are eight competencies in total, five of which have been highlighted throughout my education journey and the implementation of this QI project.

DNP Essential 1

The first DNP essential highlights the scientific underpinnings of practice and ties together holistic care for the patient, a complete understanding of the human body and its functions, the effects that optimal nursing care can have on the patient, and recognition that the human body and mind are greatly influenced by their surroundings (AACN, 2006). This essential provided the foundation for the DNP project through a focus on theory-based practice approaches. While I used several nursing theories throughout my DNP program, I found the HDM most influential. In my DNP project, I used the HDM to take into consideration several factors relating to the human body and psychiatric needs based on their beliefs about their health, their environment, and their own decision-making. Learning how to incorporate theories into

research and translate them into action will continually benefit my future as an APRN, especially when initiating practice change within an organization.

DNP Essential 2

The second DNP essential prepares DNP students to develop and evaluate caring for patients' current and future needs as well as the organization's needs. (AACN, 2006). Throughout the DNP program, there were many instances of utilizing systems thinking to develop processes to promote better patient care. During the DNP project, I was able to take feedback from the organization and develop a process for providers to use when initiating patients on SGAs. This process increased accountability for monitoring metabolic side effects for patients taking SGAs, which promoted better patient care and outcomes. The new process included educating providers and implementing a paper document on the residential unit. I was able to evaluate if this strategy was successful for this facility, which enabled me not only to be future focused but also to show sensitivity to each component of the project implementation. Organizational leadership was also demonstrated through consistent collaboration and communication with the providers, nurses, and patients. Learning this essential through the DNP program and QI project will enable me to incorporate different aspects of the presenting problem, whether it be organizational or patient-related, and to lean on scientific findings to guide practice change and promote patient healing.

DNP Essential 3

The third DNP essential recognizes that clinical scholarship and analytical research are the foundation for DNP education (AACN, 2006). Specifically looking at this essential, the use

of analytic methods to critically appraise the evidence for practice change was upheld throughout the entirety of the DNP program, especially with the DNP QI project. In both evidence-based courses, I was able to carefully appraise an abundance of literature in order to find the highest quality of evidence that provided data to guide practice change for implementing formal suicide assessments in primary care offices in Montana. These data were then transposed into an evidence table, providing an easily accessible and comprehensive breakdown of pertinent evidence. For the DNP QI project, another evidence table was created that allowed for literature to be easily accessed, enabling the dissemination of findings to happen more readily. Based on these findings, I was able to determine which approach to take for the DNP QI project: implementing a paper document and providing education to the rotating prescriber. In addition, I was able to better understand which laboratory values were most significant in the adolescent population to determine the metabolic impact of SGAs and incorporate these into which laboratory values the facility could most easily obtain. From these experiences with analyzing evidence, I believe that I have the skills to appropriately and efficiently research current topics that could lead to practice change in my future practice as an APRN.

DNP Essential 5

The fifth DNP essential speaks to health care policy and advocates for appropriate changes that would benefit patients (AACN, 2006). These policies can be governmental, organizational, or institutional and should all be appropriately advocated for by APRNs. During a health policy-focused course, I had the opportunity to learn about local and state policies. In addition to this, I was able to draft a letter to the state legislature regarding the cost of diabetes supplies and the negative impact that these costs have on Montanans. This letter was then sent to

the state representative and senators to advocate for changes in prescription costs at both the state and national levels. This was a significant learning experience for me as I received a generic response from all three congresspeople, which was disappointing. Despite this disappointment, I learned that I have a voice that can be used to advocate for my patients in small- and large-scale venues. In regard to the DNP QI project, I was able to advocate for patients by educating providers on the importance of metabolic screening in adolescent patients. I was able to provide evidence from the literature review as well as promote practice change by acting as an advocate for these adolescent patients. In regard to future practice, learning how to utilize peer-reviewed evidence in order to advocate for my patients will be an essential function as a future APRN.

DNP Essential 6

Essential six of the DNP competencies focused on interprofessional collaboration in order to improve patient health outcomes. Throughout the DNP program, I have been able to learn and practice many aspects of collaboration, especially that of employing effective communication in order to develop and implement practice models, practice guidelines, health policies, standards of care improvements, and peer reviews assistance (AACN, 2006). During classes such as design and delivery of healthcare systems, program planning and evaluation, and ethics law and policy, collaboration was regarded as one of the most important aspects of progressing change within an organization. I was able to practice collaboration thoroughly during group projects in several classes, during clinical rotations each semester, and most importantly, throughout the DNP QI project. During group projects, collaboration occurred through the sharing of evidence, scheduled meetings, and the creation of the final project. During clinical rotations, collaboration occurred each day with each preceptor by asking questions,

providing each other with ideas and sharing new data regarding best practices. Throughout the DNP QI project, collaboration occurred through each check-in, through collectively adapting the project to fit the needs of the unit andby providing education and answering questions regarding the implementation of the project. Open communication and effective collaboration were highly beneficial throughout the DNP QI project, and I feel as though I became much better at both throughout project implementation. Learning and growing these skills throughout project implementation provided me with a strong foundation for future practice. I firmly believe that from the coursework as well as the DNP QI project, I have the skillset to effectively communicate, collaborate, and advocate for my future patients.

Reflection of Project Implementation

The process of creating, implementing, and evaluating a DNP QI project in a clinical setting that has an identified systems issue has helped to form me into a DNP-prepared APRN. Learning how to identify an issue within a clinical setting and then translate it into a QI project improved my critical thinking and communication skills. Implementing the project forced me to overcome a variety of obstacles and learn that adaptation is a necessary quality as a future APRN. Finally, evaluating the project taught me that despite adversity, improvements, however small, are still considered progress. Overall, this project has provided me with the experience and confidence to be able to create, implement, and evaluate future QI projects in my coming years as a DNP-PMHNP.

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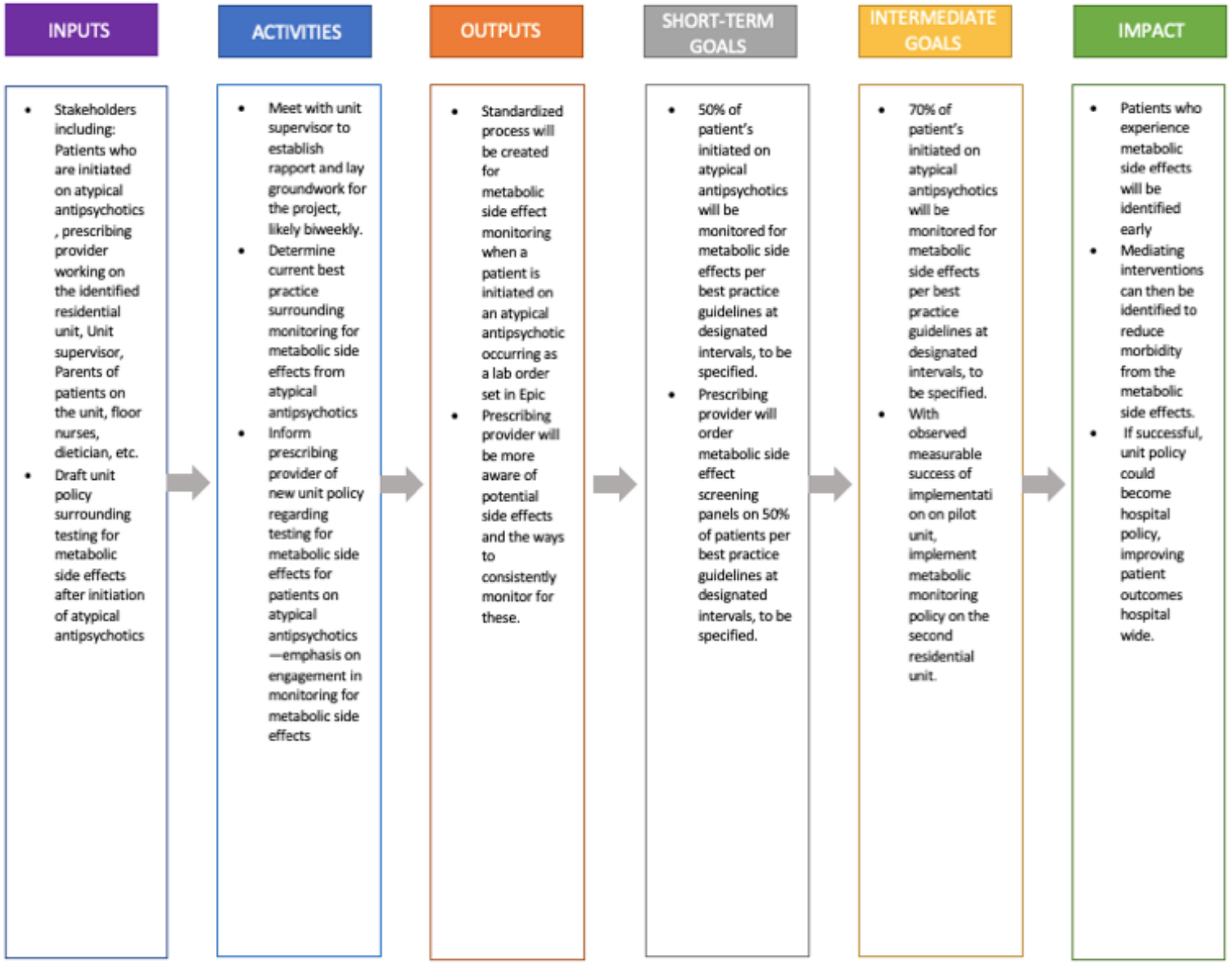
APPENDICES

APPENDIX A

LOGIC MODEL


INPUTS
Stakeholders including: Patients who are initiated on atypical antipsychotics , prescribing provider working on the identified residential unit, Unit supervisor, Parents of patients on the unit, floor nurses, dietician, etc.
Draft unit policy surrounding testing for metabolic side effects after initiation of atypical antipsychotics
ACTIVITIES
Meet with unit supervisor to establish rapport and lay groundwork for the project, likely biweekly.
Determine current best practice surrounding monitoring for metabolic side effects from atypical antipsychotics
Inform prescribing provider of new unit policy regarding testing for metabolic side effects for patients on atypical antipsychotics —emphasis on engagement in monitoring for metabolic side effects
OUTPUTS
Standardized process will be created for metabolic side effect monitoring when a patient is initiated on an atypical antipsychotic occurring as a lab order set in Epic
Prescribing provider will be more aware of potential side effects and the ways to consistently monitor for these.
SHORT-TERM GOALS
50% of patient's initiated on atypical antipsychotics will be monitored for metabolic side effects per best practice guidelines at designated intervals, to be specified.
Prescribing provider will order metabolic side effect screening panels on 50% of patients per best practice guidelines at designated intervals, to be specified.
INTERMEDIATE GOALS
70% of patient's initiated on atypical antipsychotics will be monitored for metabolic side effects per best practice guidelines at designated intervals, to be specified.
With observed measurable success of implementation on pilot unit, implement metabolic monitoring policy on the second residential unit.
IMPACT
Patients who experience metabolic side effects will be identified early
Mediating interventions can then be identified to reduce morbidity from the metabolic side effects.
If successful, unit policy could become hospital policy, improving patient outcomes hospital wide.

APPENDIX B

PAPER SCREENING TOOL

Date:

Patient Sticker

Metabolic Side Effect Screening Tool

For all patients on Second Generation Antipsychotics

Test	Baseline	4-week	8-week	12-week	Fasting:
HgA1c	Date Ordered: Date Completed: Result: Flag:	Date Ordered: Date Completed: Result: Flag:	Date Ordered: Date Completed: Result: Flag:	Date Ordered: Date Completed: Result: Flag:	
Lipid Panel	Date Ordered: Date Completed: HDL- LDL- Total Cholesterol- Triglycerides- Flag:	Date Ordered: Date Completed: HDL- LDL- Total Cholesterol- Triglycerides- Flag:	Date Ordered: Date Completed: HDL- LDL- Total Cholesterol- Triglycerides- Flag:	Date Ordered: Date Completed: HDL- LDL- Total Cholesterol- Triglycerides- Flag:	
Weight from weekly Vital Signs	Date: Weight: Percentile:	Date: Weight: Percentile:	Date: Weight: Percentile:	Date: Weight: Percentile:	
Blood Pressure from weekly Vital Signs	Date: BP: Flag:	Date: BP: Flag:	Date: BP: Flag:	Date: BP: Flag:	

Notes including patient refusal or barriers to lab completion:

APPENDIX C

PROJECT IMPLEMENTATION TIMELINE

September-December 2021:

- Timeline presented
- Stakeholders educated
- Screening tool created

January 2022:

- IRB approval
- Staff training
- Distribute screening tools
- Begin 4-week intervention

February 2022:

- End of 4-week period
- Collection of data

End of February:

- Data collection and analysis
- Revisions to process are advised
- Revisions are implemented