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Adult Attention Deficit/Hyperactivity Disorder Quality Improvement Project

Danielle Miller
Grand Valley State University

Running head: FINAL DEFENSE

Adult Attention Deficit/Hyperactivity Disorder Quality Improvement Project: Final Defense

Danielle Miller

Kirkhof College of Nursing

Grand Valley State University

Advisor: Amy Manderscheid DNP, RN, CMSRN

Advisory Team: Rebecca Davis PhD, RN and StacyAnn Steen MD

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Abstract

Introduction:

Adults with Attention Deficit Hyperactivity Disorder (ADHD) vary widely in their symptom presentation and functional deficits, which can make management in the primary care setting challenging for providers (Morstedt, Corbisiero, Bitto, & Stieglitz, 2015). Measurement-based care is common in the management of medical disease, however is rarely used as standard practice in treatment of psychiatric disorders (Waldrop & McGuinness, 2017). As a result, treatment for psychiatric conditions, such as ADHD, may vary widely among clinicians and may result suboptimal treatment and patient outcomes (Waldrop & McGuinness, 2017). The proposed solution was to introduce the use of a standardized measurement tool for evaluating ADHD symptoms in the primary care setting. The purpose of this project was to implement an ADHD tool kit and a validated ADHD symptom scale and evaluate clinical practices surrounding the assessment and treatment of ADHD.

Objectives:

The goal of this quality improvement project was to increase the frequency that providers use a validated ADHD symptom scale in the treatment and diagnosis of ADHD in primary care. The project objectives were:

1. To increase the use of ADHD assessment and symptom scales by providers within a primary care clinic.

2. To assess provider knowledge and clinical practices with the diagnosis, treatment, and management of ADHD.

3. To assess provider practices of medication prescription for the treatment of ADHD.

4. To assess whether use of ADHD symptom scale and toolkit increases adherence to evidence-based practices of managing ADHD.

Methods:

For this quality improvement project, data collection occurred primarily through retrospective record review and a provider survey before and after the intervention implementation. The setting was an urban family practice primary care office. The primary subjects of this quality improvement project were the providers in this office treating adult patients with ADHD.

Results:

This quality improvement project demonstrated an increased use of ADHD symptom scales. Secondary outcomes, such as changes in provider practices surrounding the treatment of adults with ADHD, were not significant in the five-week implementation of this project.

Conclusions:

Through this quality improvement project, the implementation of an ADHD symptom scale and toolkit in the primary care setting was completed. The use of the ADHD symptom scale increased dramatically from no use to 51% uptake in the five-week project period. Despite the great increase in use, there were no other significant changes in outcome measurements for this project. The benefits of measurement-based care are best seen over a greater time period with repeated measurements. Continued improvements in the care of adult ADHD patients in the primary care setting are needed.

Implications:

Through the use of an ADHD symptom scale, providers now have the ability to objectively measure core ADHD symptomology which should change care delivery to adults with ADHD.

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FINAL DEFENSE

Adult Attention Deficit/Hyperactivity Disorder Quality Improvement Project: Proposal Defense

Introduction

Attention Deficit/Hyperactivity Disorder (ADHD) is one of the most common disorders of childhood that often continues to persist into adulthood (VanCleave & Leslie, 2008). According to the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5) by the American Psychiatric Association (APA) (2013), ADHD is diagnosed by a "persistent pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development" (p. 59). The prevalence rate of ADHD is between 1% and 7% worldwide, with many individuals also suffering from comorbid mood, anxiety, substance use, and personality disorders (Morstedt et al., 2015). These symptoms often lead individuals with ADHD to have functional limitations in their daily activities which often affect their education, family and social life, and workplace function (Morstedt et al., 2015). These deficits lead to long-term problems and decreased function of people with ADHD and their families (Morstedt et al., 2015).

ADHD is often a lifelong condition which should be approached in the primary care setting, similarly to other chronic conditions, to improve outcomes (VanCleave & Leslie, 2008). Primary care providers often do not have sufficient knowledge regarding ADHD and are not comfortable with the treatment of patients with ADHD (Ghanizadeh & Zarei, 2010). The use of measurement-based care for the treatment of psychiatric disorders utilizes patient-reported rating scales and allows the provider to track patients' progress and develop a plan of care (Waldrop & McGuinness, 2017). Measurement-based care is common in the management of medical disease, however it is rarely used as standard practice in treatment of psychiatric disorders (Waldrop & McGuinness, 2017). As a result, treatment for psychiatric conditions, such as ADHD, may vary widely among clinicians and may result suboptimal treatment and patient outcomes (Waldrop &

McGuinness, 2017). The purpose of this paper is to describe a quality improvement project designed to evaluate ADHD management in the primary care setting through the implementation of an evidenced-based ADHD symptom scale and ADHD tool kit for provider use.

Assessment of the Organization

The Burke and Litwin (1992) Causal Model of Organizational Performance and Change and strengths, weakness, opportunities, threats (SWOT) analysis was used to complete the organizational assessment. The Causal Model of Organizational Performance and Change was designed to assess an organization for function and change. The model suggests a significant link between effective change and organizational performance. The model asserts that change within an organization occurs within two major dynamics; transformational and transactional variables. Transformational variables can both affect and be affected by environmental factors such as external environment, mission and strategy, leadership, organizational culture, and individual and organizational performance. Transactional factors are those which affect the individual within the organization and include structure, management practices, systems, work unit climate, individual skills, motivation, individual needs and values, and individual and organizational performance (Burke & Litwin, 1992).

Both transformational and transactional factors in the Burke-Litwin Model are arranged in an open model to demonstrate significant interplay among the factors which affect organizational performance and change (Appendix A). The model origins began in the 1960s with the concepts of climate and culture (Burke & Litwin, 1992). Climate reflects the personal aspects of an organization such as member's perception of their organization; however, culture reflects the foundation of the organization in terms of values and beliefs (Burke & Litwin, 1992). The transformational and transactional factors reflect the interplay between the organizational

leadership and management respectively. The Burke and Litwin (1992) model created a framework which was utilized for the structure of a personal interview with the office manager for assessing both the organization and the office setting. Additionally, observation through a shadowing experience was used to understand work flow of the primary care setting and further assess the areas of the Burke and Litwin model. Organizational data on the current ADHD practices was obtained through chart review.

A report was generated by the office manager of all adult (18 years and older) patients seen in the office within the last three months with an ICD-10 code for ADHD. This report was organized by age and yielded 238 unique patients. A chart review was completed for every seventh patient to evaluate current practices surrounding ADHD care in this office. The results showed that as many as 35% of these patients did not have any ADHD symptoms recorded in the history of present illness. When shadowing pediatric providers, the Conner's Parent and Teacher Rating Scales were observed to be routinely used to evaluate and document ADHD symptoms in pediatric patients (Conners, Erhardt, & Sparrow, n.d.). However, no screening or measurement tool was used in the adult population with ADHD in this office. Among providers for adults with ADHD, there was inconsistency in evaluation, documentation, and prescriptive practices. The electronic medical record has a template for "Adult ADHD" symptoms, but the template does not provide a usable scale and is not consistently used in practice. Through a personal interview with a provider in the office, management of ADHD in adults is largely "gestalt." Gestalt implies that clinical decisions are often made in the absence of complete information (Cook, 2009). Through the completion of the organizational assessment, the need for improved methods of assessment, diagnosis, and treatment of ADHD was apparent. Providers did not have the

appropriate tools and knowledge to manage adult ADHD well in the primary care setting, which left an opportunity for improvement in care.

Ethics and Protection of Human Subjects

The details of this project were submitted to the hospital system and Grand Valley State University (GVSU) Institutional Review Board and deemed to be not research before the project implementation and data collection began. The purpose of the project was limited to evidence-based intervention implementation and quality improvement in the care of ADHD patients in the primary care setting. Physical, social, psychological, legal, and economic threats to patients were not anticipated with this project, therefore risk to participants was considered minimal. This quality improvement project is aimed at improving the assessment process of ADHD care by providers in the primary care setting by implementing an evidence-based symptom assessment scale. As with other measurement scales commonly used in primary care settings, as well as any treatment, patients and/or providers may decline or refuse to complete the scale at any time. A letter explaining the project details and an invitation to participate was given to providers within the office. Completion of the survey implied consent to participate in the quality improvement project. The risks were minimal to provider participants.

For the completion of this project, patient records were identified by having a report generated through the electronic medical record by diagnosis code and date of visit. Protected health information was accessed by the Doctor of Nursing Practice (DNP) student within the organizational site using a systematic method. Data collection occurred only on the project site location. Personal identifiers were not collected. Data was de-identified and coded into numeric data and documented in the project database. Data was only to be accessed by the DNP student and project team members including the site mentor, GVSU faculty advisors, and GVSU

statisticians assisting with project. All files maintained for this quality improvement project were password protected and can be provided to the organization at any time, including at the conclusion of the student-led project. Analysis and the final disposition of the data is reported in statistical terms and descriptive statistics only. Publication or dissemination of results is in descriptive terms only, the name and location of the organization will not be identified. The DNP student has completed human subjects training and Health Insurance Portability and Accountability Act (HIPAA) training via the Collaborative Institute Training Initiative; and project design reflected these principles.

Stakeholders

Key stakeholders are individuals who will either be directly affected by the project implementation or who may have a vested interest in the outcomes of the project (Moran, Burson, & Conrad, 2017). Stakeholders for this project included providers and staff at the primary care practice, organizational leaders who monitor quality improvement, and patients with ADHD. Providers and staff members were key stakeholders because their participation was necessary to make practice change. Patients were key stakeholders because outcomes may affect their experience and course of treatment. Lastly, organizational leaders were important stakeholders because their support was necessary for project approval which could result in lasting changes within the organization.

SWOT

A strengths, weaknesses, opportunities, and threats (SWOT) analysis is an assessment tool used to evaluate an organization, program, project, or process (Moran et al., 2017). The SWOT analysis was imperative for a thorough evaluation of the current state of evaluation and treatment practices of ADHD in the primary care setting. The SWOT analysis was utilized to

guide decisions for successful implementation of the change. The SWOT analysis for this organization was summarized in Appendix B.

Strengths. Strengths of this project included a practice site which was recently utilized as a pilot site for the recent practice change with opioid controlled substances. Similarly, the recent law changes in the State of Michigan implicated the need for practice change surrounding stimulant medications, so this may increase provider and staff support to the intervention. Completion of the project provided opportunities for improved documentation of ADHD symptoms and a more comprehensive plan of care. Improving documentation provided an opportunity for standardized care and collaboration between providers. The team-based environment provided needed support to the project implementation. Lastly, the Adults ADHD Symptom Checklist (ASRS-v1.1) is freely available for use and is a valid tool (National Comorbidity Survey, n.d.; Kessler et al., 2005).

Weaknesses. No standardized practice for the diagnosis and treatment of ADHD across the primary care settings existed in this healthcare organization. Documentation of ADHD symptoms was not simple or standard in the documentation system. Another weakness was that the Centers for Medicare and Medicaid Services (CMS) currently does not have a quality measure for ADHD care in adults, which may limit financial opportunity for reimbursement. Adherence to an evidence-based standard of care for ADHD could increase frequency of patient visits, which could cause scheduling difficulties in this setting. Patients may have limited access to recommended adjunctive treatments for ADHD such as cognitive behavioral therapy.

Opportunities. With the successful implementation of this project, there was an opportunity to improve quality of care for patients with ADHD. Patients with ADHD could be monitored more closely for symptoms and which may result in improved patient-provider

relationships and patient satisfaction. The project implementation plan may improve provider

knowledge and comfort with the diagnosis and treatment of ADHD. This project may improve

access to treatment for mental health. The healthcare organization may have improved

reimbursement for the CMS quality measure for ADHD care in children. Project implementation

may improve ADHD symptom documentation and quality of care for adults with ADHD.

Threats. There were several threats to the success of this project. The most detrimental

threat would have been a lack of support from key stakeholders, including organizational leaders

and office staff. Without investment from stakeholders, a significant threat would exist to the

success and sustainability of the intervention. Another threat could have been limited funding

opportunities for the necessary steps to initiate new work flow patterns with patients with

ADHD. Lastly, this office workflow was designed whereas actions that impact quality

improvement measures reside within the responsibility of the medical assistants. Staff could have

been overwhelmed with additional work that was associated with the practice change.

Clinical Practice Question

Providers in this primary care office did not have access to a validated symptom scale to

use in assessing adults with ADHD. ADHD is considered a chronic condition, as such it should

be routinely monitored with a validated measurement tool (American Academy of Pediatrics,

2011). The goal of this quality improvement project was to increase the frequency that providers

used a validated ADHD symptom scale in the treatment and diagnosis of ADHD in primary care.

The clinical practice question to be addressed was: Does implementation of an ADHD tool kit

and a validated ADHD symptom scale affect clinical practice surrounding the assessment and

treatment of ADHD?

The outcome deliverables for the completion of this project were:

- Implement an intervention to improve the assessment, diagnosis, treatment, and documentation of ADHD

- Develop a provider toolkit for the assessment, diagnosis, and treatment of ADHD. The toolkit will include the Adult ADHD Self-Report Scale (ASRS-v1.1) Symptom Checklist, a Quick Education Poster, an ADHD Screening Education Packet, and a letter to explain the project.

- Provide resources to providers to improve care of adults with ADHD in the primary care setting.

Review of the Literature

Method

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline served as the framework for this review (Moher, Liberati, Tetzlaff, Altman, & PRISMA Group, 2009). A comprehensive electronic search was conducted in the CINAHL, PubMed, and PsychINFO electronic data bases and was limited to peer reviewed journal articles in the English language during the period of 2013 to 2018. Keywords were Attention Deficit Hyperactivity Disorder or ADHD, diagnosis and treatment, quality improvement, collaborative care, primary care, and management. Results were further limited to adults aged 18 or older with the major subject heading of Attention Deficit Hyperactivity Disorder.

The search was limited by inclusion and exclusion criteria. Studies were included if they focused on quality improvement, primary care, guideline adherence, measurement tools, and intervention studies in adults with ADHD. In addition, only randomized control trials,

systematic reviews, and meta-analyses were included. Since the focus of this literature review was on quality improvement of adults with ADHD in the primary care setting, studies which focused on ADHD in special populations such as children, veterans and military personnel, student athletes, and people in correctional facilities were excluded. Additionally, studies which focused on ADHD pathophysiology, correlational risk studies, medication trials, ADHD prevalence studies, study protocols, and pilot studies were excluded. Studies on ADHD and coexisting conditions such as sleep disturbances, autism, substance use disorders, and other somatic and psychological disorders were excluded. Finally, care models for ADHD were excluded.

PRISMA

The search yielded 868 records. Duplicates were then removed, leaving 769 records remaining. Each review was screened using inclusion and exclusion criteria according to PRISMA criteria (Moher et al., 2009). Each record was screened for relevance by reviewing the title which excluded 427 records, with 342 records remaining for abstract review. Using this inclusion and exclusion criteria, 57 total records were retained from the search and full text records were obtained for 53 of the records. The final 53 records were evaluated in-depth for inclusion and exclusion criteria and relevance for intervention in the adult primary care setting. Using the inclusion and exclusion criteria, the records were narrowed to 22 studies included in this review (Appendix C).

Summary of Results

This literature review was helpful in determining potential directions for intervention in the treatment and care of adults with ADHD in the primary care setting. This literature review highlighted several clinical guidelines that appeared to be well respected in ADHD care. The

most commonly cited clinical guideline in this literature review was the National Institute for

Health and Care Excellence [NICE] guideline for ADHD care from the United Kingdom (NICE,

2018). Other clinical guidelines for the treatment of adult ADHD were the British Association of

Psychopharmacology (2007), European Network Adult ADHD (2010), Canadian Attention

Deficit Hyperactivity Disorder Resource Alliance (2010), and National Institute of Mental

Health (2008) (Rabito-Alcon & Correas-Lauffer, 2014). These guidelines had a consensus that

diagnosis of ADHD should be made by clinical assessment; pharmacological intervention was

considered first-line therapy; and pharmacotherapy should be complemented with psychosocial

interventions (Rabito-Alcon & Correas-Lauffer, 2014).

Psychosocial interventions that were highlighted in the literature review appeared to be a

helpful adjunctive treatment to first line pharmacological therapy; however, they appeared to be

significantly underutilized in practice. Cognitive behavioral therapy seemed to be the most well

supported in ADHD care, with improvement in self-reported ADHD symptoms (Lopez et al.,

2018). Cognitive behavioral therapy had been shown to be efficacious in medication-treated

adults with ADHD (Young et al., 2015). Another study, Hirvikoski et al. (2017) evaluated

psychoeducation for adults with ADHD and their significant others and demonstrated

effectiveness of this intervention over treatment as usual in global life satisfaction and treatment

satisfaction.

Two studies in this literature review evaluated long-term outcomes in patients with

ADHD. Arnold et al. (2015) utilized a systemic review to evaluate 403 primary studies reporting

long-term outcomes greater than two years for patients with ADHD which found that highest

proportion of improved outcomes was with combination of pharmacological and

nonpharmacological treatments. Swanson et al. (2017) followed 515 children into adulthood to

evaluate symptom severity, height, treatment, and long term use of stimulants. Half of the

children had ADHD and half were in a normative comparison group (Swanson et al., 2017).

Extended use of medications was associated with reduction in symptom severity and suppression

of adult height (Swanson et al., 2017). Study results indicate the possibility of low dose

psychosocial treatment with lower medication dosing may preserve efficacy of results and long-

term growth (Swanson et al., 2017).

Assessment tools were important for measuring symptom severity and functioning

because adults with ADHD because of the variety of impairments among adults. Both executive

functioning and non-executive functioning testing were found to be important in identifying

persons with ADHD (Kamradt, Ullsperger, & Nikolas, 2014). Morstedt et al. (2015) evaluated

the agreement between self and informant rating on symptoms and functional impairment. Self-

rating was more similar to clinical ADHD diagnosis than informant rating. Adults with ADHD

were less likely than the informants to identify functional impairments as a result of their

symptoms. This study found that both the patients with ADHD and their relatives are important

sources of information for assessment of symptoms and functional impairment (Morstedt et al.,

2015). The World Health Organization [WHO] Adult Attention-Deficit/Hyperactivity Disorder

Self-Report Screening Scale for DSM-5 was developed to screen for patients who meet the

DSM-5 diagnostic criteria of ADHD (Ustun et al., 2017). The WHO ADHD Self Report

Screening Scale for DSM-5 was found to have high specificity and positive predictive value for

adults with ADHD in the general population (Ustun et al., 2017).

One major limitation of this literature review was that medication efficacy trials were not

included because medications are considered first line therapy for ADHD. However, medication

therapy is a mainstay of treatment for ADHD in the primary care setting, so not including these

studies may have weakened the literature review. Lastly, the purpose of the literature review was to gather information broadly, so specific interventions were not focused on which could be a limitation.

Evidence to be used for Project

The results of this literature review provided focus and support for possible areas of intervention in the primary care setting in the treatment of ADHD patients. Potential measurement tools included those for screening, executive functioning, and ADHD symptoms. In the practice project setting, no measurement tools were being utilized for adults with ADHD. The articles included in the literature review were reviewed again for commonly used symptom measurement tools since symptoms are the mainstay of the ADHD diagnosis. Commonly utilized ADHD symptoms scales were the Adult ADHD Self-Report Scale (ASRS-v1.1) Symptom Checklist, Conner's Adult ADHD rating scale, Brown ADHD Scale (BADDS), Barkley Adult ADHD Rating Scale (BAARS-IV), and the Wender Utah Rating Scale. Additionally, commonly referenced guidelines in the literature review such as, NICE (2018), Canadian ADHD Practice Guidelines (2018), and the American Academy of Pediatrics (2011) recommend the use of an ADHD symptom scale based on DSM criteria. The use of measurement-based care with commonly used self-report of symptoms could be assessed and implemented as needed. These interventions could improve care of adults with ADHD in the primary care setting.

The Adult ADHD Self-Report (ASRS-v1.1) Symptom Checklist was identified as a widely-used symptom scale which is freely available for healthcare providers (National Comorbidity Survey, n.d.; Kessler et al., 2005). This scale was developed and validated for assessing ADHD symptoms in adults based on DSM-IV diagnostic criteria for ADHD (Kessler et al., 2005). The screening scale consists of 18-items and takes approximately five minutes to

complete (Kessler et al., 2005). The ASRS-v1.1 was attractive for use in the primary care setting

because it is free to use, time-efficient, and easily correlates to DSM diagnostic criteria. The

symptoms of adult ADHD have not changed with the updates from DSM-IV to DSM-V criteria,

however the number of symptoms required for the diagnosis has decreased from six inattentive

or hyperactive symptoms to five in the DSM-V (Ustun et al., 2017). Therefore, the ASRS-v1.1

remains a valid tool for symptom assessment in adults with ADHD.

Other measurement tools were considered, but were either cost prohibitive or too long for

use in the primary care setting. The Conner's Adult ADHD rating scale has a cost of $398 for the

complete evaluation kit (Conners, Erhardt, & Sparrow, n. d.). The Brown ADHD Scale

(BADDS) Complete Kit for adolescents and adults has a cost of $288 (Brown, 2018). The

Barkley Adult ADHD Rating Scale (BAARS-IV) is available for $165 (Barkley, 2018). Lastly,

the Wender Utah Rating Scale is a 61-item scale used to assess adults for ADHD by

retrospective recall of childhood ADHD symptoms (Ward, Wender, & Reimherr, 1993). The

Conner's Adult ADHD rating scale, BADDS, and the BAARS-IV were considered too expensive

for this project. The Wender Utah Rating scale was too long to be used in a primary care

practice.

Chronic Care Model

The American Academy of Pediatrics (2011) recognizes ADHD as a chronic condition

which persists into adulthood. ADHD was originally defined in the pediatric population, but is

now recognized to have symptoms and functional impairments continue to affect individuals into

adulthood (Culpepper & Fried, 2013). Because ADHD is considered to be a chronic condition,

treatment should follow management principles of other chronic conditions such as asthma or

diabetes. The chronic care model can serve as a framework which results in improved health care

services and outcomes. The chronic care model has several components which can be applied to an ADHD treatment model. Community resources, self-management support, delivery of medical services, decision support, and clinical information systems are components of the chronic care model which can be applied to the treatment of adults with ADHD (Culpepper & Fried, 2013).

ADHD is a disorder where the symptoms and functional goals may change across the lifespan, so a standard "medicate and reassess" approach is inadequate for ADHD as well as most chronic conditions (Culpepper & Fried, 2013). Appropriate management requires goal directed treatment, patient education, and incorporation of complementary resources. A component of the chronic care model is community resources which could be applied to adults with ADHD by coordinating with support groups (Culpepper & Fried, 2013). Self-management support in ADHD may include developing a patient centered treatment plan and goals (Culpepper & Fried, 2013).

Another chronic care model component is delivery of medical services which, when applied to ADHD care, could include integrating multidisciplinary care coordination (Culpepper & Fried, 2013). Decision support could be applied to ADHD care by updating treatment periodically to align with current guidelines. Lastly, the clinical information systems component of the chronic care model could applied by optimizing access to patient and provider reports and updating counseling information periodically (Culpepper & Fried, 2013).

Project Plan

Purpose of Project and Objectives

The chronic care model asserts that the care of chronic diseases such as ADHD is optimized by the use of basic components from the model, including community resources, self-

management support, delivery of medical services, decision support, and clinical information systems (Culpepper & Fried, 2013). Components of this model were considered and incorporated into the ADHD toolkit designed for provider use in the primary care setting. The goal of this quality improvement project was to increase the frequency that providers use a validated ADHD symptom scale in the treatment and diagnosis of ADHD in primary care. The clinical practice question to be addressed was: Does implementation of an ADHD tool kit and a validated ADHD symptom scale affect clinical practice surrounding the assessment and treatment of ADHD? The objectives for this project were:

1. To increase the use of ADHD assessment and symptom scales by providers within a primary care clinic.

2. To assess provider knowledge and clinical practices with the diagnosis, treatment, and management of ADHD.

3. To assess provider practices of medication prescription for the treatment of ADHD.

4. To assess whether use of ADHD symptom scale and toolkit increases adherence to evidence based practices of managing ADHD.

Design for the Evidence-based Initiative

For this quality improvement project, baseline data included primarily retrospective record review and a survey of the providers. After determination and approval by the organization and GVSU Institutional Review Boards [IRBs], the DNP student evaluated medical records of adult patients (18+ years) with ADHD diagnoses that were seen in the clinic in the prior five weeks for data collection as described in the methodology section below. Pre-implementation data collection occurred in November, 2018. Additionally, pre-implementation provider/staff surveys were distributed and collected after IRB approval. The intervention

included the implementation of the Adult ADHD Self-Report Scale (ASRS v1.1) Symptom

Checklist and the ADHD toolkit. Beginning approximately two weeks following implementation

of the intervention (to allow for the usual chart preparation period), charts of all adult ADHD

patients seen in the clinic were retrospectively reviewed for a five-week post-intervention data

collection period. The post-intervention data collection occurred between January, 2019-

Feburary, 2019 .

Setting

The setting for this organizational assessment was a family practice primary care office in

the Midwest. This office is a part of a larger network of healthcare facilities throughout the

community and the nation. The health system is a nonprofit health care system which includes

five hospital campuses and more than 60 physician offices. The clinic is a part of a national

health system and seeks to provide compassionate and excellent care. The office is comprised of

15 providers who operate in work "pods" comprised of physicians, nurse practitioners or

physician assistants, and medical assistants. This structure allows more continuity of care and

flexibility for both acute and routine appointments. The office provides primary care to a large

array of patients ranging from pediatrics through older adults. The patient population in this

urban setting is very diverse in terms of ethnic and socioeconomic demographics. The lead

practice physician was the project site mentor for this quality improvement project.

Participants

A chart review of adult patients (aged 18 and older, excluding vulnerable populations)

with an ADHD diagnosis code (F90.0, 90.1, 90.2, 90.8, and 90.9) who were seen in this primary

care office during the project period were included. Additionally, providers of adult patients with

ADHD in this primary care office were the primary participants of the quality improvement

project. A provider questionnaire was administered pre- and post-intervention to assess

knowledge and clinical practices surrounding ADHD care. Providers that are exclusively

pediatric providers were excluded.

Model Guiding Implementation: Model for Improvement

The Model for Improvement with Plan-Do-Study-Act cycles served as the theoretical

framework for implementation of the ASRS-v1.1 and the ADHD toolkit in the primary care

setting. The Model for Improvement with Plan-Do-Study-Act cycles has three fundamental

questions which form the premise of the model: "What are we trying to accomplish? How will

we know that a change is an improvement? and What change can we make that will result in

improvement?" (IHI, 2018, p.1). This model was developed by Associates in Process

Improvement and is recommended for quality improvement by the Institute for Healthcare

Improvement (IHI, 2018). The steps in this model are: forming the team, setting aims,

establishing measures, selecting changes, testing changes with Plan-Do-Study-Act cycle,

implementing changes, and spreading changes (IHI, 2018; Langley et al., 2009). The Model for

Improvement (Appendix D) is reproduced with permission from published John Wiley and Sons

(Appendix E).

Forming a Team. The quality improvement team was comprised of representatives

within the organization which represent different kinds of expertise (IHI, 2018). This project

team consisted of a family physician project leader, Doctor of Nursing Practice (DNP) student

leader, and site medical assistant (MA) staff. The core group of leaders of varied expertise

assisted in the implementation design and workflow for the ASRS-v1.1 and ADHD toolkit.

Setting Aims. Setting aims is required to make improvements within an organization (IHI, 2018). Aims should be both measurable and time-specific (IHI, 2018). The goal of this quality improvement project was to implement the use of a validated symptom scale and determine how the use of the scale affected clinical practices surrounding the care of adults with ADHD. The timeframe for this project was as follows: propose to the doctoral project committee at Grand Valley State University (GVSU) and the site mentor on November 5th, 2018, obtain approval through the IRBs, collect pre-implementation data via provider survey and chart review of adult patients with an ADHD diagnosis seen at the office in the prior five weeks, implement the use of ASRS-v1.1 and ADHD toolkit, and evaluate measures beginning two weeks after implementation.

Establishing Measures. Measurement allows the team to evaluate the process and make changes as necessary (IHI, 2018). Measurements should bring knowledge into practice and collect enough data to learn and complete another Plan-Do-Study-Act cycle (IHI, 2018). Measurements for this quality improvement project align with project goals and objectives discussed in the project plan portion of this document.

Selecting Changes. The primary change in this quality improvement process was implementing the use of the Adults ADHD (ASRS-v1.1) Symptom Checklist into routine evaluation of adults with ADHD in the primary care setting. If changes result in improvement, the change can be expanded (IHI, 2018).

Testing Changes. The Model for Improvement suggests testing changes by trying a change in a real work setting by using the Plan-Do-Study-Act cycle (IHI, 2018). By testing changes, the organization can increase support by establishing that the change results in improvement and decide whether the change results in improvement in the actual working

environment (IHI, 2018). The steps for testing are planning the test with a plan for data

collection, trying the test on a small scale and begin data analysis, complete data analysis and

summarize results, and lastly to refine the change as needed from what was learned during the

testing period (IHI, 2018).

Implementing Changes. After successful testing on a small scale, the change may be

ready for implementation on a larger scale (IHI, 2018). The implementation step is solidifying a

change into organizational practices by affecting documentation, policies, training, and possibly

compensation (IHI, 2018). Implementation stage also utilizes Plan-Do-Study-Act cycles for

modifying the change as needed for the practice setting (IHI, 2018).

Spreading Changes. Spreading changes is the final step of implementing a change in the

Model for Improvement (IHI, 2018). This step involves replicating the change process in other

parts of the organization. For this quality improvement project, this would be the possibility of

implementing the Adult ADHD ASRS-v1.1 Symptom Checklist into other primary care settings

within the health system in the future.

Plan for Implementation

The Model for Improvement with Plan-Do-Study-Act cycles was best implemented

initially on a smaller scale with three providers initially to help the intervention gain momentum

within the project location. At the project site, there were 12 providers that manage and treat

patients with adult ADHD. Implementation began with three of these providers and their teams

to test the changes and adjust for any issues in workflow for the first week. Once implementation

was successful on this scale, the implementation was expanded to all the adult providers within

the office. This implementation plan allowed for an opportunity to refine the process as needed

to optimize uptake and buy-in within the office setting. The Adult ADHD ASRS-v1.1 Symptom

Checklist and ADHD toolkit implementation affected the workflow of both providers and the medical assistants. For successful implementation, medical assistants needed to ask adult patients to complete the ASRS with their visit. Typically, for visits such as ADHD follow-up appointments and routine physicals, chart preparation was completed two weeks in advance with paperwork mailed to the patient. When completing chart preparation, the medical assistant could include the ASRS in the mailing for adults with ADHD. If the patient presents with ADHD and had not filled out the ASRS for the visit, the medical assistant instructed the patient to do so. The medical assistant uploaded the form to the electronic medical record and gave the hard copy to the provider for interpretation.

For adults with ADHD, providers should ensure the patients have completed the ASRS, and then evaluate their current symptoms at their appointment. Providers should decide if an intervention is necessary and treat the patient accordingly. If needed, the provider can set another appointment with the patient to further evaluate ADHD symptoms. Providers should verify that the ASRS was uploaded to the patient's medical record.

Implementation Steps and Strategies

The ADHD toolkit included the Adult ADHD Self-Report Scale (ASRS-v1.1) Symptom Checklist for patient use (Appendix F). The Adult ADHD Self-Report Scale (ASRS-v1.1) is a three-page document with instructions on the first page and the value of using a scale for ADHD on the third page. The ASRS-v1.1 is copyrighted by the World Health Organization, but is freely available for use by healthcare providers, so long as the appropriate citation is included. This has been highlighted in Appendix G. Next, the ASRS Interpretation Guide (Appendix H) was created by the DNP student for quick interpretation of ASRS Symptom Checklist results. Inattentive and hyperactive symptoms were highlighted for

easy interpretation. This was refined for readability after the first Plan-Do-Study-Act cycle

(Appendix I). DSM-V symptom diagnostic criteria are highlighted with an ICD-10 coding

guide. Symptom definitions for ADHD, partial remission, and functional remission are

included. A provider survey cover letter (Appendix J) explained the purpose of the project to

providers and included an invitation to participate in the provider survey which was

distributed during the initial week of project implementation. A pre-implementation provider

survey (Appendix K) and a post-implementation provider survey (Appendix L) were utilized

to understand provider assessment and treatment of adult patients with ADHD in the primary

care setting.

The provider situation, background, assessment, recommendation (SBAR) document

(Appendix M) served as an educational tool to outline the reason for the project and the

selection of the ASRS measurement tool. The ASRS Medical Assistant Letter/Education

(Appendix N) explained the project and proposed workflow to incorporate the ASRS into

practice. The ASRS Medical Assistant Letter/Education was changed slightly after the first

Plan-Do-Study-Act cycle to clarify the workflow directions for the staff (Appendix O).The

ADHD Quality Improvement Education poster (Appendix P) provided a project explanation

and purpose in SBAR format and include a summary of workflow changes for both providers

and flow staff. This was utilized as the cover to the adult ADHD folders that were distributed

to providers and staff within the office. A Provider Medication Guide outlined available

medications for adult ADHD (Appendix Q). Lastly, the Provider Non-Pharmacological

Interventions Guide provided resources and education discussion points for providers to

discuss adult ADHD (Appendix R).

Measures

Measurement of this quality improvement project began by evaluating demographic information in the pre-implementation and post-implementation cohorts. Demographic information included gender, age, and race to ensure that the population with ADHD in the pre-implementation and post-implementation periods were similar. Secondly, measurements were designed to align with project objectives.

The first objective, to determine whether use of ADHD scales by providers can be improved in the primary care setting, was measured by documentation of a symptom scale during the visit and type of visit. Use of ADHD measurement scales may vary depending on the reason for the patient's office visit. Additionally, the provider survey evaluated the use of a validated symptom rating scale in question two, provider perception of usefulness of a symptom scale in question three, and ease of documentation of ADHD symptoms in question seven. The second objective was to assess provider knowledge and clinical practices with the diagnosis, treatment, and management of ADHD.

The second objective was measured by timeframe of the patient's last office for ADHD, presence of a comprehensive ADHD evaluation on the chart of a patient given the ADHD diagnosis, number of ADHD symptoms recorded in the history of present illness (HPI), and by provider survey. The provider survey questions 1, 2, 8, and 9 addressed knowledge of adult ADHD, use of an ADHD symptom scale, discussion of nonpharmacological treatment options, and offering additional community resources to adults with ADHD.

The third objective, to assess provider practices of medication prescription for the treatment of ADHD, was evaluated by whether the patient is receiving medications for ADHD at the last visit, ADHD medication type, changes in medication dosage ever, change in medication dose

during current visit, and by provider survey. Survey questions five and six address provider confidence and understanding of medication management of adults with ADHD.

The fourth objective, to assess whether use of ADHD symptom scale and toolkit changes providers practice in treatment of ADHD, was addressed by whether patient has an ADHD follow up visit scheduled within the next six months, pre- and post-intervention medication prescriptions, and by provider survey. Question four of the provider survey asked if the provider knows who to ask with questions regarding ADHD management.

Data Collection Procedures

The project began immediately following IRB determination and permission from the doctoral project committee containing representatives from Grand Valley State University and the clinic. Pre-intervention data collection and provider survey occurred in the month of November 2018. Implementation of the ADHD toolkit and ASRS in the clinic began with the initial three providers and their teams during the week of November 12, 2018. During the week of December 3, 2018, the implementation of the ADHD toolkit and the ASRS began with the rest of the providers and their teams. Post-implementation data collection began in January 2019 which allowed for a two-week chart preparation period. Data collection continued for approximately five weeks from January 2019 through mid-February 2019. Statistical analysis occurred at the end of February. The quality improvement project will be available for dissemination and published through Grand Valley State University ScholarWorks by April 2019.

This quality improvement project did not require a sample size estimation as all adult patients with a diagnosis code for ADHD were evaluated during the project period. The project period extended five weeks prior to implementation and five weeks after project

implementation. A preliminary report was run during August 2018 which identified 238 unique adult patients with an ADHD diagnosis code that had been seen at the clinic in the prior three months, averaging approximately 19 adults ADHD patients each week. A five-week sample was expected to yield approximately 95 adult patients for both the pre- and post-implementation period. The provider survey was distributed to all providers (MD, DO, NP, PA) who evaluate and treat adult patients with ADHD. An Excel file was developed for retrospective data collection, including the following items:

- Pre- or post-intervention (pre-, post-)

- Gender (male, female)

- Age (in years)

- Race (Caucasian, African American, Other)

- Diagnosis code (F90.0 (predominantly inattentive); F90.1 (predominantly hyperactive); F90.2 (combined type); F90.8 (other); F90.9 (unspecified); more than one dx code)

- Current visit type (initial evaluation ADHD, follow up ADHD, physical, sick visit)

- Last office visit for ADHD symptom evaluation (first visit, within last month, within last 12 months, greater than 12 months)

- Presence of comprehensive ADHD evaluation on chart (yes, no, referred, not applicable)

- Documentation of a symptom scale at visit (yes, no, no applicable)

- Number of ADHD symptoms in HPI at last visit for ADHD (number of symptoms)

- Scheduled a follow up ADHD visit within next six months (yes, no, no

  applicable)

- Receiving medications for ADHD at last visit (yes, no)

- ADHD Medication type (long acting stimulant only, short acting stimulant only,

  nonstimulant only, long acting + short acting stimulant combination, long acting

  stimulant + nonstimulant combination, no medication)

- Change in ADHD medication ever (yes, no, not applicable)

- Change in ADHD medication last six months (yes, no, not applicable)

- Change in ADHD medication current visit (yes, no, not applicable)

- Change in ADHD medication dose at current visit (increase, decrease, no

  change, not applicable)

- ADHD Patient Education Documented (yes, no, not applicable)

An additional two items were added to the data collection after proposal defense and with the

IRB approval to account for what ASRS symptom scores and if an ADHD plan was in place.

These items were:

- Greater than 5 inattentive or hyperactive symptoms on ASRS [red zone] (ASRS

  not used, >5 symptoms, <5 symptoms)

- Provider documented an ADHD Plan (yes, no)

The DNP student collected the de-identified data and entered the data into the Excel code

book attached on the project site. The de-identified data was stored on a password protected

device. The DNP student collaborated with a GVSU statistician graduate student assigned to

assist with this project for completion of statistical analysis. De-identified data was analyzed

using Statistical Analysis System (SAS) software.

Data Management

Protected health information was accessed by the DNP student within the organizational

site using a systematic method. Patient records were identified for review by having a report

generated through the electronic medical record system by diagnosis code and date of visit by an

organizational site leader. Data collection only occurred on project site location. Personal

identifiers were not collected. Data was de-identified and coded into numeric data and

documented in the project Excel file. Data was only accessed by the principal investigator and

project team members including site mentor, GVSU faculty advisors, and GVSU statisticians

assisting with project. All files maintained for this quality improvement project were password

protected and could be provided to the clinic at any time, including at the conclusion of the

student-led project in April, 2019. Analysis and the final disposition of the data was reported in

statistical terms and descriptive statistics only. Publication or dissemination of results was in

descriptive terms only, the name and location of the organization was not identified. The DNP

student could provide information as requested. At the completion of the project in April 2019,

all study related documents will be transferred to the clinic. The DNP student has completed

human subjects training and Health Insurance Portability and Accountability Act (HIPAA)

training via Collaborative Institute Training Initiative and project design will reflect these

principles.

Analysis

Demographic data, including age, gender, and race were evaluated, analyzed, and

presented in the form of a table for the purpose of describing the pre-implementation patient

group and the post-implementation group. An assessment of normality was completed with

demographic data to establish that pre- and post- implementation groups are similar. Numeric

variables were compared using t-tests or the appropriate nonparametric test if necessary

assumptions were not met. Data used in the t-tests were summarized and reported with means

and standard deviations. Data used in nonparametric tests were summarized using medians and

interquartile ranges. Categorical data was compared using chi-squared analyses with Fishers'

Exact tests. Frequencies and percent frequencies were reported for categorical data. All p-values

were reported and compared using a level of significance of alpha=0.05.

Resources & Budget

The budget for this quality improvement project was comprised of revenue and expenses.

Revenue sources represent value-added to the project and include time for the project manager as

well as team member time of the family physician project leader, registered nurse practice

manager, and practice flow staff. Additionally, time for family physicians to fill out the survey

was included. Consultations for statistician services and the ADHD expert were additional values

added to this project. These items were also included in the expenses, as cost which would need

to account for in the case of project replication. Additional expenses were the cost of printing

letters, surveys, and educational materials, as well as, the use of a computer to complete project

research and design, chart review, and dissemination reports.

The average hourly salary for a family physician leader is $93/ hour (Pay Scale, 2018a).

RN project leaders earn approximately $35/ hour (Pay Scale, 2018 b). Medical assistants were

key to model implementation planning and are paid approximately $14.50/ hour (Pay Scale,

2018 c). The psychiatric specialists, such as an ADHD expert, earns approximately $125/ hour

(Pay Scale, 2018d). The cost for input from an RN Practice manager was based on an hourly rate

of $30 (Pay Scale, 2018e). Consultation services of the statistician is based on an average hourly

rate of $29 (Pay Scale, 2018f). The total expense of the project is projected to be $1040.00 as outlined in the project budget (Appendix S).

Timeline

The timeline for this quality improvement project progressed in the following steps (Appendix T):

1. Met with clinic personnel to discuss project on July 11, 2018.

2. Proposed project to doctoral project committee at Grand Valley State University to the organizational representative, on November 5, 2018.

3. Obtained approval through the clinic and Grand Valley State University IRB.

4. Distributed Provider Surveys during November, 2018.

5. Obtained report of adult (18+ years) ADHD patients seen at the clinic in previous five weeks (November 2018) via report builder in the clinic electronic health record provided by office manager.

6. Reviewed medical records for applicable pre-implementation data and record de-identified data in project excel file (see attachment).

7. Implemented the Adult ADHD Self-Report Scale (ASRS v1.1) Symptom Checklist and ADHD provider toolkit with initial three providers and their teams in the office location. In addition, the following steps will be completed:

    a. Utilized a Plan-Do-Study-Act model of quality improvement model by Institute for Healthcare Improvement [IHI] (2017) to guide project implementation

    b. Implemented project with office staff members (Flow Staff)

     i. During chart preparation- identify adult patients with ADHD by reviewing the problem list

    ii. Include ASRS with chart preparation packet

   iii. Complete ASRS during intake of adult with ADHD, if not already complete

   iv. Give form to provider for scoring and interpretation

    v. Upload to patient's current visit via scanning & uploading a document to a chart protocol

  c. Implemented project with providers (physicians, physician assistants, and nurse practitioners)

     i. If a patient has ADHD, ensure patient has completed ASRS

    ii. Evaluate current symptoms and utilize symptom review to guide conversation and assess patient functional status

   iii. Intervention: Decide if a need for change in treatment plan is needed and treat accordingly or set up future appointment for further evaluation if needed. Educate/engage patient on diagnosis/treatment plan

   iv. Ensure ASRS is uploaded to the chart for the visit

8. Evaluated implementation process and workflow and made any changes necessary during weeks of November 12, 19, and 26, 2018.

9. Implemented the Adult ADHD Self-Report Scale (ASRS v1.1) Symptom Checklist and ADHD provider toolkit with remaining nine providers and their teams during the week of December 3, 2018.

10. Evaluated charts of adult (18+ years, excluding vulnerable populations) ADHD patients seen at the office for five weeks post-implementation from January 2-February 8, 2019.

11. Submitted project data to GVSU statisticians by February 12, 2019.

12. Completed statistical analysis during March, 2019.

13. Project defense to GVSU faculty and organizational representative and publish findings in GVSU ScholarWorks by April 30, 2019.

Sustainability Plan

This project demonstrates long-term sustainability because of the strategies utilized for implementation. The use of the ASRS in practice will become easier as time continues and the practice becomes solidified. The cost of sustaining operation of this project is low. Project deliverables such as the ADHD toolkit and printed educational materials also contribute to the sustainability of the project. Additionally, the project site mentor serves as the physician lead in this practice and therefore will be well positioned to be the ADHD physician champion in this office. The physician champion can contribute to sustainability by providing leadership on the topic of ADHD and the process change. In accordance with the Model for Improvement, Plan-Do-Study-Act cycles may be continued for implementation of the ADHD toolkit and the ASRS with more providers. The final step in the Model for Improvement is spreading changes. The project site mentor and physician champion serves on the organizational opioid task force which has been charged with refining practices around opioid prescriptions within the organization. Future goals of this task force may include refining practices around other controlled substances such as benzodiazepines and stimulants. This project may serve as a basis for changes surrounding stimulant prescription and the treatment of ADHD with a trialed ADHD toolkit and

validated symptom measurement tool to be implemented at other primary care sites within the organization.

Results

Implementation of ADHD toolkit with Plan-Do-Study- Act Model

The Model for Improvement with Plan-Do-Study-Act cycles served as the theoretical framework for the implementation of the ASRSv1.1 and the ADHD toolkit in this primary care setting. During the first PDSA cycle, the ADHD toolkit was implemented with three providers in the office for two weeks. Several changes occurred as a result of the first PDSA cycle including modification to the ASRS Interpretation Guide to increase readability (Appendix I) and modification of workflow instructions for support staff (Appendix O). The workflow changes were suggested by the support staff team as a simple and familiar method of uploading the ASRS to the electronic medical record and would be easy to retrieve for reference in the future. Additionally, during the first PDSA cycle, the ASRS interpretation guide was used to create an transparent template for easy identification of clinically significant hyperactive and inattentive symptoms. This was placed in a bright yellow folder with the ADHD Quality Improvement Education Poster stapled to the front of the folder. Also included inside the folder were blank ASRS forms for use, ASRS Staff Education, and provider education on pharmacological and nonpharmacological interventions for adult ADHD.

After these changes were made during the initial PDSA cycle and were solidified with the initial three providers and their teams, the ASRS implementation was expanded to the rest of the providers in the office. ASRS folders were made for every provider and support staff team in the office, which allowed easy access to the necessary resources for all team members. Additionally,

the DNP student did proactively review patient charts to provide a list of patients who would be coming into the office with ADHD.

Provider Survey

The pre-implementation provider survey was distributed to all 12 of the providers and nine of these surveys were returned. The post-implementation provider survey was distributed to 10 of the 12 providers because two providers were out of the office for an extended period of time. Five of the 10 post-implementation provider surveys were returned. The results of the provider survey are summarized in Table 1.

The first question asked the providers to rate their knowledge of adult ADHD. In the pre-implementation survey, 3/9 (33%) providers rated themselves as very low or low, 4/9 (44%) rated themselves moderately, and 2/9 (22%) rated themselves as high or very high. In the post-implementation survey, 1/5 (20%) providers rated themselves as very low or low, 3/5 (60%) rated themselves moderately, and 1/5 (20%) rated themselves as high or very high. The second question inquired about provider use of a validated symptom scale. In the pre-implementation survey, 6/9 (67%) providers reported never or rarely using a scale, 2/9 (22%) providers reported sometimes using a scale, and 1/9 (11%) providers reported usually or always using a scale. In the post implementation survey, 1/5 (20%) providers reported never or rarely using a scale, 3/5 (60%) reported using a scale "sometimes," and 1/5 (20%) reported usually or always using a scale. The third question asked about providers perspective on whether or not a symptom scale would be helpful in the management of adult ADHD. On the pre-implementation survey, 1/9 (11%) providers reported a symptom scale was never or rarely helpful, 4/9 (44%) provider reported a scale would be sometimes helpful, and 4/9 (44%) providers answered that a symptom scale would be usually or always helpful. On the post-implementation survey, 1/5 (20%)

providers reported a symptom scale was never or rarely helpful and 4/5 (80%) providers reported a symptom scale was sometimes helpful.

Question four of the provider survey asked if the provider knew who to ask with questions regarding ADHD management. In the pre-implementation survey, 1/9 (11%) providers reported never or rarely knowing who to ask, 1/9 (11%) providers reported sometimes knowing who to ask, and 7/9 (78%) providers reported usually or always knowing who to ask. In the post-implementation survey, 1/5 (20%) reported never or rarely, 1/5 (20%) reported sometimes, and 3/5 (60%) reported usually or always knowing who to ask. The fifth survey question asked about confidence in medication management of adult ADHD. In the pre-implementation survey, responses of very low or low were given by 2/9 (22%) providers, 4/9 (44%) providers responded with moderate, and 3/9 (33%) providers have high or very high confidence with medication management. In the post-implementation survey, 1/5 (20%) reported very low or low confidence, 2/5 (40%) reported moderate confidence, and 2/5 (40%) reported high or very high confidence in medication management. Question six asked about understanding of medications and dosing for adult ADHD. In the pre-implementation survey, 2/9 (22%) providers low or very low understanding, 5/9 (56%) providers reported moderate understanding, and 2/9 (22%) providers reported high or very high understanding. In the post implementation survey, 1/5 (20%) providers reported low or very low understanding, 2/5 (40%) providers reported moderate understanding, and 2/5 (40%) providers reported high or very high understanding.

Question seven asked providers about ease of documentation. In the pre-implementation survey 2/9 (22%) providers reported documentation was never or rarely easy, 4/9 (44%) providers reported sometimes documentation was easy, and 3/9 (33%) providers reported was usually or always easy. In the post-implementation survey, 1/5 (20%) providers reported

moderate ease of documentation and 4/5 (80%) providers reported documentation was usually or always easy. The eighth question asked providers to rate how often they discussed non-pharmacologic interventions. In the pre-implementation survey, 4/9 (44%) providers reported sometimes discussing nonpharmacological interventions and 5/9 (56%) providers reported usually or always discussing nonpharmacological interventions for adult ADHD. In the post-implementation survey, 1/5 (20%) providers reported sometimes discussing nonpharmacologic interventions and 4/5 (80%) providers reported usually or always discussing nonpharmacologic interventions with adult ADHD patients. Lastly, question nine asked providers about offering community resources, support groups, or professional support to adult ADHD patients. In the pre-implementation survey, 3/9 (33%) providers reported never or rarely offering this information, 3/9 (33%) providers reported sometimes offering these resources, and 3/9 (33%) providers reported usually or always offering these resources. In the post-implementation survey, 2/5 (40%) providers reported never or rarely offering, 1/5 (20%) providers reported sometimes offering, and 2/5 (40%) reported usually or always offering community resources to adults with ADHD.

The open-ended question at the end of the surveys elicited some interesting comments. Provider feedback had some mixed responses, with one provider stating that the ASRS was helpful in "monitoring treatment response." Whereas another provider noted on the post survey, "I worry that rating scales (like pain scales + opioids) will cause escalation of stimulant dosing and I am not comfortable with our current high prescribing." On the survey, providers also noted need for psychosocial supports including "I don't know of any support groups for ADHD, would appreciate this kind of info" and "more professional/social support." Additionally, providers highlighted diagnosis and treatment concerns including, "Do we over use stimulants for adults in

the US. Is the adult ADHD diagnosis accurate for my patients?" and "Risk for abuse of these

meds; risk for aggravation of HTN [hypertension]." Lastly, providers noted need for additional

services including "better access to formal testing" and "better follow-up, more regular mental

health referrals to help manage a etiology for learning and managing life."

Chart Audit Pre and Post Implementation

The chart audit included 56 pre-implementation visits and 55 post-implementation visits.

Each visit was categorized as either an initial evaluation for ADHD, follow-up visit for ADHD,

routine physical, or a sick visit. In the pre-implementation group there were three visits which

were classified as "sick visits," whereas in the post-implementation group there were 14 sick

visits. Because the sick visit appointments were considered likely to differ in documentation and

focus of the appointment, these visits were excluded from the analysis. This left 53 patients in

the pre-implementation group and 41 patients in the post-implementation group. Patient

demographic variables, including gender, race, and age, were assessed for normality in the pre-

and post-implementation groups. For gender in the pre-implementation group, 38/53 (72%) were

female and 15/53 (28%) were male. In the post-implementation group, 23/41 (56%) were female

and 18/41 (44%) were male. Gender demographics are outlined in Table 2. For patient race in the

pre-implementation group, 44/53 (83%) were Caucasian, 8/53 (15%) were African American,

and 1/53 (2%) were classified as other. In the post-implementation group, 34/41 (83%) were

Caucasian, 4/41 (10%) were African American, and 3/41 (7%) were classified as other. Race

demographics are outlined in Table 3. Groups did not differ with respect to gender (χ^2

(1)=2.4696, p=0.1161) or race (χ^2 (2)=2.1180, p=0.3468) and therefore the normality assumption

is met for the composition of the groups. The age distribution appears to be similar across the

pre- and post-implementation groups (Figure 1).

The primary goal of this project was to implement the use of the ASRS in the primary care setting. Utilization of a measurement-based tool for adult ADHD was a new practice change in this setting and there was no prior use of or documentation with a symptom scale prior to the beginning of this project. In the pre-implementation group, there was zero use of ADHD symptom scales, but in the post-implementation group, 51.22% providers had used the symptom scale during their visit. The zero count in the pre-implementation group does not provide an opportunity for a reliable statistic to be produced, however is a noteworthy uptake in the use of the scale. Thus, the project was considered to be successful.

As a consequence of the use of the ASRS in the adult ADHD population in the primary care setting, there were no other significant outcomes noted in the five-week post-implementation group. In the pre- and post-implementation groups, there were no significant differences in the provider documenting a plan for ADHD, scheduling a follow-up visit for ADHD within next six months, or making changes to medication type or dose. Additionally, no significant changes were found for documentation of ADHD education, diagnosis code frequency, or number of ADHD symptoms.

Despite insignificant outcome measures, there were two variables that were interesting on the management of ADHD in this primary care setting. The variable that evaluated if more than five inattentive or hyperactive symptoms were clinically significant on the ASRS yielded interesting results. In the post-implementation group, 20/41 (48%) did not use the ASRS. However, among those that did use the ASRS, 12/21 (57%) had more than five clinically significant symptoms, indicating that the patient's symptoms are still meeting diagnostic criteria for adult ADHD. There were 9/21 (43%) of those who used the ASRS who had less than five clinically significant inattentive or hyperactive symptoms, indicating that these patients may be

in partial or full remission for adult ADHD. In this quality improvement project, 90% of patients were on medications to treat their ADHD; however, only 43% reported well controlled symptoms.

Another interesting variable was the variable for medication type which evaluated if a patient was on a short-acting stimulant only, long-acting stimulant only, nonstimulant only, combination of long and short acting stimulant, long-acting stimulant and nonstimulant combination, or no medication. Although no significant changes were noted between groups, the total frequencies and percentages of each medication type is interesting. Of the 94 total patients in this project, 37 (39%) were on a long-acting stimulant, 35 (37%) were on short acting stimulants, 4 (4%) were on a nonstimulant, 7 (7%) were on a long-acting plus a short-acting stimulant combination, 1 (1%) was on a long-acting plus non-stimulant combination, and 10 (10%) were on no medication. A medication type pie chart is located in Figure 2.

Discussion

Measurement-based care for mental health concerns is intended to "enhance precision and consistency in disease assessment, tracking, and treatment to achieve optimal outcomes" (Fortney et al., 2017, p. 180). Symptom rating scales are intended to be used as a supplement to clinical judgement and as a starting point in the provider's evaluation of treatment efficacy (Fortney et al., 2017). Outcomes are most improved when symptom assessment coincides with a clinical encounter and is assessed frequently (Fortney et al., 2017). Patients often report that measurement-based care complements the provider's assessment and helps them better understand their illness and express their symptoms to providers (Fortney et al., 2017). Assessing symptom response by comparing current symptom severity with prior symptom severity is

notably more difficult when using a paper-and-pencil measurement-based care tool versus an electronic version (Fortney et al., 2017).

This DNP quality improvement project was able to demonstrate substantial improvement in the use of the ASRS over the five-week post-implementation period. The project was unable to demonstrate further significant outcomes or practice changes as a result of the use of the symptom scale. Given the short evaluation period, the lack of positive long-term outcomes is unsurprising. The adult ADHD project has highlighted a couple areas for improvement in the care of adults with ADHD in the primary care setting. In this project, 57% of adult patients still had clinically significant symptoms. Additionally, 37% of patients were on short-acting stimulants only. Short-acting and intermediate-acting stimulants are considered second-line treatment agents for adults with ADHD (CADDRA, 2018). Long-acting stimulants are considered first-line therapy because they have the best risk-benefit profile, effectiveness, and duration (CADDRA, 2018). Additionally, long-acting stimulants reduce the need for multiple dosages and consequently increase compliance, symptom coverage, and treatment response (CADDRA, 2018). Optimal treatment is defined as symptoms have decreased and there has been improvement in general functioning (CADDRA, 2018). The results from this indicate that perhaps there is a large proportion of adult ADHD patients that have suboptimal treatment response and are not being treated with first-line medications. This may indicate a need for further study and support of providers in treating adults with ADHD.

The chronic care model served as an important basis for this project because ADHD is now known to be a lifelong condition that affects the individual across the life span (Culpepper & Fried, 2013). Appropriate management requires assessment and reassessment, a goal-directed treatment plan, utilization of ancillary resources, and patient education (Culpepper & Fried,

2013). By beginning to utilize an evidence-based measurement tool for symptom assessment, this primary care providers in this office have taken a challenging step in the appropriate management for adults with ADHD.

Limitations

This quality improvement project for improving use of the ASRS in adults with ADHD in the primary care setting had several limitations. Provider responses to the post-intervention survey were limited. Two providers in the office were out for extended leave and several others did not return the voluntary surveys. Another project limitation would be the length of implementation and evaluation time. The project was evaluated over a post-implementation period of five weeks. Maximum benefit from the use of measurement-based care will not be seen after only one symptom assessment, but over a time with repeated assessments.

Another significant barrier to this project was that the ASRS was not built into the electronic medical record (EMR). The organization is planning to change electronic medical record providers and therefore during this project implementation, changes to the current EMR were not considered. Different patients were compared pre- and post- implementation which may affect the outcomes.

Another limitation was the method of data collection did not necessarily represent the patients well, for example, some patients were managed by another provider outside of the office such as a psychiatrist or ADHD specialist, however they were still coded for ADHD at their visit. Another limitation was that the visit types for this project were limited to initial evaluation of ADHD, follow-up ADHD, routine physical, and sick visit. Some patients, however, may not have fit neatly into these categories; other reasons for visits included emergency room follow-up, follow-up on chronic conditions, or follow-up on another mental health condition such as

depression. Another significant barrier was the generally low volume of adult patients with ADHD. In a given week, there may be approximately 10-15 adult patients with ADHD that were scheduled in the office, however, at most a single provider would only see four of these patients. Additionally, throughout the course of this project, adults with ADHD have a high risk of cancelling or no-showing their appointments. This is not surprising given that core symptoms of ADHD include inattention, hyperactivity, and impulsivity which often manifest in organizational problems such as difficulty with time management and missed appointments (CADDRA, 2018).

Stakeholder Support and Sustainability

This project has several invested stakeholders, including the project site mentor and other physicians who frequently treat patients with adult ADHD. During project implementation, the strongest physician stakeholders were those who treated the highest number of adults with ADHD. Providers who treated few patients with ADHD were less invested in adopting the use of the ASRS. Additionally, the support staff were instrumental in making practice change. The support staff were invested in helping design the practice change and implementing it in adults with ADHD. Patients were also a stakeholder because they were asked to complete the ASRS at their visit. Lastly, organizational leaders such as the office managers were an invaluable support to the project. The office managers were essential in obtaining the reports necessary to complete data collection for the project.

The use of the ASRS and the ADHD toolkit demonstrates sustainability due to the strategic implementation plan. Unfortunately, the ASRS could not be integrated with the EHR due to the organizational plan to change EHR providers. However, the implementation workflow is easy and has become a more solidified practice through the duration of the project. The cost of sustaining the project is low as the toolkit folders and educational information have already been

distributed and there is minimal cost with uploading the document to the chart. The only ongoing

cost to sustaining the use of the adult ADHD toolkit would be printing copies of the ASRS,

which is minimal. The site mentor also serves as the physician practice leader and has agreed to

continue to serve as the physician champion for adult ADHD in the practice.

Implications for Practice

ADHD affects the lives of many adults due to the wide variety of functional impairments

that affect many areas of their lives. Measurement-based care is considered the standard of care

for ADHD along with most other psychiatric conditions. Measurement-based care is most

effective when used systematically over time as a way to adjust treatment (Wray, Ritchie, Oslin,

& Beehler, 2018). Benefits of measurement-based care include improvement of treatment

fidelity, provider-patient communication, and patient engagement (Wray et al., 2018). However,

few health care providers have adopted the use of standardized instruments for mental health

concerns (Wray et al., 2018). Measurement-based care was implemented in this practice setting

through the use of the ASRS and ADHD toolkit for adults with ADHD. Some providers will

need continued education, others accepted this new tool willingly and change was easily

established. The primary purpose of this intervention was to increase provider use of a

standardized assessment tool for adults with ADHD. Through the use of the ASRS and the adult

ADHD toolkit, providers were able to adopt the of a standardized tool to begin a more

comprehensive assessment of adult ADHD.

The use of the Model for Improvement with Plan-Do-Study-Act cycles served as an

important component to the implementation of the ASRS and ADHD toolkit in the primary care

setting. The steps of forming a team to promote stakeholder investment and making smaller scale

changes before office-wide implementation was helpful in the success of the project.

Additionally, this project implemented components of the chronic care model for improved outcomes in the treatment and management of adults with ADHD.

Reflection of Doctor of Nursing Practice Essentials

DNP students are required to meet eight essential competencies to graduate in good standing as required by the American Association of Colleges of Nursing [AACN] (AACN, 2006). These essential competencies are crucial for success in the nurse practitioner role. The eight Essentials were developed through the course of the DNP education and this project implementation.

Scientific Underpinnings for Practice

The first Essential contributes to practice by integrating nursing science with knowledge from other areas including ethics, biophysical, psychosocial, analytical, and organizational sciences to achieve high level nursing practice (AACN, 2006). Additionally, the use of scientific theories and concepts to guide and evaluate practice is necessary (AACN, 2006). In this project, there were several examples of use of this competency, including the use of a comprehensive literature review on the topic of ADHD and evidence-based practices. Practices found in the literature review were incorporated into the project implementation. Additionally, by using the chronic care model and the model for improvement for project implementation the DNP student demonstrated this competency.

Organizational and Systems Leadership

Essential II provides a competency for organizational and systems leadership for quality improvement (AACN, 2006). This Essential ensures the development and evaluation of care delivery approaches to meet the needs of patient populations and ensures accountability for the quality of care and patient safety within the health organization (AACN, 2006). This DNP

project demonstrated competency in Essential II by nature of being a quality improvement project. Through the use of an organizational assessment, the needs of adult ADHD patients within the primary care setting were assessed and the quality improvement project was designed to improve the care of these patients. The Plan-Do-Study-Act model was used to effectively implement the new process in this primary care setting.

Clinical Scholarship and Analytical Methods

The third Essential focuses on using analytic methods to evaluate existing evidence to implement into practice and direct quality improvement methods to promote safe, effective, efficient, and patient-centered care (AACN, 2006). Information technology and research methods should be used to collect and analyze data and findings should be disseminated to improve healthcare outcomes (AACN, 2006). The adult ADHD quality improvement project demonstrated this Essential by designing the intervention and implementation to align with current evidence. Additionally, data was collected and analyzed using appropriate statistical methods and disseminated through presentation and publication. Through integration of the chronic care model into this DNP project, clinical scholarship was demonstrated in applying best practices to a patient care setting.

Information Systems Technology

Use of information technology is essential to DNP competency and practice in the healthcare field. This competency highlights the use of technology to evaluate and monitor quality improvement and demonstrate the conceptional ability and technical skills to evaluate practice data (AACN, 2006). This project demonstrated competency in information technology by use of the organization EHR for data collection via reports and chart review. Additionally, an electronic spreadsheet was used to code and store data for analysis. Analysis was completed

using statistical software. Ethical guidelines were followed in accordance with the institutional review board to maintain confidentiality with patient data.

Advocacy for Health Care Policy

Essential V, advocacy for health care policy, prepares the DNP student to analyze health policy, demonstrate leadership in development and implementation of health policies at all levels, influence and educate policy makers, and advocate for the nursing profession and ethical policies (AACN, 2006). Although this project did not require a direct policy change within the organization, organizational policy was followed through the process of IRB proposal and project approval. Lastly, this DNP student was able to demonstrate competency in this area by attending Advocacy Day at the state capitol to support state level policies and educate lawmakers on the influence and practice rights of nurse practitioners.

Interprofessional Collaboration

The DNP student should master Essential VI, interprofessional collaboration, to improve patient and population health outcomes (AACN, 2006). In this Essential, the DNP student should employ effective communication and collaborative skills to implement standards of care and practice guidelines (AACN, 2006). Additionally, the DNP student can lead the interprofessional team to create a change in the health care system (AACN, 2006). This competency was demonstrated through the implementation of the ASRS and adult ADHD toolkit in the primary care setting. The DNP student created the project plan and guided its implementation through the use of clinical practice guidelines.

Clinical Prevention and Population Health

Essential VII represents foundational DNP knowledge of clinical prevention and population health for improving the nation's health competencies (AACN, 2006). This Essential

requires the DNP student to analyze scientific data at the individual, aggregate and population level to develop and implement interventions to address gaps in care (AACN, 2006). During the project planning, the DNP student analyzed data specific to the adult ADHD population in the primary care setting to assess for practice gaps in care delivery.

Advanced Nursing Practice

The final DNP Essential is advanced nursing practice competencies which prepares students to function in their roles. This competency requires the student to conduct a comprehensive and systematic assessment of health and illness parameters, design and implement therapeutic interventions, and educate others through complex health transitions (AACN, 2006). The DNP student demonstrated this competency by acting as a change agent in the implementation of the ASRS and adult ADHD toolkit in the primary care setting. The use of a standardized assessment tool for adult ADHD was a new practice that had not been used previously in this office, the DNP student guided this practice change through education during this transition. Additionally, the practice change was implemented using the evidence-based Model for Improvement and utilized Plan-Do-Study-Act cycles for quality improvement.

<div align="center">

Dissemination of Outcomes

</div>

The results of this adult ADHD quality improvement project will be disseminated through several outlets. The DNP student will publicly present the project at the university's final defense in April, 2019. The DNP student will present the findings of this project to an organizational representative at the final defense. Lastly, the DNP student will publish these outcomes to the university database, ScholarWorks.

Conclusion

Adult ADHD is a significant mental health disorder that is routinely managed in the primary care setting. Although measurement-based care is considered the standard of practice and is recommended by numerous guidelines, it is rarely used in the primary care setting. Through the implementation of the ASRS and the adult ADHD toolkit, practice changes have begun in the care of adults with ADHD. Routinely using an evidence-based tool to assess for symptoms can improve outcomes over time. ADHD is a chronic condition which should be assessed and managed routinely with a standardized assessment tool such as the ASRS.

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Tables

Table 1

Pre- and Post- Intervention Provider Survey

	Pre- or Post-Implementation	Very low or low/ Never or rarely	Moderate/ Sometimes	High or very high/ Usually or always
Question 1: I would rate my knowledge of ADHD as _____.	Pre-	3/9 (33%)	4/9 (44%)	2/9 (22%)
	Post-	**1/5 (20%)**	**3/5 (60%)**	**1/5 (20%)**
Question 2: I routinely use a validated symptom rating scale.	Pre-	6/9 (67%)	2/9 (22%)	1/9 (11%)
	Post-	**1/5 (20%)**	**3/5 (60%)**	**1/5 (20%)**
Question 3: I think a symptom scale is _____ helpful in the management or treatment of ADHD.	Pre-	1/9 (11%)	4/9 (44%)	4/9 (44%)
	Post-	**1/5 (20%)**	**4/5 (80%)**	**0/5 (0%)**
Question 4: I know who to ask if I have a question regarding ADHD management.	Pre-	1/9 (11%)	1/9 (11%)	7/8 (78%)
	Post-	**1/5 (20%)**	**1/5 (20%)**	**3/5 (60%)**
Question 5: My confidence in medication management of an adult with ADHD is: _____.	Pre-	2/9 (22%)	4/9 (44%)	3/9 (33%)
	Post-	**1/5 (20%)**	**2/5 (40%)**	**2/5 (40%)**
Question 6: My understanding of medications and dosing for an adult with ADHD is:	Pre-	2/9 (22%)	5/9 (56%)	2/9 (22%)
	Post-	**1/5 (20%)**	**2/5 (40%)**	**2/5 (40%)**
Question 7: Documentation of ADHD symptoms and management plan is easy.	Pre-	2/9 (22%)	4/9 (44%)	3/9 (33%)
	Post-	**0/5 (0%)**	**1/5 (20%)**	**4/5 (80%)**
Question 8: I routinely discuss nonpharmacological treatment options with my adult patients with ADHD.	Pre-	0/9 (0%)	4/9 (44%)	5/9 (56%)
	Post-	**0/5 (0%)**	**1/5 (20%)**	**4/5 (80%)**
Question 9: I offer information on community resources, support groups, or professional support to adults with ADHD	Pre-	3/9 (33%)	3/9 (33%)	3/9 (33%)
	Post-	**2/5 (40%)**	**1/5 (20%)**	**2/5 (40%)**

Table 2

Pre- and Post-Intervention by Gender

Pre- or post-intervention	Gender		
	Female	**Male**	**Total**
Pre-intervention frequency and percent	38	15	53
	71.70%	28.30%	56.38%
Post-intervention frequency and percent	23	18	41
	56.10%	43.90%	43.62%
Total frequency and percent	61	33	94
	64.89%	35.11%	100.00

Table 3

Pre- and Post-Intervention by Race

Pre- or post-intervention	Race			
	Caucasian	**African American**	**Other**	**Total**
Pre-intervention frequency and percent	44	8	1	53
	83.02%	15.09%	1.89%	56.38%
Post-intervention frequency and percent	34	4	3	41
	82.93%	9.76%	7.32%	43.62%
Total frequency and percent	78	12	4	94
	82.98%	12.77%	4.26%	100.00%

Figures

Figure 1

Histogram of Age Distribution in Pre- and Post- Implementation Groups
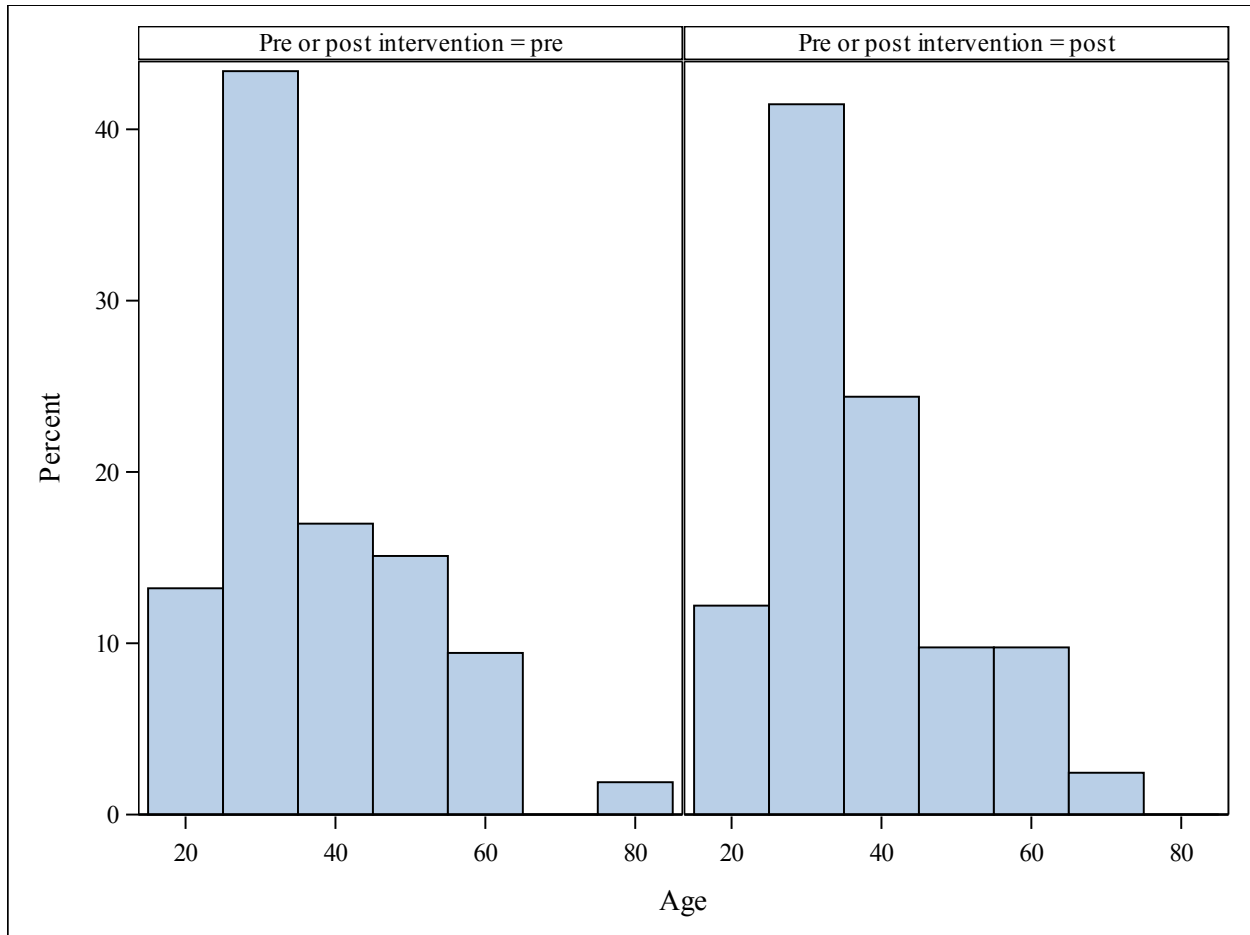
Figure 2

Pie Chart of Total Medication Type

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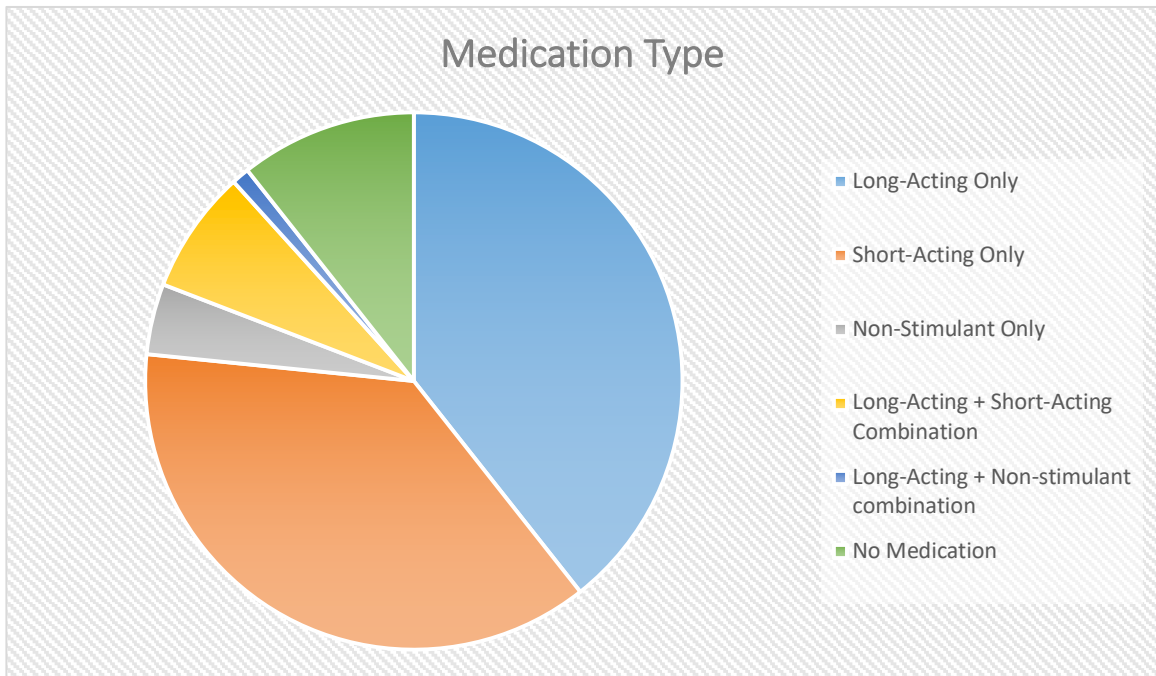
Appendices

Appendix A

Burke-Litwin Causal Model of Change
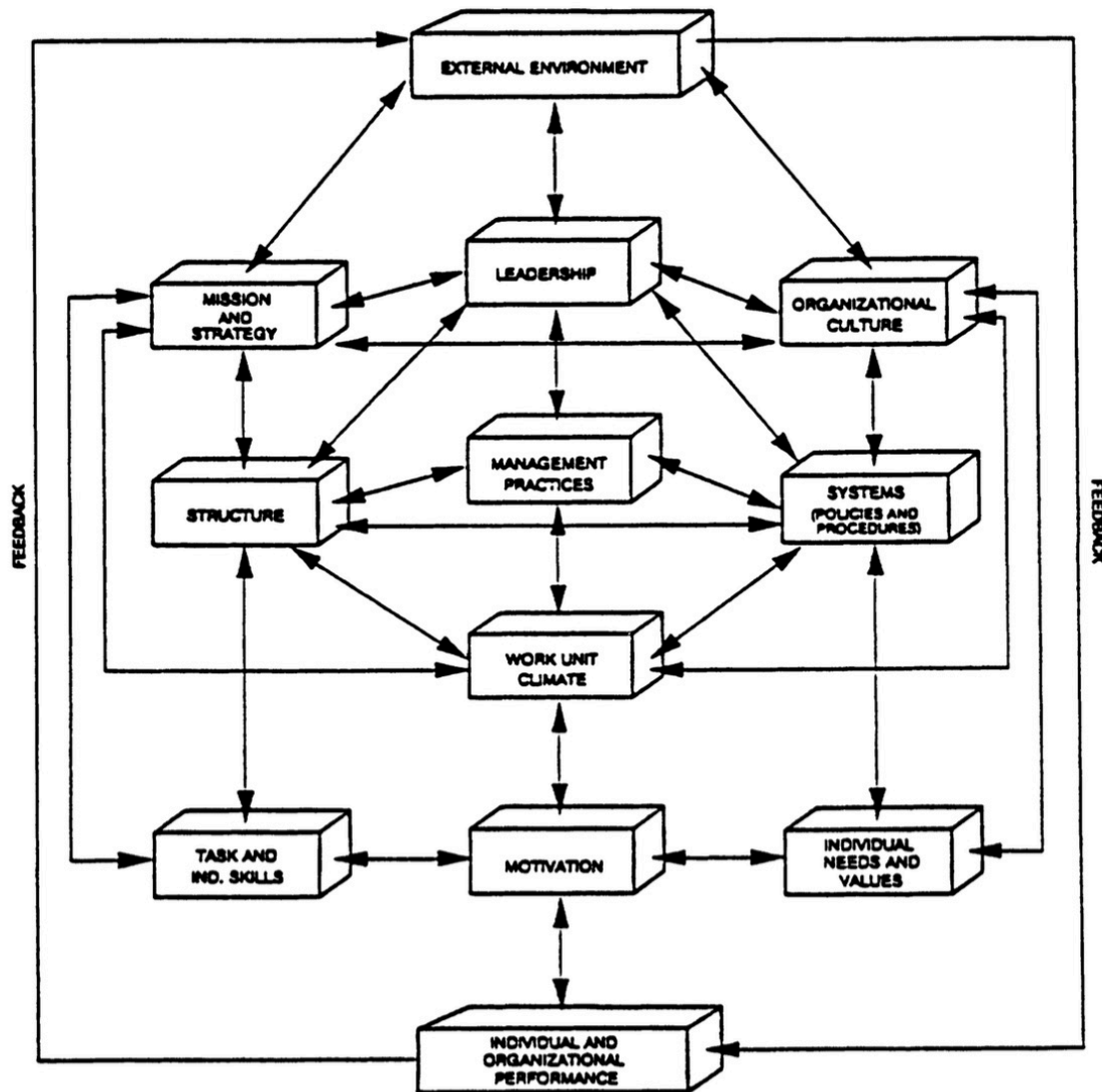
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Title: A Causal Model of Organizational Performance and Change
Author: W. Warner Burke, George H. Litwin
Publication: Journal of Management
Publisher: SAGE Publications
Date: 09/01/1992
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Appendix B

SWOT Analysis of the Organization

Strengths	Weaknesses
• This office piloted the opioid controlled substances initiative recently • Michigan law changes for controlled substances may motivate providers and staff to adopt an evidence-based practice surrounding stimulant prescription • Opportunity for standardized care • Chart analysis to be completed through chart review and intervention does not directly involve patients • Team-based environment • Involved physician leadership • Validated adult ADHD Symptom Checklist (ASRS v1.1) is freely available for use.	• No CMS quality measure for ADHD in adults • No current standard of practice surrounding ADHD care • Documentation of ADHD symptoms is not simple in current charting system • May increase patient visits • May not have easy access to adjunctive treatments for ADHD such as therapy
Opportunities	**Threats**
• CMS has a quality measure for ADHD care in children, may increase reimbursement for this measure • Improving quality of care for patients with ADHD • May allow for closer monitoring of ADHD patients and improved patient satisfaction • Improve provider knowledge and comfort with diagnosis and treatment of ADHD • Improve access to treatment for mental health • Improved documentation and collaboration between care providers	• Funding limitations for initiation of new workflow for ADHD • Staff schedules predominately include routine screenings and quality measures, may be overwhelming to change practice • Lack of buy-in of organizational leaders, and office staff could severely limit quality improvement opportunities and sustainability of the intervention.

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Appendix C

PRISMA Flow diagram of literature search selection process
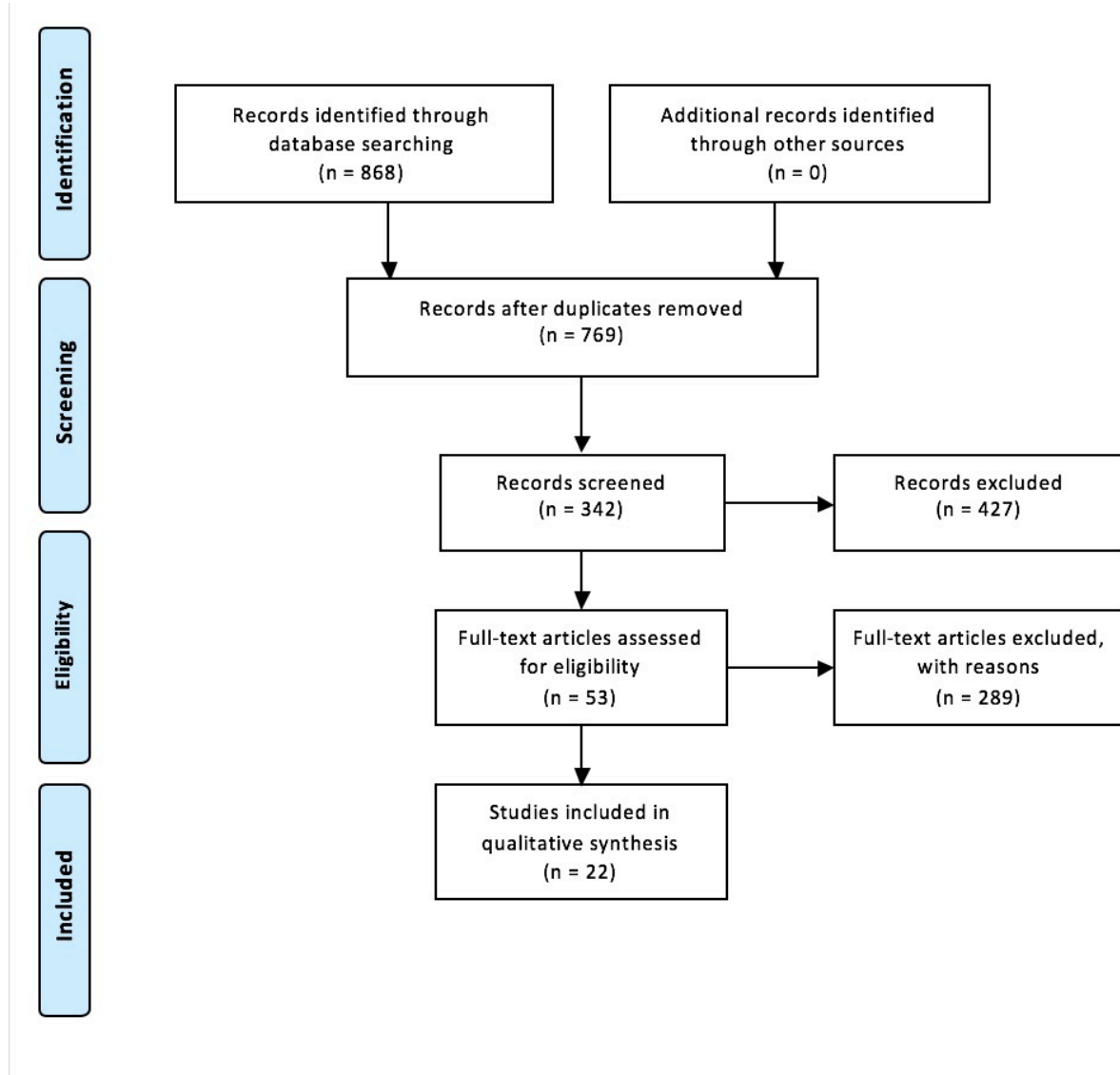
Appendix D

Model for Improvement
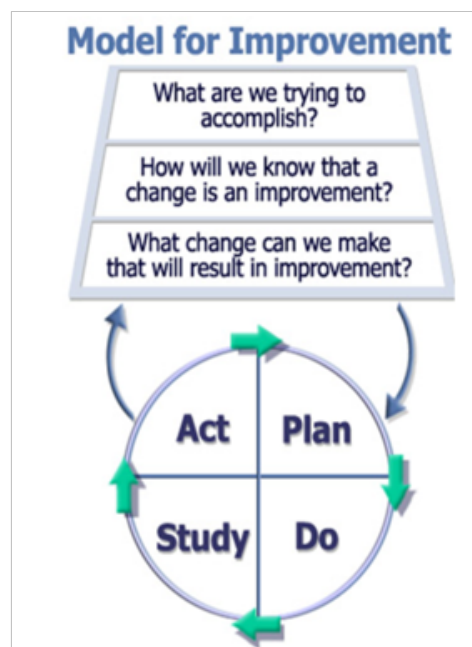
Langley, G. J., Moen, R. D., Nolan, K. M., Nolan, T. W., Norman, C. L., & Provost, L. P. (2009). *The improvement guide: A practical approach to enhancing organizational performance* (2nd ed). Used with permission from John Wiley and Sons.

Appendix E

Permission to Use Model for Improvement

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WILEY

Book: The Improvement Guide: A Practical Approach to Enhancing Organizational Performance, 2nd Edition

Author: Gerald J. Langley, Ronald D. Moen, Kevin M. Nolan, Thomas W. Nolan, Clifford L. Norman, Lloyd P. Provost

Publisher: John Wiley and Sons

Date: Apr 1, 2009

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Original Wiley figure/table number(s)	Model for Improvement
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Appendix F

Adult ADHD Self-Report Scale (ASRS-v1.1) Symptom Checklist for Patient Use

Adult ADHD Self-Report Scale (ASRS-v1.1) Symptom Checklist
Instructions

The questions on the back page are designed to stimulate dialogue between you and your patients and to help confirm if they may be suffering from the symptoms of attention-deficit/hyperactivity disorder (ADHD).

Description: The Symptom Checklist is an instrument consisting of the eighteen DSM-IV-TR criteria. Six of the eighteen questions were found to be the most predictive of symptoms consistent with ADHD. These six questions are the basis for the ASRS v1.1 Screener and are also Part A of the Symptom Checklist. Part B of the Symptom Checklist contains the remaining twelve questions.

Instructions:

Symptoms

1. Ask the patient to complete both Part A and Part B of the Symptom Checklist by marking an X in the box that most closely represents the frequency of occurrence of each of the symptoms.

2. Score Part A. If four or more marks appear in the darkly shaded boxes within Part A then the patient has symptoms highly consistent with ADHD in adults and further investigation is warranted.

3. The frequency scores on Part B provide additional cues and can serve as further probes into the patient's symptoms. Pay particular attention to marks appearing in the dark shaded boxes. The frequency-based response is more sensitive with certain questions. No total score or diagnostic likelihood is utilized for the twelve questions. It has been found that the six questions in Part A are the most predictive of the disorder and are best for use as a screening instrument.

Impairments

1. Review the entire Symptom Checklist with your patients and evaluate the level of impairment associated with the symptom.

2. Consider work/school, social and family settings.

3. Symptom frequency is often associated with symptom severity, therefore the Symptom Checklist may also aid in the assessment of impairments. If your patients have frequent symptoms, you may want to ask them to describe how these problems have affected the ability to work, take care of things at home, or get along with other people such as their spouse/significant other.

History

1. Assess the presence of these symptoms or similar symptoms in childhood. Adults who have ADHD need not have been formally diagnosed in childhood. In evaluating a patient's history, look for evidence of early-appearing and long-standing problems with attention or self-control. Some significant symptoms should have been present in childhood, but full symptomology is not necessary.

Adult ADHD Self-Report Scale (ASRS-v1.1) Symptom Checklist

Patient Name		Today's Date					
Please answer the questions below, rating yourself on each of the criteria shown using the scale on the right side of the page. As you answer each question, place an X in the box that best describes how you have felt and conducted yourself over the past 6 months. Please give this completed checklist to your healthcare professional to discuss during today's appointment.			Never	Rarely	Sometimes	Often	Very Often
1. How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?							
2. How often do you have difficulty getting things in order when you have to do a task that requires organization?							
3. How often do you have problems remembering appointments or obligations?							
4. When you have a task that requires a lot of thought, how often do you avoid or delay getting started?							
5. How often do you fidget or squirm with your hands or feet when you have to sit down for a long time?							
6. How often do you feel overly active and compelled to do things, like you were driven by a motor?							
							Part A
7. How often do you make careless mistakes when you have to work on a boring or difficult project?							
8. How often do you have difficulty keeping your attention when you are doing boring or repetitive work?							
9. How often do you have difficulty concentrating on what people say to you, even when they are speaking to you directly?							
10. How often do you misplace or have difficulty finding things at home or at work?							
11. How often are you distracted by activity or noise around you?							
12. How often do you leave your seat in meetings or other situations in which you are expected to remain seated?							
13. How often do you feel restless or fidgety?							
14. How often do you have difficulty unwinding and relaxing when you have time to yourself?							
15. How often do you find yourself talking too much when you are in social situations?							
16. When you're in a conversation, how often do you find yourself finishing the sentences of the people you are talking to, before they can finish them themselves?							
17. How often do you have difficulty waiting your turn in situations when turn taking is required?							
18. How often do you interrupt others when they are busy?							
							Part B

The Value of Screening for Adults With ADHD

Research suggests that the symptoms of ADHD can persist into adulthood, having a significant impact on the relationships, careers, and even the personal safety of your patients who may suffer from it.[1-4] Because this disorder is often misunderstood, many people who have it do not receive appropriate treatment and, as a result, may never reach their full potential. Part of the problem is that it can be difficult to diagnose, particularly in adults.

The Adult ADHD Self-Report Scale (ASRS-v1.1) Symptom Checklist was developed in conjunction with the World Health Organization (WHO), and the Workgroup on Adult ADHD that included the following team of psychiatrists and researchers:

- **Lenard Adler, MD**
  Associate Professor of Psychiatry and Neurology
  New York University Medical School

- **Ronald C. Kessler, PhD**
  Professor, Department of Health Care Policy
  Harvard Medical School

- **Thomas Spencer, MD**
  Associate Professor of Psychiatry
  Harvard Medical School

As a healthcare professional, you can use the ASRS v1.1 as a tool to help screen for ADHD in adult patients. Insights gained through this screening may suggest the need for a more in-depth clinician interview. The questions in the ASRS v1.1 are consistent with DSM-IV criteria and address the manifestations of ADHD symptoms in adults. Content of the questionnaire also reflects the importance that DSM-IV places on symptoms, impairments, and history for a correct diagnosis.[4]

The checklist takes about 5 minutes to complete and can provide information that is critical to supplement the diagnostic process.

References:
1. Schweitzer JB, et al. Med Clin North Am. 2001;85(3):10-11, 757-777.
2. Barkley RA. Attention Deficit Hyperactivity Disorder: A Handbook for Diagnosis and Treatment. 2nd ed. 1998.
3. Biederman J, et al. Am J Psychiatry.1993;150:1792-1798.
4. American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision. Washington, DC, American Psychiatric Association. 2000: 85-93.

Adult ADHD Self-Report Scale (ASRS-v1.1) Symptom Checklist

Patient Name		Today's Date					

Please answer the questions below, rating yourself on each of the criteria shown using the scale on the right side of the page. As you answer each question, place an X in the box that best describes how you have felt and conducted yourself over the past 6 months. Please give this completed checklist to your healthcare professional to discuss during today's appointment.	Never	Rarely	Sometimes	Often	Very Often
1. How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?					
2. How often do you have difficulty getting things in order when you have to do a task that requires organization?					
3. How often do you have problems remembering appointments or obligations?					
4. When you have a task that requires a lot of thought, how often do you avoid or delay getting started?					
5. How often do you fidget or squirm with your hands or feet when you have to sit down for a long time?					
6. How often do you feel overly active and compelled to do things, like you were driven by a motor?					
					Part A
7. How often do you make careless mistakes when you have to work on a boring or difficult project?					
8. How often do you have difficulty keeping your attention when you are doing boring or repetitive work?					
9. How often do you have difficulty concentrating on what people say to you, even when they are speaking to you directly?					
10. How often do you misplace or have difficulty finding things at home or at work?					
11. How often are you distracted by activity or noise around you?					
12. How often do you leave your seat in meetings or other situations in which you are expected to remain seated?					
13. How often do you feel restless or fidgety?					
14. How often do you have difficulty unwinding and relaxing when you have time to yourself?					
15. How often do you find yourself talking too much when you are in social situations?					
16. When you're in a conversation, how often do you find yourself finishing the sentences of the people you are talking to, before they can finish them themselves?					
17. How often do you have difficulty waiting your turn in situations when turn taking is required?					
18. How often do you interrupt others when they are busy?					
					Part B

ADHD-ASRS Symptom Checklist v1.1 is copyrighted by the World Health Organization and is available for unrestricted use.

Kessler, R. C., Adler, L., Ames, M., Demler, O., Faraone, S., Hiripi, E., Howes, M. J., Jin, R., Secnik, K., Spencer, T., Ustun, T. B., & Walters, E. E. (2005). The World Health Organization Adult ADHD Self-Report Scale (ASRS). *Psychological Medicine, 35*(2), 245-256.

Appendix G

Adult ADHD Self-Report Scale (ASRS-v1.1) Permission for Use

Appendix H

ASRS Interpretation Guide

Adult ADHD Self-Report Scale (ASRS-v1.1) **Symptom Checklist**

Patient Name		Today's Date					
Please answer the questions below, rating yourself on each of the criteria shown using the scale on the right side of the page. As you answer each question, place an X in the box that best describes how you have felt and conducted yourself over the past 6 months. Please give this completed checklist to your healthcare professional to discuss during today's appointment.			Never	Rarely	Sometimes	Often	Very Often

Inattentive

1. How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?
2. How often do you have difficulty getting things in order when you have to do a task that requires organization?
3. How often do you have problems remembering appointments or obligations?
4. When you have a task that requires a lot of thought, how often do you avoid or delay getting started?

Hyperactive

5. How often do you fidget or squirm with your hands or feet when you have to sit down for a long time?
6. How often do you feel overly active and compelled to do things, like you were driven by a motor?

Part A

Screener alone
>4 total symptoms =
likely adult ADHD- investigate further

Inattentive

7. How often do you make careless mistakes when you have to work on a boring or difficult project?
8. How often do you have difficulty keeping your attention when you are doing boring or repetitive work?
9. How often do you have difficulty concentrating on what people say to you, even when they are speaking to you directly?
10. How often do you misplace or have difficulty finding things at home or at work?
11. How often are you distracted by activity or noise around you?

>5 (of 9) Inattentive symptoms
(Questions 1-4; 7-11)
DSM 5 criteria for Inattention

Hyperactive

12. How often do you leave your seat in meetings or other situations in which you are expected to remain seated?
13. How often do you feel restless or fidgety?
14. How often do you have difficulty unwinding and relaxing when you have time to yourself?
15. How often do you find yourself talking too much when you are in social situations?
16. When you're in a conversation, how often do you find yourself finishing the sentences of the people you are talking to, before they can finish them themselves?
17. How often do you have difficulty waiting your turn in situations when turn taking is required?
18. How often do you interrupt others when they are busy?

>5 (of 9) Hyperactive Symptoms
(Questions 5-6; 12-18)
DSM 5 criteria for Hyperactivity

Symptoms within normal range
+
Normal Functioning
=
Functional Remission

Full ADHD criteria previously met
+
Last 6 months, less than full ADHD criteria met
+
Functional Impairment (Social, academic, occupational)
=
Partial Remission

Line of Clinical Significance

>5 Inattentive and/or
>5 hyperactive symptoms
+
Symptoms prior to age 12
+
Functional Impairment (social, academic, occupational)
+
> 2 settings (home, school, work, etc)
=
ADHD

ADHD-ASRS Symptom Checklist v1.1 is copyrighted by the World Health Organization and is available for unrestricted use.

Kessler, R. C., Adler, L., Ames, M., Demler, O., Faraone, S., Hiripi, E., Howes, M. J., Jin, R., Secnik, K., Spencer, T., Ustun, T. B., & Walters, E. E. (2005). The World Health Organization Adult ADHD Self-Report Scale (ASRS). *Psychological Medicine, 35*(2), 245-256.

FINAL DEFENSE

Appendix I

Revised ASRS Interpretation Guide

CODING
F90.0: Predominantly Inattentive
F90.1: Predominantly Hyperactive

F90.2: Combined Type=
criteria for BOTH inattentive and hyperactive met

Adult ADHD Self-Report Scale (ASRS-v1.1) Symptom Checklist

Patient Name		Today's Date	

Please answer the questions below, rating yourself on each of the criteria shown using the scale on the right side of the page. As you answer each question, place an X in the box that best describes how you have felt and conducted yourself over the past 6 months. Please give this completed checklist to your healthcare professional to discuss during today's appointment.

Columns: Never | Rarely | Sometimes | Often | Very Often

1. How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?

2. How often do you have difficulty getting things in order when you have to do a task that requires organization?

3. How often do you have problems remembering appointments or obligations?

4. When you have a task that requires a lot of thought, how often do you avoid or delay getting started?

5. How often do you fidget or squirm with your hands or feet when you have to sit down for a long time?

6. How often do you feel overly active and compelled to do things, like you were driven by a motor?

7. How often do you make careless mistakes when you have to work on a boring or difficult project?

8. How often do you have difficulty keeping your attention when you are doing boring or repetitive work?

9. How often do you have difficulty concentrating on what people say to you, even when they are speaking to you directly?

10. How often do you misplace or have difficulty finding things at home or at work?

11. How often are you distracted by activity or noise around you?

12. How often do you leave your seat in meetings or other situations in which you are expected to remain seated?

13. How often do you feel restless or fidgety?

14. How often do you have difficulty unwinding and relaxing when you have time to yourself?

15. How often do you find yourself talking too much when you are in social situations?

16. When you're in a conversation, how often do you find yourself finishing the sentences of the people you are talking to, before they can finish them themselves?

17. How often do you have difficulty waiting your turn in situations when turn taking is required?

18. How often do you interrupt others when they are busy?

Part A

Part B

Screener Alone
≥ 4 symptoms in Part A=
likely ADHD- investigate further

Inattentive Symptoms:
≥ 5 (of 9) = DSM 5 criteria for inattention
Questions: 1-4; 7-11

Hyperactive Symptoms:
≥ 5 (of 9) = DSM 5 criteria for hyperactivity
Questions: 5, 6; 12-18

Line of Clinical Significance

Symptoms within normal range
+
Normal Functioning
=
Functional Remission

Full ADHD criteria previously met
+
Last 6 months, less than full ADHD criteria met
+
Functional Impairment (social, academic, occupational)
=
Partial Remission

≥ 5 inattentive and/or ≥ 5 hyperactive symptoms
+
Symptoms prior to age 12
+
Functional Impairment (social, academic, occupational)
+
≥2 settings (home, school, work, etc)
=
Adult ADHD

Kessler, R. C., Adler, L., Ames, M., Demler, O., Faraone, S., Hiripi, E., Howes, M. J., Jin, R., Secnik, K., Spencer, T., Ustun, T. B., & Walters, E. E. (2005). The World Health Organization Adult ADHD Self-Report Scale (ASRS). *Psychological Medicine, 35*(2), 245-256.

Appendix J

Provider Survey Cover Letter

Dear Providers,

My name is Danielle Miller and I am a Doctor of Nursing Practice (DNP) student through Grand Valley State University. I am working with Dr. XXXX MD to conduct a quality improvement project for the care of adults with Attention Deficit/Hyperactivity Disorder (ADHD). The goal of this project is to implement the use of validated symptom scale and determine how the use of the scale may affect clinical practice surrounding the care of adults with ADHD.

As a provider in this office, your participation is valued for the success of the project and improvement of care we provide to patients with ADHD. This letter is an invitation to participate in a brief survey to assist me in the quality improvement process. Participation in this survey is voluntary and responses will remain anonymous.

Survey responses will be collected anonymously and no information that will identify you as an individual will be collected. Survey results will be reported only as the collective provider aggregate. The information collected will be used only for the purposes of this project and will not be reported elsewhere at any time.

Benefits of participation in this survey include improved understanding of the provider approach to ADHD care in the primary care setting. The information will be used to improve education and provide resources for use in the care of adults with ADHD.

If you have any questions regarding this project, please feel free to contact me in person or via email at dobbsd@mail.gvsu.edu.

Sincerely,

Danielle Miller BSN, RN
Grand Valley State University
DNP Student
dobbsd@mail.gvsu.edu

FINAL DEFENSE

Appendix K

Pre-implementation Provider Survey

The goal of this project is to implement the use of validated symptom scale and determine how the use of the scale may affect clinical practice surrounding the care of adults with ADHD. As a provider in this office, your participation is valuable for the success of the project and improvement of care we provide to patients with ADHD. By completion of the survey, a waiver of consent is implied. Participation in this survey is voluntary and responses will remain anonymous.

Please complete this survey and return to Danielle Miller or Dr. XXXX MD by Wednesday, November 14.

Please answer these questions/statements regarding care of the adult with ADHD…

1. I would rate my knowledge of adult ADHD as _____

   a. Very low   b. Low   c. Moderate   d. High   e. Very high

2. I routinely use a validated symptom rating scale.

   a. Never   b. Rarely   c. Sometimes   d. Usually   e. Always

3. I think a symptom scale is _____ helpful in the management or treatment of adult ADHD

   a. Never   b. Rarely   c. Sometimes   d. Usually   e. Always

4. I know who to ask if I have a question regarding ADHD management.

   a. Never   b. Rarely   c. Sometimes   d. Usually   e. Always

5. My confidence in medication management of an adult with ADHD is:

   a. Very low   b. Low   c. Moderate   d. High   e. Very high

6. My understanding of medications and dosing for an adult with ADHD is

   a. Very low   b. Low   c. Moderate   d. High   e. Very high

7. Documentation of ADHD symptoms and management plan is easy.

   a. Never   b. Rarely   c. Sometimes   d. Usually   e. Always

8. I routinely discuss nonpharmacological treatment options with my adult patients with ADHD.

   a. Never   b. Rarely   c. Sometimes   d. Usually   e. Always

9. I offer information on community resources, support groups, or professional support to adults with ADHD.

   a. Never   b. Rarely   c. Sometimes   d. Usually   e. Always

10. List any questions or concerns regarding ADHD care.

Appendix L

Post-implementation Provider Survey

The goal of this project was to implement the use of validated symptom scale and determine how the use of the scale may affect clinical practice surrounding the care of adults with ADHD. As a provider in this office, your participation is valuable for the success of the project and improvement of care we provide to patients with ADHD. By completion of the survey, a waiver of consent is implied. Participation in this survey is voluntary and responses will remain anonymous.

Please complete this survey and return to Danielle Miller or Dr. XXXX MD by Thursday, February 28.

Please answer these questions/statements regarding care of the adult with ADHD…

1. I would rate my knowledge of adult ADHD as _____

    a. Very low   b. Low   c. Moderate   d. High   e. Very high

2. I routinely use a validated symptom rating scale.

    a. Never   b. Rarely   c. Sometimes   d. Usually   e. Always

3. I think a symptom scale is _____ helpful in the management or treatment of adult ADHD

    a. Never   b. Rarely   c. Sometimes   d. Usually   e. Always

4. I know who to ask if I have a question regarding ADHD management.

    a. Never   b. Rarely   c. Sometimes   d. Usually   e. Always

5. My confidence in medication management of an adult with ADHD is:

    a. Very low   b. Low   c. Moderate   d. High   e. Very high

6. My understanding of medications and dosing for an adult with ADHD

    a. Very low   b. Low   c. Moderate   d. High   e. Very high

7. Documentation of ADHD symptoms and management plan is easy.

    a. Never   b. Rarely   c. Sometimes   d. Usually   e. Always

8. I routinely discuss nonpharmacological treatment options with my adult patients with ADHD.

    a. Never   b. Rarely   c. Sometimes   d. Usually   e. Always

9. I offer information on community resources, support groups, or professional support to adults with ADHD.

    a. Never   b. Rarely   c. Sometimes   d. Usually   e. Always

10: What are your recommendations for improved delivery of care for adults with ADHD?

Appendix M

Provider SBAR

Situation:

- Currently XXXX does not have a validated symptom scale to use in assessing adults with Attention Deficit/Hyperactivity Disorder (ADHD). ADHD is considered a chronic condition, as such should be routinely monitored with a validated measurement tool.

Background:

- Rating scales are helpful for assessing whether a patient meets Diagnostic and Statistical Manual of Mental Disorders (DSM) criteria for adult ADHD diagnosis and for assessing current symptoms (Adler & Cohen, 2004).
- Guidelines recommend utilizing a validated symptom assessment tool in evaluation of adults with ADHD
  - International Guidelines:
    - National Institute for Health and Care Excellence (NICE), 2018
    - Canadian ADHD Resource Alliance (CADDRA), 2018
  - National Guidelines and Organizations:
    - American Academy of Pediatrics, 2011
    - Children and Adults with Attention-Deficit/Hyperactivity Disorder (CHADD), 2018
  - State-level
    - Michigan Quality Improvement Consortium, 2017
  - Insurances
    - Blue Cross Blue Shield Complete of Michigan
    - Optima Health

Assessment:

- In pediatric patients, use of validated ADHD symptom scales is considered the standard of care and is routinely used. In the adult population, the use of a validated symptom scale is considered part of the standard of care, however is not consistently used for symptom assessment.
- Diagnosis of ADHD is based on childhood onset of symptoms, functional impairment, and current symptoms (Adler & Cohen, 2004).
- The Adult ADHD Self-Report Scale (ASRS-v1.1) Symptom Checklist was originally developed by a workgroup on adult ADHD and is available through the World Health Organization (Adler & Cohen, 2004). The ASRS has been validated using the National Comorbidity Survey and in adult ADHD populations (Adler & Cohen, 2004).
- Consistent use of the ASRS symptom checklist can allow the provider to quickly assess if ADHD symptoms are under control and allow the provider to monitor treatment response.
- The 18-item ASRS Symptom v1.1 Checklist corresponds to nine hyperactive symptoms and nine inattentive symptoms which correspond to both the DSM IV and V diagnostic criteria for adult ADHD (Silverstein et al., 2018).
  - Utilization of the full ASRS can improve classification of ADHD among true cases and is useful in charting clinical improvement among adults with ADHD receiving treatment (Kessler et al., 2005).
- The first six questions on the ASRS is useful in screening for possible ADHD in cases where diagnosis has not yet been made (Kessler et al., 2005).

Recommendation:

MAs/RNs/Flow Staff:

- Ask patient to complete the ASRS (may be sent in chart prep or when patient arrives)
- Score and share results with provider
- Scan and Upload to chart

Providers:

- Ensure documentation of ASRS has been uploaded to chart for future reference.
- Evaluate symptoms on ASRS and discuss with patient, intervene as appropriate.
- Consider referencing pharmacological and non-pharmacological intervention guides for adult ADHD as needed.

Appendix N

ASRS Medical Assistant Letter/Education

Dear Registered Nurses, Medical Assistants, and Flow Staff,

My name is Danielle Miller and I am a Doctor of Nursing Practice (DNP) student through Grand Valley State University. I am working with Dr. XXXX MD to conduct a quality improvement project for the care of adults with Attention Deficit/Hyperactivity Disorder (ADHD). The goal of this project is to implement the use of validated symptom scale and determine how the use of the scale may affect clinical practice surrounding the care of adults with ADHD.

As a member of the office team, your participation is valued for the success of the project and improvement of care we provide to patients with ADHD. We plan to assess all adult patients with an ADHD diagnosis regardless of reason for visit for the project period starting November 12, 2018. We will use the Adult ADHD Symptom Checklist with patients coming in for initial evaluation of possible ADHD, ADHD follow-up, and annual physicals of patients with ADHD.

The workflow will be as follows:
1. **Chart Prep**, adult patient noted to have ADHD on the problem list or be on a stimulant prescription
2. Include copy of ASRS v1.1 in chart prep packet- copies of ASRS v1.1 to be located at each desk
3. **Adult with ADHD arrives**
4. During Intake, if "Reason for Visit" is ADHD evaluation, follow up, or med review OR if patient is here for a physical or any other reason and has ADHD noted on the problem list- ask patient to complete ASRS v1.1
5. Score ASRS symptoms- Instructions attached
6. Record inattentive and hyperactive symptoms per ASRS in HPI and discuss with provider
7**. Scan and upload ASRS v1.1 to chart**

1. On patient's facesheet, click "add document" link
2. Complete first page as usual, select the document class/subclass and choose file to be added, click create document
3. The system will upload the document in DATA ENTRY status
4. Document Type: Select "Document Type not listed" and type "Adult ADHD rating scale" in the internal note
5. Complete data entry by selecting data entry completed and click save

If you have any questions regarding this project, please feel free to contact me in person or via email at dobbsd@mail.gvsu.edu.

Sincerely,

Danielle Miller BSN, RN
Grand Valley State University
DNP Student
dobbsd@mail.gvsu.edu

Appendix O

Revised ASRS Medical Assistant Letter/Education

Dear Registered Nurses, Medical Assistants, and Flow Staff,

My name is Danielle Miller and I am a Doctor of Nursing Practice (DNP) student through Grand Valley State University. I am working with Dr. XXXX MD to conduct a quality improvement project for the care of adults with Attention Deficit/Hyperactivity Disorder (ADHD). The goal of this project is to implement the use of validated symptom scale and determine how the use of the scale may affect clinical practice surrounding the care of adults with ADHD.

As a member of the office team, your participation is valued for the success of the project and improvement of care we provide to patients with ADHD. We plan to assess all adult patients with an ADHD diagnosis regardless of reason for visit for the project period starting December 3, 2018. We will use the **Adult ADHD Symptom Checklist (ASRS)** with patients coming in for initial evaluation of possible ADHD, ADHD follow-up, and annual physicals of patients with ADHD.

The workflow will be as follows:
Chart Prep:
- **IF** adult has ADHD on the problem list or on a stimulant prescription
- **THEN:** include copy of ASRS v1.1 in chart prep packet

Intake for Adults with ADHD:
- "Reason for Visit" is ADHD evaluation, follow up, or med review OR if patient is here for a physical or any other reason and has ADHD noted on the problem list- ask patient to complete ASRS v1.1
- Score ASRS symptoms- Instructions attached
- Record inattentive and hyperactive symptoms per ASRS in HPI and discuss with provider
- **Scan and upload ASRS v1.1 to chart**
    6. Patient's **Quickview**, click **Clinicals t**ab
    7. Select **Print Document Barcode**
    8. Select "**Encounter Document**" and choose "**Health History Questionnaire**"
    9. Enter the **Encounter Date**
    10. For status: Change to "close" unless the provider needs to evaluate
    11. Add **Internal Note:** *ADHD Self Report or ASRS*
    12. Complete data entry by selecting data entry completed and click save

If you have any questions regarding this project, please feel free to contact me in person or via email at dobbsd@mail.gvsu.edu.

Sincerely,

Danielle Miller BSN, RN
Grand Valley State University
DNP Student
dobbsd@mail.gvsu.edu

Appendix P

ADHD Quality Improvement Education Poster

ADULT ADHD SYMPTOM CHECKLIST

SITUATION

Validated symptom scales are not being used to assess adults with ADHD and could help providers assess current symptoms and whether the patient's treatment has been helping.

All team members are needed

OBJECTIVE

The goal of this project is to implement the use of validated symptom scale and determine how the use of the scale may affect clinical practice surrounding the care of adults with ADHD.

BACKGROUND

Symptom Rating Scales are Useful and Quick

- Takes less than 5 minutes
- Quickly assess inattentive vs. hyperactive symptoms
- Can be used to assess treatment progress

Recommended by guidelines for ADHD

- National Institute for Health and Care (NICE), 2018 from UK;
- Canadian ADHD Resource Alliance (CADDRA), 2018;
- American Academy of Pediatrics (2011);
- Children and Adults with Attention Deficit/Hyperactivity Disorder (CHADD), 2018;
- Michigan Quality Improvement Consortium (2017);
- Many insurance providers.

ASSESSMENT

Already Used in Pediatrics

Validated ADHD symptom scales are commonly used in pediatrics

Adult ADHD ASRS Symptom Checklist

- Developed by the World Health Organization
- Inattentive and hyperactive symptoms correspond to DSM criteria
- Assess current symptoms and treatment response

RECOMMENDATION

MAs/RNs Flow Staff:

- **Ask** patient to complete the ASRS (may be sent in chart prep or when patient arrives)
- **Score** and **Share** results with provider
- **Scan** and **Upload** to chart

Providers:

- **Evaluate** symptoms on ASRS and **discuss** with patient, **intervene** as appropriate
- **Ensure documentation** of ASRS has been uploaded to chart for future reference

QUESTIONS

- Please contact Danielle Miller DNP student or Dr. XXXX MD

  Email: dobbsd@mail.gvsu.edu

Appendix Q

Provider Medication Guide

Active Ingredient	Drug Name	Dosages	Duration of effect	Starting dose	Titration	Maximum dose
Long-acting Psychostimulants *Preferred						
Extended release Mixed salts of amphetamine (dextramphetamine/Levoamphetamine)	Adderall XR/generic	5, 10, 15, 20, 25, 30 mg	8-10 hrs	20 mg/day in the am	Increase by 10 mg weekly	60 mg/day
	Mydayis	12.5, 25, 37.5, 50 mg	Up to 16 hrs	12.5 mg to 25 mg daily	Increase by 12.5 mg weekly	50 mg/day
Extended-Release Methylphenidate	Concerta	18, 27, 36, 54 mg	10-12 hr	18 or 36 mg in the am	Increase by 18 mg weekly	72 mg/day
Methylphenidate	Extended release capsule	10, 20, 30, 40, 50, 60 mg	6-8 hrs	20 mg once daily	Increase by 10 mg increments weekly	60 mg/day
Lisdexamfetamine	Vyvanse	10, 20, 30, 40, 50, 60, 70 mg	12-14 hr	30mg in the am	Increase by 10 to 20 mg weekly	70 mg/day
Short-acting Psychostimulants						
Mixed salts of amphetamine (dextroamphetamine/levoamphetamine)	Adderall/generic	5, 7.5, 10, 12.5, 15, 20, 30 mg	4- 6 hrs	5 mg 1-2 times daily	Increase by 5 mg weekly	40-60 mg/daily
Methylphenidate	Ritalin IR	5, 10, 20 mg	3-5 hrs	5 mg BID, before breakfast and lunch	Increase by 5-10 mg at weekly intervals	60 mg/day in divided doses
Non-stimulants (may take weeks to see clinical efficacy)						
Atomoxetine	Strattera	10, 18, 25, 40, 60, 80, 100 mg	24 hrs	40 mg/day	Increase every 7-14 days to 60 mg, then to 80 mg	Lesser of: 100 mg/day or 1.4 mg/kg/day
Off-Label Options						
Bupropion	Wellbutrin SR	100, 150, 200 mg	12 hrs	100 mg daily	Increase to 100 mg BID after several weeks; may increase dose 150 mg BID, then 200 mg BID with several weeks between titrations	200 mg BID
	Wellbutrin XL	150, 300 mg	24 hr	150 mg daily	After several weeks, may increase to 300 mg daily	450 mg daily
Guanfacine extended release	Intuniv XR	1, 2, 3, 4 mg	24 hr	1 mg once daily	Increase by 1 mg/week	Monotherapy- up to 7 mg/day Adjunctive with psychostimulant: up to 4 mg/day

1st line recommendation: Long-acting psychostimulants
- o Single dosage maintains privacy and reduces stigma (school, work, social situation)
- o Increases compliance and convenience
- o Improved symptom control related to pharmacokinetic profile (fewer ups and downs)
- o Reduced risk of diversion

Amphetamine vs. methylphenidate?
- o Both block reuptake of dopamine and norepinephrine, but mechanism of action is different
- o Affects individuals differently
- o If one does not work well, try the other. There is no preferred order for medication trial.

Atomoxetine
- o Selective norepinephrine reuptake inhibitor
- o Takes longer to produce response than stimulants

Bupropion
- o Efficacious in reducing symptoms in for adults with ADHD
- o Antidepressant with mixed catecholaminergic effects
- o Also efficacious for depression and smoking cessation and may be appropriate for adults with ADHD and one of these conditions

Guanfacine extended release
- o Approved and effective for children, not FDA approved for adult ADHD
- o Selective alpha-2 adrenoreceptor agonist, theorized to improve delay-related firing of prefrontal cortex neurons

American Academy of Pediatrics. (2011). Clinical practice guideline ADHD: Clinical practice guideline for the diagnosis, evaluation, and treatment of Attention-Deficit/Hyperactivity Disorder in children and adolescents. Pediatrics, 125(5), 1007-1022. Doi: 10.1542/peds.2011-2654
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Appendix R

Provider Non-Pharmacological Interventions Guide

ADHD Non-Pharmacological Interventions and Resources

➢ Although stimulants and pharmacological agents are first line treatment in ADHD, education and non-pharmacological treatments play an important role.

Psychoeducation
➢ **What does my patient know about ADHD??**
  o Biological origins: Neurodevelopmental condition with symptoms from mild to severe
  o Occurs throughout lifespan
➢ **Dispelling Myths**
  o ADHD is not real, patients are lazy and looking for excuses
    ▪ There are numerous physical differences in the brain structure of patients with ADHD. ADHD tends to run in families and has significant genetic components. ADHD results in social, academic, emotional, and work functional problems.
  o ADHD is a disorder of childhood
    ▪ ADHD persists into adolescence in 50-80% of cases and into adulthood inn 35-65% of cases
  o ADHD is over-diagnosed
    ▪ Increasing diagnostic rates could be attributed to improved recognition, decreased stigma, and more treatment options.
  o ADHD caused by poor parenting
    ▪ Main causes of ADHD: genetic and neurologic factors (complications during pregnancy/birth, brain damage, toxins, etc)
  o Girls have lower rates and severity than boys
    ▪ Girls/women have substantial impairments that are of a similar rate to boys.
    ▪ Diagnostic rate is higher for boys than girls, but prevalence by adulthood is nearly the same.
➢ **Educate**
  o Importance of combining medications with psychosocial interventions
  o Risks and benefits of treatment
➢ **Promote Health**
  o Regular exercise, good sleep hygiene, and nutrition
➢ **Give Resources**
  o **Websites**
    ▪ Attitude Magazine for People with ADHD; http://attitudemag.com
    ▪ Attention-Deficit Disorder Association (ADDA); https://add.org
    ▪ Children and Adults with Attention-Deficit/Hyperactivity Disorder (CHADD); http://www.chadd.org
    ▪ National Institute of Mental Health (NIMH); https://www.nimh.nih.gov/health/topics/attention-deficit-hyperactivity-disorder-adhd/index.shtml
  o **Books**
    ▪ Adler, L. & Florence, M. (2006). *Scattered Minds: Hope and Help for Adults with ADHD.* New York: Putnam.
    ▪ Barkley, R. A. (2010). *Taking Charge of Adult ADHD.* New York: Guilford Press.
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    ▪ Brown, T. E. (2005). *Attention Deficit Disorder: The Unfocused Mind in Children and Adults.* New Haven, CT: Yale University Press.
    ▪ Brown, T. E. (2014). *Smart but Stuck.* San Francisco, CA: John Wiley & Sons, Inc.
    ▪ Hallowell, E. M., & Ratey, J. J. (2011). *Driven to Distraction (Revised): Recognizing and Coping with Attention Deficit Disorder.* New York: Anchor Books.
    ▪ Kelly, K., & Ramundo, P. (2006). *You Mean I'm Not Lazy, Stupid or Crazy?!: The Classic Self-Help Book for Adults with Attention Deficit Disorder.* New York: Simon & Schuster.
    ▪ Surman, C., Bilkey, T., Weintraub, K. (2013). *Fast Minds: How to Thrive if you have ADHD (Or Think You Might).* New York: Penguin Groups.
  o **Community Resources**
    ▪ CHADD ADHD Specialist Help Line: 1-800-233-4050 Monday-Friday 1p-5pm Eastern Time
    ▪ CHADD Online Community: http://www.chadd.org/Support/Tips-and-Resources.aspx

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Appendix S

Project Budget

Doctor of Nursing Practice Project Financial Operating Plan
Implementation of ASRS for adults with ADHD

Revenue	
Project Manager Time (in-kind donation)	10,500.00
Team Member Time:	
Family Physician Project Leader (site mentor)	2,790.00
Registered Nurse, Practice Manager	150.00
Family Physician Questionaire time	349.00
Practice Flow Staff	145.00
Consultations	
Statistician	435.00
ADHD Expert	250.00
Cost of Space	800.00
TOTAL INCOME	15,419.00
Expenses	
Project Manager Time (in-kind donation)	10,500.00
Team Member Time:	
Family Physician Project Leader (site mentor)	2,790.00
Registered Nurse, Practice Manager	150.00
Family Physician Questionaire time	349.00
Practice Flow Staff	145.00
Consultations	
Statistician	435.00
ADHD Expert	250.00
Cost of Space	800.00
Cost of print/copy/fax	40.00
Laptop	1,000.00
TOTAL EXPENSES	16,459.00
Net Operating Plan	-1,040.00

FINAL DEFENSE

Appendix T

Project Timeline
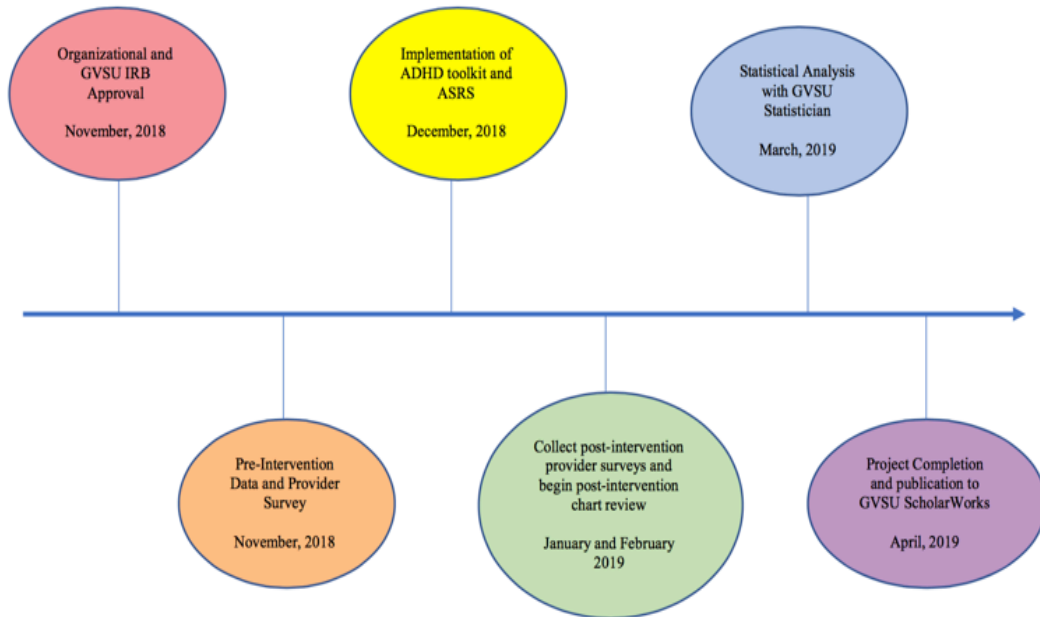
Oral Defense Presentation

4/2/19

Adult Attention Deficit/Hyperactivity Disorder Quality Improvement Project

Danielle Miller, RN, BSN
DNP Project Final Defense
April 1, 2019

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Objectives for Presentation

1. Review the clinical problem
2. Review organizational assessment
3. Review evidence for project and project plan
4. Review project results and sustainability

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Introduction

- Attention Deficit/Hyperactivity Disorder (ADHD) is common and often managed in the primary care setting.
  – Prevalence: 1-7% worldwide
  – Symptoms of inattention, hyperactivity, and impulsivity lead to functional impairments which affect an individual's education, family/social life, and work.
- Historically thought of as a disorder of childhood, now known as a chronic condition which affects adults

(Morstedt, Corbisiero, Bitto, & Stieglitz, 2015)

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The Problem

- Deficits caused by ADHD may lead to long-term problems and decreased function of patients with ADHD and their families
- Diagnosis and treatment is difficult
  - Symptom presentation and functional deficits vary widely
  - Symptoms often overlap with other comorbid psychological problems

(Morstedt et al., 2015)

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Organizational Assessment

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Framework: Burke & Litwin

- Transformational variables
  - External environment
  - Mission & Strategy
  - Leadership
  - Organizational culture
  - Individual/organizational performance
- Transactional factors
  - Structure
  - Management practices
  - Systems
  - Work-unit climate
  - Individual skills
  - Motivation
  - Individual needs/values
  (Burke & Litwin, 1992)

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Current state of site: ADHD practices

- Chart Review
  - 238 adult patients with ADHD diagnosis in 3 months
  - 35% did not have any ADHD symptoms recorded in History of Present Illness
- Shadowing/Interviewing
  - Pediatric providers routinely use Conner's Parent/Teacher Rating Scales to evaluate/document pediatric ADHD
  - No screening/measurement tools were used or available to use for adult patients with ADHD
  - Inconsistency in provider practices for evaluation, documentation, and treatment
  - Interview with adult provider: management of ADHD in adults is largely "gestalt"

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IRB Approval

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Stakeholders

- Staff members
  - Providers
  - Assistive staff (RNs, MAs)
- Organizational leaders
  - Quality Improvement
  - IRB
- Adult patients with ADHD

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SWOT

Strengths	Weaknesses
• Opportunity for standardized care • Team-based environment • Validated adult ADHD Symptom Checklist (ASRS v1.1) is freely available for use.	• No current standard of practice surrounding ADHD care • Documentation of ADHD symptoms is not simple in current charting system
Opportunities	**Threats**
• Improve provider knowledge and comfort with diagnosis and treatment of ADHD • Improved documentation and collaboration between care providers	• Staff schedules predominately include routine screenings and quality measures, may be overwhelming to change practice • Lack of buy-in of organizational leaders, and office staff could severely limit quality improvement opportunities and sustainability of the intervention.

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Clinical Practice Question

• Does implementation of the Adult ADHD Self-Report Scale (ASRS v1.1) Symptom Checklist and ADHD toolkit affect clinical practice surrounding the assessment and treatment of ADHD?

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Literature Review

Purpose:
Identify areas where evidence based practice for ADHD may better inform care in primary care

Aims:
1. What tools can aid ADHD diagnosis, treatment, and management in adults
2. What clinical guidelines are available to inform care of adults with ADHD

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Review Method

- Preferred Reporting Items for Systematic Reviews and Meta-Analyses **(PRISMA)**

- **Databases:**
  – CINAHL
  – PubMed
  – PsychINFO

(Moher, Liberati, Tetzlaff, Altman, & PRISMA Group, 2009).

- **Key Words:**
  – Attention Deficit Hyperactivity Disorder or ADHD
  – diagnosis and treatment
  – quality improvement
  – collaborative care
  – primary care
  – management
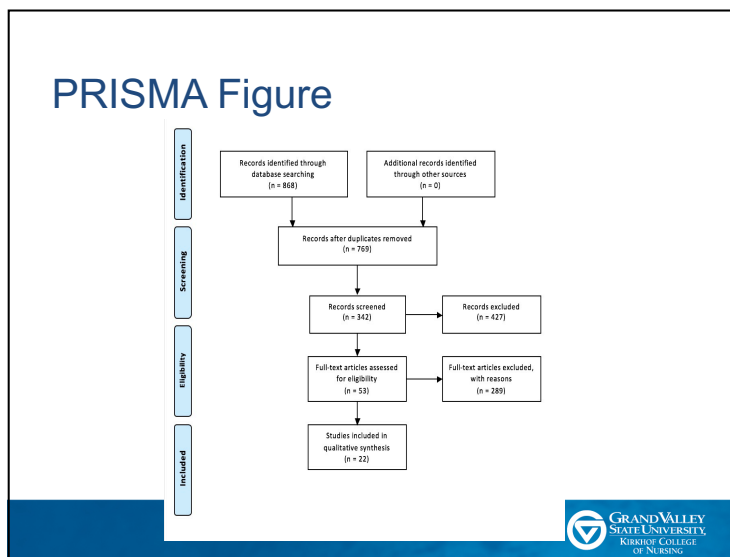
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Evidence for Project

- Adult ADHD Self-Report (ASRS-v1.1) Symptom Checklist
  - Widely used symptom scale
  - Freely available
  - 18-items, 5 minutes to complete
  - Based on DSM-IV criteria
    - Adult ADHD Symptoms have not changed from DSM-IV to DSM-V
    - Number of inattentive or hyperactive symptoms required decreased from 6 to 5 in adults.
- Other tools were cost prohibitive or too long for use in primary care

(National Comorbidity Survey, n.d.; Kessler et al., 2005; Ustun et al., 2017)

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Chronic Care Model

- American Academy of Pediatrics (2011) recognizes ADHD as a chronic condition persisting into adulthood

- Appropriate management: goal directed treatment, patient education, complementary resources

- Chronic Care Model can serve as framework for ADHD care for improved health care services and outcomes
  - Community Resources
  - Self Management support
  - Delivery of medical services
  - Decision support
  - Clinical information systems

(Culpepper & Fried, 2013)

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Project Plan

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Project Purpose & Objectives

Goal: Implement use of the Adult ADHD Self-Report Scale (ASRS V-1.1) Symptom Checklist and ADHD toolkit, increase provider use of a validated symptom scale, and evaluate changes in clinical practices surrounding the care of adults with ADHD.

Objectives for quality improvement are:
- To increase the use of ADHD assessment and symptom scales by providers within a primary care clinic.
- To assess provider knowledge and clinical practices with the diagnosis, treatment, and management of ADHD.
- To assess provider practices of medication prescription for the treatment of ADHD.
- To assess whether use of ADHD symptom scale and toolkit increases adherence to evidence based practices of managing ADHD.

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Design

- Quality Improvement Project
  - Retrospective and prospective data
- Project Implementation: Model for Improvement, Plan-Do-Study-Act design
  - Pre-implementation: IRB approval, review existing medical records, and provider surveys
  - Implementation: ASRS v1.1 and ADHD toolkit
    - Initially with 3 of 12 providers + teams
    - Secondly, with remaining 9 providers + teams
  - Post-implementation: review of patient records, provider survey

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Setting & Participants

- Where: Physician Partners-Downtown location
- Who:
  - Providers (physicians, NPs, PAs)
  - Staff (RNs, MAs)
  - Patients

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Model for Improvement:

- Plan-Do-Study-Act

Model for Improvement

What are we trying to accomplish?

How will we know that a change is an improvement?

What change can we make that will result in improvement?

Act | Plan

Study | Do

(Langley et al., 2009)

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Process flow for ADHD toolkit

- Staff
  - Toolkit:
    - Adult ADHD Self-Report Scale (ASRS v1.1) Symptom Checklist
    - ASRS Interpretation Guide
    - ASRS Flow Staff Letter/Education
    - ADHD Quality Improvement Education Poster
  - Plan:
    - Chart preparation: if patient has adult ADHD- included ASRS in chart preparation packet
    - Intake: Collect completed ASRS from chart preparation or ask patient to complete ASRS at office
    - Scoring and provide to provider
    - Upload to patient's chart for the visit

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Process flow for ADHD toolkit

- Providers
  - Toolkit:
    - Adult ADHD Self-Report Scale (ASRS v1.1) Symptom Checklist
    - ASRS Interpretation Guide
    - Provider SBAR
    - Provider Medication Guide
    - Provider Non-pharmacological intervention guide
  - Plan:
    - Ensure patient has completed ASRS for each adult with ADHD or suspected ADHD
    - Assess reported symptoms and incorporate into clinical assessment
    - Provide treatment per clinical judgement
    - Ensure ASRS is uploaded to patient's chart for the visit

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Evaluation & Measures

Pre-/Post-measures

- Surveys: Provider knowledge and clinical practices
  - November 2018; January 2019
- Chart Review: pre and post implementation
  - 5 weeks pre-implementation: November 2018
  - 5 weeks post-implementation January 7th- February 8, 2019
- Observation: Implementation process/workflow
  - Initial 3 providers: Weeks of November 12, 19, 26, 2018
  - Remaining 9 providers: December 3, 2018

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Measures

- Gender
- Age
- Race
- Diagnosis code
- Current visit type
- Last office visit for ADHD symptom evaluation
- Presence of comprehensive ADHD evaluation on chart
- Documentation of a symptom scale at visit
- Number of ADHD symptoms in HPI at last visit for ADHD
- Scheduled a follow up ADHD visit within next 6 months
- Receiving medications for ADHD at last visit
- ADHD Medication type
- Change in ADHD medication ever
- Change in ADHD medication last 6 months
- Change in ADHD medication current visit
- Change in ADHD medication dose at current visit
- ADHD Patient Education documented

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Analysis Plan

- Demographic Data: age, gender, race
  - Assessment of normality
- Numeric variables: T-tests or appropriate nonparametric tests (if assumptions not met)
  - Means and standard deviations (T-tests)
  - Medians and interquartile ranges (Nonparametric)
- Categorical Data:
  - Frequencies and percent frequencies
  - Chi-squared, possible Fishers' exact test

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Results

Results: Participant Characteristics

- Gender:
  - Female: 65%
  - Male: 35%
- Race:
  - Caucasian: 83%
  - African American: 13%
  - Other: 4%

- Age:

*Normality assumption met across pre- and post- intervention groups

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Results: Pre/Post Education Survey

	Pre- or Post-Implementation	Very low or low/ Never or rarely	Moderate/ Sometimes	High or very high/ Usually or always
Question 1: I would rate my knowledge of ADHD as _____.	Pre-	3/9 (33%)	4/9 (44%)	2/9 (22%)
	Post-	1/5 (20%)	3/5 (60%)	1/5 (20%)
Question 2: I routinely use a validated symptom rating scale.	Pre-	6/9 (67%)	2/9 (22%)	1/9 (11%)
	Post-	1/5 (20%)	3/5 (60%)	1/5 (20%)
Question 3: I think a symptom scale is _____ helpful in the management or treatment of ADHD.	Pre-	1/9 (11%)	4/9 (44%)	4/9 (44%)
	Post-	1/5 (20%)	4/5 (80%)	0/5 (0%)
Question 4: I know who to ask if I have a question regarding ADHD management.	Pre-	1/9 (11%)	1/9 (11%)	7/8 (78%)
	Post-	1/5 (20%)	1/5 (20%)	3/5 (60%)
Question 5: My confidence in medication management of an adult with ADHD is: _____.	Pre-	2/9 (22%)	4/9 (44%)	3/9 (33%)
	Post-	1/5 (20%)	2/5 (40%)	2/5 (40%)
Question 6: My understanding of medications and dosing for an adult with ADHD is:	Pre-	2/9 (22%)	5/9 (56%)	2/9 (22%)
	Post-	1/5 (20%)	2/5 (40%)	2/5 (40%)
Question 7: Documentation of ADHD symptoms and management plan is easy.	Pre-	2/9 (22%)	4/9 (44%)	3/9 (33%)
	Post-	0/5 (0%)	1/5 (20%)	4/5 (80%)
Question 8: I routinely discuss nonpharmacological treatment options with my adult patients with ADHD.	Pre-	0/9 (0%)	4/9 (44%)	5/9 (56%)
	Post-	0/5 (0%)	1/5 (20%)	4/5 (80%)
Question 9: I offer information on community resources, support groups, or professional support to adults with ADHD	Pre-	3/9 (33%)	3/9 (33%)	3/9 (33%)
	Post-	2/5 (40%)	1/5 (20%)	2/5 (40%)

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Results: Pre/Post Education Survey

- Provider Comments
  - ASRS is helpful in "monitoring treatment response"
  - "I worry rating scales (like pain scales + opioids) will cause escalation of stimulant dosing"
  - "Do we overuse stimulants for adults in the US. Is the adult ADHD diagnosis accurate for my patient?"
  - "better access to formal testing"

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Results: Patient Outcomes

- In this office, there was no prior use of an ADHD symptom scale.
- In the 5-week post-implementation period, 51% of providers used the symptom scale at the visit.

Use of ASRS for Adult ADHD patients

100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%

Pre-implementation   Post-implementation

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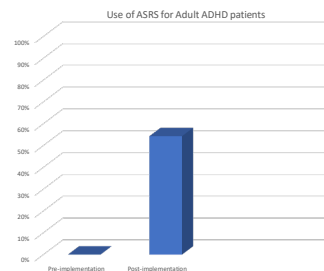
Results: Patient Outcomes

- Outcome measures found to be non-significant:
    - Documenting a plan
    - Scheduling a follow-up within 6 months
    - Medication changes (dose or type)
    - Documentation of ADHD education
    - Diagnostic code frequency
    - Number of ADHD symptoms in HPI

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Results: Patient Outcomes

- "Red Zone" or >5 inattentive or hyperactive symptoms on ASRS
  - 48% did not use the ASRS
  - Of those that used the ASRS
    - 57% had more than 5 clinically significant symptoms
    - 43% had less than 5 clinically significant symptoms

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Results: Patient Outcomes

- Medication Type
  - 39% long-acting stimulant only
  - 37% short-acting stimulant only
  - 10% no medication
  - 7% long-acting + short-acting stimulant
  - 4% non-stimulant only
  - 1% long-acting stimulant + non-stimulant

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Results: Implementation Strategy

- Plan-Do-Study-Act cycle 1
  - 3 of 12 providers in the office
  - Modification to the ASRS interpretation guide to increase readability
  - Modification of workflow instructions for support staff
  - Creation of a transparent template for easy identification of clinically significant symptoms
  - Creation of ADHD Quality Improvement yellow folders for providers and staff

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Discussion

- Measurement-based care for mental health
  - Increase precision and consistency in assessment, tracking, and treatment
- Symptom rating scales supplement clinical judgement
- Outcomes most improved:
  - Symptom assessment correlates with clinical encounter
  - Occurs frequently

(Fortney et al., 2017)

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Discussion

- Project able to demonstrate improvement in use of ASRS
  - Unable to demonstrate significant outcomes or practice change as a result of the use of the ASRS
- Areas for improvement in ADHD care in the primary care setting
  - Long-acting stimulants are considered first-line therapy: best risk-benefit profile, effectiveness, and duration
  - 57% of adult patients had clinically significant symptoms on the ASRS

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Limitations

- Limited post-intervention provider survey responses
- Length of implementation and evaluation time
  - Maximum benefit of measurement-based care expected after repeated assessments
- ASRS not built into the electronic medical record
- Low volume of adult ADHD patients and many appointment cancellations/no-shows
- Data collection
  - Visit type coding and patients managed by outside practices

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Implications for Practice

Measurement-based care is considered standard of care for ADHD and other psychiatric conditions

- • Most effective when used over time
- • Benefits: treatment fidelity, provider-patient communication, patient engagement

Providers were able to adopt the use of a standardized tool for a more comprehensive assessment of adult ADHD

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Conclusions

- Adult ADHD is a significant mental health disorder
  - Managed in primary care setting
- Measurement-based care
  - Standard of practice
  - Recommended by numerous guidelines
  - Rarely used
- Implementation of ASRS and ADHD toolkit
  - Began practice change
  - Improved outcomes expected over time

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Sustainability Plan

- Use of ASRS v1.1 will become easier as practice is solidified
- Allows for ongoing symptom tracking which is reinforcing
- Cost to sustain project is low
- ADHD toolkit and printed materials
- Site mentor is physician lead and could serve as ADHD physician champion for the practice and organization

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Dissemination

- Public presentation at GVSU final defense

- Findings presented to organizational representative at final defense

- University database, ScholarWorks

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DNP Essentials Reflection

AACN Essential Competencies
- **Scientific Underpinnings for Practice**
  - Literature review, chronic care model and model for improvement
- **Organizational and Systems Leadership**
  - Quality improvement project, organizational assessment
- **Clinical Scholarship and Analytical Methods**
  - Evidence-based project design and implementation

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DNP Essentials Reflection

- **Information Systems Technology**
  - Use of organizational EHR for data collection and chart review
- **Advocacy for Health Care Policy**
  - Organizational policy followed through IRB proposal and approval process
- **Interprofessional Collaboration**
  - Implementation of ASRS and adult ADHD toolkit in primary care setting

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DNP Essentials Reflection

- **Clinical Prevention and Population Health**
  - Analyzed data in the adult ADHD population to identify practice gaps in care delivery
- **Advanced Nursing Practice**
  - DNP student acted as a change agent to implement the ASRS and adult ADHD toolkit in the primary care setting

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