## University of New Hampshire

# University of New Hampshire Scholars' Repository

**DNP Scholarly Projects** 

Student Scholarship

Fall 2020

# Timely Follow Up Care After Initiation of ADHD Medication in Children: A Quality Improvement Project

Rebecca Haas University of New Hampshire

Follow this and additional works at: https://scholars.unh.edu/scholarly\_projects

Part of the Other Nursing Commons, Pediatric Nursing Commons, and the Pharmacy Administration, Policy and Regulation Commons

#### **Recommended Citation**

Haas, Rebecca, "Timely Follow Up Care After Initiation of ADHD Medication in Children: A Quality Improvement Project" (2020). *DNP Scholarly Projects*. 44. https://scholars.unh.edu/scholarly\_projects/44

This Clinical Doctorate is brought to you for free and open access by the Student Scholarship at University of New Hampshire Scholars' Repository. It has been accepted for inclusion in DNP Scholarly Projects by an authorized administrator of University of New Hampshire Scholars' Repository. For more information, please contact Scholarly.Communication@unh.edu.

# Timely Follow Up Care After Initiation of ADHD Medication in Children: A Quality Improvement Project

Rebecca W. Haas

University of New Hampshire

Faculty Mentor: Pamela P DiNapoli PhD, RN, CNL

Practice Mentor: Natesha Bestman, DNP, NP-C

Date of Submission: November 10, 2020

#### Abstract

**Background**: Enhancing medication safety, strengthening compliance and mitigating side effects requires close monitoring. A child, defined by Centers for Medicare and Medicaid Services, as being between the ages of 6 years and 12 years of ages, with Attention Deficit Hyperactivity Disorder (ADHD) must have an initial medication visit within 30 days of a first-time trial of ADHD medication. Increasing staff awareness of organizational policy of expected timeframe for medication checks and annotating appointment slots as initial medication checks will decrease the number of days between the first-time trial of ADHD medication and a child's medication assessment.

**Methods**: The Model for Improvement and Plan, Do, Study, Act structure for quality improvement worked well for this project. A 3-month retrospective chart review was completed, prior to the implementation of the intervention. A total of 600 charts were reviewed for the start date of ADHD medication and date of initial medication assessment.

**Intervention:** Administrative staff and APRNs were educated about CMS measures and organizational controlled medication policies. Appointment slots were annotated as initial medication checks. Due to COVIS 19, the visit platform was changed from in person to telehealth. CMS measures, organizational policy and process changes were included in a weekly email to both administrative staff and APRNs.

**Results**: Follow up chart reviews (n=591) revealed the mean number of days between starting an ADHD medication to the initial medication assessment, in the 3 months after implementation, decreased from 43 days to 20 days, an overall reduction of 23 days or 73%, meeting both CMS measures and organizational policy.

TIMELY CARE AFTER INITIATION OF ADHD MEDICATION

Conclusion: Increased awareness, reinforcement, annotation of appointments and a change to

3

telehealth platform successfully decreased the mean number of days between ADHD medication

initiation and follow up medication evaluation. Limitations include: the project taking place in the

setting of an epidemic, an announcement that The ADHD Center would be closing and not having

data to compare in person visits to telehealth visits.

Keywords: ADHD, medication, initiation

# **Table of Contents**

Introduction	Error! Bookmark not defined.
Problem Description	6
Available Knowledge	8
Rationale	9
Plan, Do, Study, Act (PDSA) cycle	10
Plan	10
Do	11
Study	
Act	
Specific Aims	
Methods	
Context	
Cost Analysis	14
Intervention	
Study of the Intervention	
Measures	16
Analysis	16
Ethical Considerations	16
Results	17

Missing Data	18
Discussion	18
Summary	18
Limitations	20
Conclusion	20
References	23
Appendices	28

# Timely Follow Up Care After Initiation of ADHD Medication in Children: A Quality Improvement Project

Attention Deficit/Hyperactivity Disorder (ADHD) is a chronic mental health disorder characterized by deficits in attention and focus, poor impulse control, and high activity levels that impair daily functioning. The diagnosis of ADHD is based on the criteria outlined by The Diagnostic and Statistical Manual of Mental Disorders (DSM). ADHD is one of the most prevalent mental health disorders in children. To qualify for a diagnosis of ADHD, symptoms must result in impairment of social, academic, or other functioning that cannot be explained or attributed to another physical condition, mental health condition, or social situation (Brown et al., 2017). 11% of American children have been diagnosed with ADHD (National Committee for Quality Assurance [NCQA], 2020). In 2007, 6.9% of the children in Connecticut had been diagnosed with ADHD as compared to 9.5% nationwide. In 2011 these number grew to 8.7% in Connecticut and 11% nationwide. In 2011, of the children diagnosed with ADHD, 5.1% in Connecticut were taking medication and 6.1% nationwide were taking medication for ADHD (Connecticut, 2020) (See Appendix A).

## **Problem Description**

Medication is the single most common treatment for ADHD in children ages 6 to 12 (Mayo Clinic, 2019). Children with ADHD often experience impaired academic, social, and family difficulties, given this, medication discontinuity is a major public health concern (Brinkman et al., 2018). The most common reasons for discontinuation of ADHD medication, as reported by the APRNs at The ADHD Center, are loss of appetite, difficulty sleeping, GI distress and anger / irritability. Brinkman et al indicate that medication adherence is poor in children, as they or their parents, will often stop and restart medication during the first year of treatment.

This was a phenomenon often seen at The ADHD Center. Patients often come in with their parents for their follow up medication check reporting that the parent or the child stopped taking the prescribed medication due to side effects, long before coming to the appointment. The medication is stopped without a call to the provider or scheduling a sooner appointment.

CMS contracted with NCQA to develop a strategy to evaluate the quality of care for this population. NCQA established Health Effectiveness Data and Information Set (HEDIS) measures used to identify opportunities for improvement, monitor the success of quality improvement initiatives, track improvement, and provide a set of measurement standards that allow comparison with other plans. A lack of adherence to these CMS standards was the impetus for this project. HEDIS and Centers for Medicare and Medicaid Services (CMS) recommend the quality metric be one follow-up appointment with a medical provider within 30 days of initiating treatment with ADHD medication (AJMC, 2017). American Academy of Family Physicians (AAFP) and NCQA specify that the follow up medication visit be with a physician or a prescribing provider. This CMS measure was reviewed and endorsed on June 6, 2020. The goal being close monitoring of children who have newly started an ADHD medication for effectiveness, side effects, and adherence (NCQA, 2020).

Treating ADHD can be costly when medical expenses, price of medication, costs to the educational system, and lost wages for caregivers of children with ADHD are considered. In 2011, the annual estimated cost of ADHD to society was approximately \$14,500 per child, \$42.5 billion total. This includes mental health utilization, medication, educational costs and work-loss related costs (Robb et al., 2011). The aim of this project was to decrease the number of days between initiation of ADHD medication and the following medication assessment for children at The ADHD Center in order to be consistent with the HEDIS recommendations and less frequent

stoppage of medication. Appointments with Advanced Practice Registered Nurses (APRNs) at The ADHD Center were often booked up to two months in advance, leaving more than a 30-day delay for an assessment visit in the patient who had just started ADHD medication. The ADHD Center often had a waiting list. Waiting lists are a common barrier to treatment (Wright, et al., 2015). Prior to this improvement project, administrative staff were not aware of the recommendations and guidelines. The global aim of this quality improvement project was to align The ADHD Center process with CMS measures and organizational policy. Following CMS measures and organizational policy protects the safety of the patients by decreasing the risks of medication nonadherence. Discontinuation of ADHD medication may result in: social and academic difficulties, substance abuse, delinquency, accidental injury, and poor economic, social, and emotional well-being and improves the quality of care and quality of life for pediatric ADHD patients by having patients follow up within 30 days of starting ADHD medication (Sikirica, et al., 2014).

## **Available Knowledge**

ADHD is the most common behavioral disorder in childhood (Office of the National Coordinator for Health Information Technology/Centers for Medicare & Medicaid Services [psychiatry.org], n.d.). The prevalence continues to rise year over year. The goal of ADHD treatment is to improve symptoms and optimize functioning for children in both home and school settings. CMS and National Committee for Quality Assurance (NCQA) standards state that there be a follow up visit with a provider within 30 days after a first-time trial of ADHD medication. Blood pressure (bp), pulse, weight, height, side effects, the severity of ADHD symptoms and the effectiveness of medication should be assessed at this visit. The goal was to align The ADHD Center process with CMS measures and organizational policy the purpose of which is to improve

symptomology and adherence to prescribed medication, alleviate side effects and decrease the rate of discontinuation. The way to achieve this was by changing the process at The ADHD Center to match CMS measures and organizational policy, that children be seen within 30 days of initiation of ADHD medication.

According to NCQA, when ADHD medication is managed correctly it has the potential to control the symptoms of inattention, hyperactivity, and impulsivity. For ADHD medication to be managed appropriately, children should be closely monitored by the prescribing provider. Pharmacological treatment of ADHD is associated with improved academic achievement in elementary school, improved health and quality of life, and is central to the physical, emotional and psychological wellbeing of children with ADHD (Shier et al., 2013; Brown, 2018).

Adherence to CMS measures and organizational policy were the motivation for this improvement project, but the value goes much deeper. When ADHD symptoms are treated effectively children and adolescents can achieve full potential in all areas of life: social, academic, and family functioning (Brown et al., 2017, p. 45). Wolraich, et al. (2019) indicate that ADHD medication is often discontinued, placing children at higher risk for significant problems. Effective ADHD medication management mitigates the risk of discontinuing treatment. ADHD medication, prescribed with close clinical supervision, in addition to school accommodations, and behavioral interventions improves the chances for children with ADHD to grow in to healthy and productive adults.

#### Rationale

The Institute for Healthcare Improvement (IHI) Model for Improvement guided this process improvement project (Department of Health, 2011) (see Appendix B). The model has two equally important parts. The first asks three questions:

- 1. What are we trying to accomplish?
- 2. How will we know whether a change is an improvement?
- 3. What changes can we make that will result in an improvement?

The second part of this model, Plan, Do, Study, Act (PDSA) cycle, tests and implements changes in work settings (health.ny.gov, 2011).

The ADHD Center practice is to have all medication related visits completed by a physician or advanced practice clinician (APC). The intervention involved an assessment of level of The ADHD Center staff knowledge of CMS measures and organizational policy, increasing awareness, and changing the scheduling process. With increased awareness and knowledge, weekly reinforcement, and a change in scheduling process and platform, adherence to follow up medication recommendations improved.

## Plan, Do, Study, Act (PDSA) cycle

## Plan

The plan phase of the PDSA cycle addresses the who? what? where? and when? of data collection. The plan included a retrospective chart review, extracting data from the electronic health record (EHR) for first-time trials of ADHD medication and the length of time until the following medication check. Data from two APRNs, APRN 1 and APRN 2 were utilized. The dates used for retrospective extraction of data were November 2019, December 2019, and January 2020. The dates were chosen to coordinate with the hire of the second (APRN 2), who started practicing at The ADHD Center in October of 2019 and ramped up to a full schedule by November 2019. The dates of implementation of the plan were June, July and August of 2020. Using data collected from the same months for both APRNs allowed for greater parity.

Do

Details of how the plan was carried out, observations documented, and data recorded were addressed in the "do" phase of the PDSA cycle. A gap analysis was completed by direct observation of the current process.

Patients scheduled for follow up medication checks more than 30 days after medication initiation was the existing process state. The desired process state was that patients newly prescribed medication be scheduled within 30 days for a follow up medication check via telehealth platform. Herein laid the process gap (SHRM, 2018).

A virtual meeting was held wherein the observations were shared, staff were asked about their existing knowledge of CMS measures and organizational policy and current process. Administrative staff were not aware of the gaps in the process. Level of knowledge of CMS measures and organizational policy was ascertained via formative assessment (see Appendix C). Formative assessments offer qualitative feedback, assesses strengths and weaknesses, and offers a productive and intense educational experience (Abu-Zaid, 2013). APRNs were not aware of CMS measures but were aware of organizational policy. There was an obvious knowledge gap. The project leader read both the CMS measures and the organization's controlled medication policy and explained the gap in the process and the intent to change the process. Each staff member was given the opportunity to add their ideas for changing and improving the current process laying the groundwork for a new process.

Designated slots were to be changed from a general 30-minute follow up visit to an initial medication check in the APRN schedule by administrative staff through the scheduling program. Initial medication assessments were to be annotated on the schedule as "initial med check".

Weekly emails reviewing measures, policies, and interventions were sent to both administrative staff and APRN 1 and APRN 2.

## Study

In the study phase of the PDSA cycle, data was analyzed, results compared to predictions and the findings summarized. The following data were collected: start date of ADHD medication for APRN 1 and APRN 2, the date of the visit immediately following start of ADHD medication for APRN 1 and APRN 2, the total number of days in between starting medication and follow up.

Using a quantitative design allowed for observations to be made about a subject that had previously been unexplored. The hypothesis was that when staff have knowledge and understanding of standards and policies and a change made to the process, The ADHD Center performance would align with CMS measures and organizational policy and the number of days between starting ADHD medication and the follow up medication check would decrease. The null hypothesis is that the process change causes no change in the number of days between starting ADHD medication and the follow up medication check. Paired t-tests were executed for APRN 1 and APRN 2. The mean number was identified separately and then combined.

Act

The "act" phase dealt with changes made to the process. Administrative staff annotated "initial med check" on the providers' schedule. Educational reinforcement emails were sent weekly by the project leader to administrative staff and APRN 1 and APRN 2 recapping CMS measures and organizational policy and the updated scheduling process for the intervention.

## **Specific Aims**

The specific aim of this project was to align The ADHD Center process with CMS measures and organizational policy related to children with ADHD by decreasing the number of days between a first-time trial of ADHD medication and the following medication check. The CMS measure reads:

Initiation Phase: Assesses children between 6 and 12 years of age, who were diagnosed with ADHD, and had one follow-up visit with a practitioner with prescribing authority within 30 days of their first prescription of ADHD medication.

(CMS, 2020)

## **Methods**

#### Context

The ADHD Center is in the Northeastern United States and is a specialty clinic within a larger healthcare organization. The ADHD Center is the only mental health clinic within the larger organization. The larger organization is predominantly compromised of primary care, internal medicine, family practice, and pediatric practices. The entire organization was acquired by a nationally recognized healthcare / insurance corporation in December of 2016. The ADHD Center consisted of: 3 APRNS each of whom works four to five days per week; a developmental pediatrician, who served as medical director and works two days per week; a pediatrician who worked within the organization in a pediatric practice four days per week and one day per week at The ADHD Center and a psychiatrist who consulted at the center ½ day per week; two special education teachers; an office manager; and three support staff. The ADHD Center would receive multiple requests daily for new evaluations. The ADHD Center had an extensive waiting list. The services offered are in high demand. What made The ADHD Center unique and separated it from other ADHD centers and ADHD providers was the evidence-based testing, individualized

treatment, interface with school and community-based therapists, responsivity of the staff, and providers specially trained in treating ADHD. Patients would come to the center from all over the state and from several other states. Specialized ADHD centers are uncommon in this area. The practice included both adult and pediatric patients, with a primary diagnosis of ADHD, as well as comorbid anxiety, depression and behavioral and educational concerns.

The stakeholders in this quality improvement project are the patients and families, APRNs, The ADHD Center and the umbrella organization. Approval to allocate designated initial medication visits was granted by the office manager and the business director. Despite approval, the intervention was revised and reapproved with the start of the COVID-19 epidemic and visit platform shifting from in person visits to telehealth visits in April 2020. Organizational policy states that patients started on an ADHD medication are to be seen within 30 days of initiation. Once stable, follow up visits were scheduled at three-month intervals. Scheduling an initial medication check after 30 days would add one additional visit in the first year for each child starting medication. Patients who have not been stabilized on medication or who may be experiencing side effects, behavioral difficulties or school concerns require more frequent visits.

## **Cost Analysis**

The ADHD Center had been accepting 24 new patients per month up until July. About 50% of all new patients were started on ADHD medication. If follow up visits were scheduled within 30 days, this would have added an additional 12 initial medication visits per month. Adherence to CMS measures and organizational protocols would have generated 144 additional visits per 12-mont h period, at a rate of \$181 per 30-minute medication check, totaling \$26,064 in additional revenue annually. This would offset the cost of administrative time for regularly scheduled staff education.

#### Intervention

The planned intervention was to designate two 30-minute visits per week per APRN annotated as "initial medication check" visits. After the COVID-19 epidemic began, April 2020, The ADHD Center providers were mandated to work from home. A telehealth platform was implemented, initially by phone and then by videoconferencing. Processes were changed and schedules reconfigured. Administrative staff were informed by the APRN that the next scheduled appointment was to be an initial medication check and annotated as such on the schedule. Additionally, weekly email blasts were sent to administrative staff, APRN 1, and APRN 2 by the project leader, recapping organizational policy and updated processes.

A retrospective audit of the EHR included all patient charts for APRN 1 and APRN 2 for the designated time periods. The number of days between the first-time trial of an ADHD medication and the initial medication check for ADHD patients were extracted. The following were the criteria for inclusion: subjects had to be a patient of The ADHD Center, ages 6 years old up to 12 years old, naïve to ADHD medication, and starting either a stimulant or non-stimulant ADHD medication. Exclusion criteria included: patients younger than 6 years old and older than 12 years, patients switching or restarting ADHD medication and patients starting medication for diagnoses other than ADHD.

## **Study of the Intervention**

The interventions included assessing staffs' level of awareness of the organization's medication policies and The ADHD Center process for initiating medication and scheduling the follow up visit. Administrative staff were not aware of organizational policy. APRNs were aware of medication policies but could not identity how or even if this was being monitored. Certain team members have access to important information that others do not. This information

is of little value if it is not communicated to the entire team (Haas & Mortensen, 2016). CMS measures and organizational policies were read to both administrative staff and APRNs. Level of understanding was evaluated by allowing time for questions, having staff repeat back information, and having administrative staff and APRNs demonstrate a mock trial run of the new process. Weekly email reminders were sent by the project leader. Application of the process was apparent by viewing the phrase "initial medication check" on the schedule.

## **Measures**

The planned process change was to align The ADHD Center process with CMS quality metrics and organizational policy by reducing the number of days between initiation of ADHD medication and the following medication check. The measures examined included the mean number of days between initiation of medication and the follow up medication assessment. The impact of the intervention would be the alignment of The ADHD Center process with the core measure set forth by CMS and organizational policy.

## **Analysis**

Using a quantitative design and paired t-test allowed for an observation to be made about a subject that had been unexplored. The original hypothesis is that staff education combined with annotations made to appointments will decrease the number of days between ADHD medication initiation and the follow up medication visit

#### **Ethical Considerations**

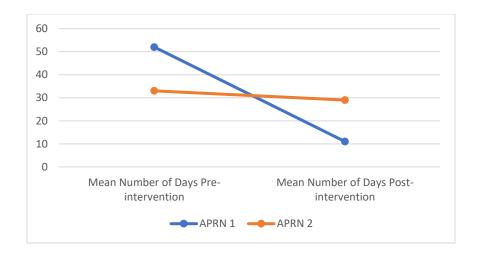
Potential ethical issues were considered. Children with ADHD are considered a vulnerable population. The children were not the subject of the project. The focus of this quality improvement project was The ADHD Center process. This improvement project meets the

criteria for quality improvement and therefore did not need human subjects' approval as no identifying information or protected health information (PHI) was collected.

#### **Results**

Over the course of this project, 600 pre-intervention patient encounter records were reviewed for the months of November 2019, December 2019, and January 2020 and 591 post-intervention patient encounter records were reviewed for the months of June 2020, July 2020 and August 2020 (see Appendix D).

**Figure 1**Mean Number of Days



The number of days between initiation of ADHD medication and the ensuing medication assessment visit pre-intervention were tracked for the same time period, November 2019, December 2019, and January 2020. Figure 1 shows that the mean number of days for APRN 1 was 52 days and for APRN 2 was 33 days. The average was then taken from APRN 1 and APRN 2 combined, 43 days. This was an average of 12 days longer than either CMS measures or the organization's 30-day policy (see Appendix D).

The two-tailed P value equals 0.0284. This difference is considered to be statistically significant. The mean of Group APRN 1 minus Group APRN 2 equals 16.69 with a 95% confidence interval.

**Table 1**Paired T-test Values Pre-intervention

Group	APRN 1	APRN 2
Mean	52.23	35.54
SD	19.80	14.17
SEM	5.49	3.93
N	13	13

The number of days between initiation of ADHD medication and initial medication evaluation were tracked again, post intervention for the time period of June 2020, July 2020, and August 2020. The mean number of days for APRN 1 was 11 (N=1) and for APRN 2 was 29 days (N=4). The average was taken from APRN 1 and APRN 2 combined totaling 20 days. The number of days was reduced by 23 days or 73%, meeting both CMS measures and organizational policy (see Appendix D).

## **Missing Data**

There was not enough data for a paired t-test post-intervention. A retrospective chart review totaled N=1 for APRN 1. A t-test cannot be performed when there is only one value. The lack of data is attributable to the gradual winding down of patient care in preparation for the closing of the center.

## **Discussion**

## **Summary**

The framework of the Model for Improvement for a rapid cycle change in process using a single PDSA cycle worked well for guiding this process. Repeated PDSA cycles are needed to

make refinements and modifications and build knowledge. Future PDSA cycles on a larger scale would likely lead to continued refinement and standardization of the process. The COVID-19 epidemic forced staff to work from home, leading to a change in visit platform from in-person to telehealth. This changed the workflow and the process for scheduling appointments. A comparison of the pre and post COVID-19 process for scheduling visits would indicate whether the improvement in timely follow up care was related to the change in visit platform or to raising awareness of policies. The telehealth platform had never been used before at The ADHD Center. After the initial adjustment period, scheduled visits continued virtually. Parents were pleased with this platform, cutting down on travel time and expense and wait time. Parents were better able to fit a telehealth visit into their own and their child's schedule interfering less in after school activities and missing less school time for appointments. Brinkman states that one of the main reasons that children stop taking ADHD medication are "logistical barriers" of getting and taking medication (Brinkman et al., 2018). APRN 1 and APRN 2 saw improved adherence to scheduled visits allowing for closer medication monitoring.

By raising the level of awareness of staff, providing weekly recap emails, and annotating schedules there was a 73% decrease in the number of days between medication initiation and the follow up medication visit. Follow up medication visits after initiation of medication were made within the 30-day window more often with the effects lasting the duration of the intervention period. The process for scheduling follow up visits after initiation of ADHD medication aligned with CMS measures and organizational policy once the intervention was understood and implemented. Staff awareness of measures and policies and the planned intervention lead to improved compliance. Administrative staff and APRNs were eager to change the process once they were aware and understood the need and the potential positive outcomes for the patients.

When a team has direction and a common goal its' members feel energized and engaged. Shared knowledge increases efficiency (Haas & Mortensen, 2016).

#### Limitations

Fewer patients started ADHD medication than anticipated during the study period. Patients often sought out The ADHD Center for a second opinion after unsuccessful attempts at symptom treatment, wanting specialized care, or requiring help with accommodations and advocacy at school. Patients that were new to The ADHD Center were not necessarily new to the ADHD diagnosis. Hamed (2015) attributes this to "limited reimbursement for specialist evaluation or mental health care is a factor in diagnosis of ADHD, particularly for complex presentations that may require more clinician time".

There were several limiting factors over the course of this project. The number of subjects was limited by CMS's definition of a child as being between the ages of 6 and 12. Extending the time of both pre- and post-interventions would have yielded more robust data. The COVID-19 epidemic forced staff to work from home, leading to a change in visit platform from in-person to telehealth, changing the workflow and the process for scheduling appointments.

Implementation of a meaningful performance improvement project includes the following recommendations: collection of data over a longer period of time, examining a clinic that has a large number of pediatric ADHD patients, when possible avoiding the start of a quality improvement project during an epidemic and replication in a clinic that is not closing. Future PDSA cycles should focus on advancing the use of the telehealth platform.

## **Conclusion**

An unexpected opportunity arose out of this process improvement project. It gave providers the chance to compare in person visits to telehealth visits for children with ADHD. Precautions related to the COVID-19 epidemic will likely be in place for the long term. CMS standards and organizational policies will need to adapt to meet the challenge that COVID-19 has presented. The ADHD specialty lends itself well to the telehealth platform. Future performance improvement projects will need to focus on the addition of the physical exam component of an ADHD medication visit, including height, weight, blood pressure and pulse. This is an integral part of an ADHD medication assessment and was not monitored as closely at the onset of the epidemic. Sustainability of ADHD visits will depend on the ability to perform cardiovascular monitoring. Existing and new capabilities available on smartphones make home monitoring an option. New technology, transdermal optical imaging, uses a smartphone camera to capture images of imperceptible facial blood flow and uses machine learning to determine blood pressure from these images (McGrath, 2020).

The ability of specialty care practices to provide quality clinical care for patients depends on the ability to understand the need for continuous quality monitoring and process improvement. CMS standards and organizational policies are in place to ensure safe medication practices. Safe prescribing practices, availability of a telehealth platform and close monitoring improve the level of adherence to taking medication as prescribed and attending scheduled appointment.

Use of the telehealth platform has lent itself to ongoing monitoring in pediatric patients.

The ADHD Center APRNs report that ADHD treatment performed in the telemedicine platform was equally as effective as in person services. In addition, states have imposed requirements for parity in reimbursement for telemedicine. The pediatric population is especially vulnerable, and

the benefits of appropriate ADHD treatment and safe ADHD medication prescribing practices reach into adulthood. Staff awareness, process change and telehealth show promise for sustainability in pediatric ADHD treatment. With Medicaid reimbursing for telehealth visits at the same rate as in person visits and the scarcity of ADHD treatment in this area, the telehealth platform has advantages for this specialty practice.

#### References

- ADHD information by state: Connecticut. (2020, July 9). cdc.gov. Retrieved July 19, 2020, from <a href="https://www.cdc.gov/ncbddd/adhd/data/state-profiles/connecticut.html">https://www.cdc.gov/ncbddd/adhd/data/state-profiles/connecticut.html</a>
- Amer, Y., Al-Joudi, H., Varnham, J., Hammad, M., Al Salehi, S., Daghash, H., & Albatti, T. (2019). Appraisal of clinical practice guidelines for the management of attention deficit hyperactivity disorder (ADHD) using the AGREE II Instrument: A systematic review. *PLoS ONE*, *14*(7). Retrieved April 9, 2020, from <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6611626/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6611626/</a>
- Attention-deficit/hyperactivity disorder (ADHD) in children. (2019, June 25). Mayo Clinic. https://www.mayoclinic.org/diseases-conditions/adhd/diagnosis-treatment/drc-20350895
- Bolea-Alamañac, B., Nutt, D., Adamou, M., Asherson, P., Bazire, S., Coghill, D., Heal, D.,
  Müller, U., Nash, J., Santosh, P., Sayal, K., Sonuga-Barke, E., & Young, S. (2014).
  Evidence-based guidelines for the pharmacological management of attention deficit
  hyperactivity disorder: Update on recommendations from the British Association for
  Psychopharmacology. *Journal of Psychopharmacology*, 28(3), 179–203. Retrieved April
  9, 2020, from <a href="https://doi.org/10.1177/0269881113519509">https://doi.org/10.1177/0269881113519509</a>
- Brinkman, W. B., Simon, J. O., & Epstein, J. N. (2018). Reasons why children and adolescents with attention-deficit/hyperactivity disorder stop and restart taking medicine. *Academic Pediatrics*, 18(3), 273–280. <a href="https://doi.org/10.1016/j.acap.2017.09.005">https://doi.org/10.1016/j.acap.2017.09.005</a>
- Brinkman, W., Sucharew, H., Majcher, J., & Epstein, J. (2018). Predictors of medication continuity in children With ADHD. *Pediatrics*, *141*(6), 1–12. https://doi.org/10.1542/peds.2017-2580

- Brown, K., Samuel, S., & Patel, D. (2017). Pharmacologic management of attention deficit hyperactivity disorder in children and adolescents: a review for practitioners.

  \*Translational Pediatrics\*, 7(1), 36–47. Retrieved April 12, 2020, from <a href="https://doi.org/10.21037/tp.2017.08.02">https://doi.org/10.21037/tp.2017.08.02</a>
- Centers for Medicare and Medicaid Services. (2020, February 11). 2014 Clinical Quality

  Measures. CMS.gov. Retrieved April 12, 2020, from <a href="https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/2014\_ClinicalQualityMeasures">https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/2014\_ClinicalQualityMeasures</a>
- Charach, A., & Fernandez, R. (2013). Enhancing ADHD medication adherence: Challenges and opportunities. *Curr Psychiatry Rep*, *15*(7), 1–8. Retrieved April 5, 2020, from https://doi.org/10.1007/s11920-013-0371-6
- Cortese, S., Holtmann, M., Banaschewski, T., Buitelaar, J., Coghill, D., Danckaerts, M.,

  Dittmann, R., Graham, J., Taylor, E., & Sergeant, J. (2013). Practitioner Review: Current best practice in the management of adverse events during treatment with ADHD medications in children and adolescents. *Journal of Child Psychology and Psychiatry*, 54(3), 227–246. Retrieved April 5, 2020, from <a href="https://doi.org/10.1111/jcpp.12036">https://doi.org/10.1111/jcpp.12036</a>
- Epstein, J., Kelleher, K., Baum, R., Brinkman, W., Peugh, J., Gardner, W., Lichtenstein, P., & Langberg, J. (2014). Variability in ADHD care in community-based pediatrics.

  \*Pediatrics, 134(6), 1136–1143. Retrieved April 5, 2020, from <a href="https://doi.org/10.1542/peds.2014-1500">https://doi.org/10.1542/peds.2014-1500</a>
- Epstein, J., Langberg, J., Lichtenstein, P., & Kolb, R. (2013). The myADHDportal.com

  Improvement Program: An innovative quality improvement intervention for improving
  the quality of ADHD care among community-based pediatricians. *Clinical practice in*

- pediatric psychology, 1(1), 1–18. Retrieved April 15, 2020, from https://doi.org/10.1037/cpp0000004
- Haas, M., & Mortensen, M. (2016). The Secrets of Great Teamwork. *Harvard Business Review*, 70–76.
- Hamed, A. M., Kauer, A. J., & Stevens, H. E. (2015). Why the diagnosis of attention deficit hyperactivity disorder matters. *Frontiers in Psychiatry*, 6. https://doi.org/10.3389/fpsyt.2015.00168
- Khan, M., & Aslani, P. (2020). Exploring factors influencing medication adherence from initiation to discontinuation in parents and adolescents with attention deficit hyperactivity disorder. *Clinical pediatrics*, *59*(3), 285–296. Retrieved April 4, 2020, from <a href="https://doi.org/10.1177/0009922819900973">https://doi.org/10.1177/0009922819900973</a>
- McGrath, J. (2020). Adhd and covid-19: Current roadblocks and future opportunities. *Irish Journal of Psychological Medicine*, *37*(3), 204–211. https://doi.org/10.1017/ipm.2020.53
- National Committee for Quality Assurance. (2020). Follow-Up care for children prescribed ADHD Medication (ADD). Retrieved April 9, 2020, from <a href="https://www.ncqa.org/hedis/measures/follow-up-care-for-children-prescribed-adhd-medication/">https://www.ncqa.org/hedis/measures/follow-up-care-for-children-prescribed-adhd-medication/</a>
- National Committee for Quality Assurance. (2020). Follow-Up care for children prescribed ADHD Medication (ADD). Retrieved October 13, 2020, from <a href="https://www.ncqa.org/hedis/measures/follow-up-care-for-children-prescribed-adhd-medication/">https://www.ncqa.org/hedis/measures/follow-up-care-for-children-prescribed-adhd-medication/</a>

- New York State Department of Health. (2011). *The Model for Improvement: Five critical components*. Department of Health. Retrieved April 11, 2020, from <a href="https://www.health.ny.gov/statistics/chac/improvement/components.htm">https://www.health.ny.gov/statistics/chac/improvement/components.htm</a>
- Office of the National Coordinator for Health Information Technology/Centers for Medicare & Medicaid Services. (n.d.). *ADHD: Symptom Reduction in Follow up Period*. Retrieved April 4, 2020, from <u>ADHD-Symptom-Reduction-in-Follow-up-Period.pdf</u>
- Robb, J., Sibley, M., Pelham, W., Jr., Foster, E., Molina, B., Gnagy, E., & Kuriyan, A. (2011).

  The estimated annual cost of ADHD to the U.S. education system. *School Mental Health*, 3(3), 169–177. Retrieved April 18, 2020, from <a href="https://doi.org/10.1007/s12310-011-9057-6">https://doi.org/10.1007/s12310-011-9057-6</a>
- Schwarzwald, H., Hernandez-Grande, A., Chapman, S., & Marton, S. (2017, March 8). *Meeting the Measure: Improving ADHD Care in the Medical Home*. AJMC.

  <a href="https://www.ajmc.com/view/meeting-the-measure-improving-adhd-care-in-the-medical-home">https://www.ajmc.com/view/meeting-the-measure-improving-adhd-care-in-the-medical-home</a>
- Section 3: Are you ready to improve? (2020). Agency for Healthcare Quality and Research.

  <a href="https://www.ahrq.gov/cahps/quality-improvement/improvement-guide/3-are-you-ready/index.html">https://www.ahrq.gov/cahps/quality-improvement/improvement-guide/3-are-you-ready/index.html</a>
- Shier, A., Reichenbacher, T., Ghuman, H., & Ghuman, J. (2013). Pharmacological treatment of attention deficit hyperactivity disorder in children and adolescents: clinical strategies.

  \*\*Journal of Central Nervous Sytem DIsease\*, 5, 1–17. Retrieved April 12, 2020, from <a href="https://doi.org/10.4137/JCNSD.S6691">https://doi.org/10.4137/JCNSD.S6691</a>
- Sikirica, V., Lu, M., Greven, P., Zhong, Y., Qin, P., Xie, J., & Gajria, K. (2014). Adherence, persistence, and medication discontinuation in patients with attention-

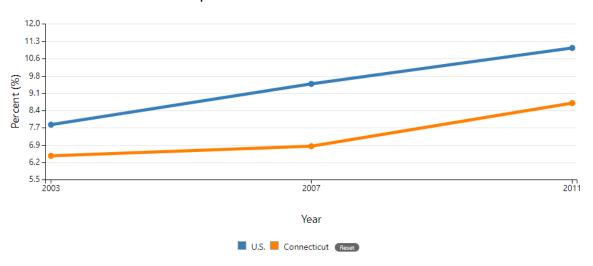
- deficit/hyperactivity disorder a systematic literature review. *Neuropsychiatric Disease* and *Treatment*, 1543. https://doi.org/10.2147/ndt.s65721
- Society for Human Resources Manangement. (2018, August 16). *How to conduct a training needs assessment*. SHRM. <a href="https://www.shrm.org/resourcesandtools/tools-and-samples/how-to-guides/pages/conduct-training-needs-assessment.aspx">https://www.shrm.org/resourcesandtools/tools-and-samples/how-to-guides/pages/conduct-training-needs-assessment.aspx</a>
- Stanciu, C. (2020, March 20). Best Practices in Using Telemedicine for ADHD During the COVID-19 Pandemic. Psychiatric Times. https://www.psychiatrictimes.com/view/best-practices-using-telemedicine-adhd-during-covid-19-pandemic
- Wolraich, M., Hagan, J., Allan, C., Chan, E., Davison, D., Earls, M., Evans, S., Flinn, S.,
  Froehlich, S., Frost, J., Holbrook, J., Lehmann, C., Lessin, H., Okechukwu, K., Pierce,
  K., Winner, J., & Zurhellen, W. (2019). Clinical practice guideline for the diagnosis,
  evaluation, and treatment of attention-deficit/hyperactivity disorder in children and
  adolescents. *Pediatrics*, 144(4), 1–25. Retrieved April 9, 2020, from
  https://doi.org/10.1542/peds.2019-2528
- Wright, N., Moldavsky, M., Schneider, J., Chakrabarti, I., Coates, J., Daley, D., Kochhar, P., Mills, J., Sorour, W., & Sayal, K. (2015). Practitioner review: Pathways to care for adhda systematic review of barriers and facilitators. *Journal of Child Psychology and Psychiatry*, 56(6), 598–617. <a href="https://doi.org/10.1111/jcpp.12398">https://doi.org/10.1111/jcpp.12398</a>

## Appendix A

## **Prevalence**

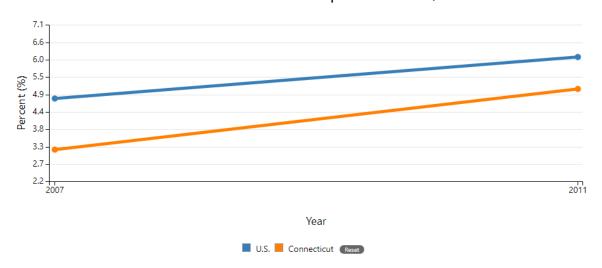
# Prevalence

Percent of children ever diagnosed with ADHD in Connecticut compared to the US, over time.



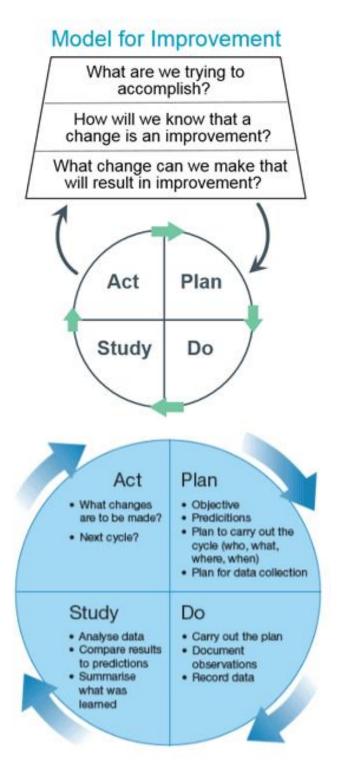
## Treatment: Medication

Percent of children with ADHD currently taking medication treatment for ADHD in Connecticut compared to US, over time.



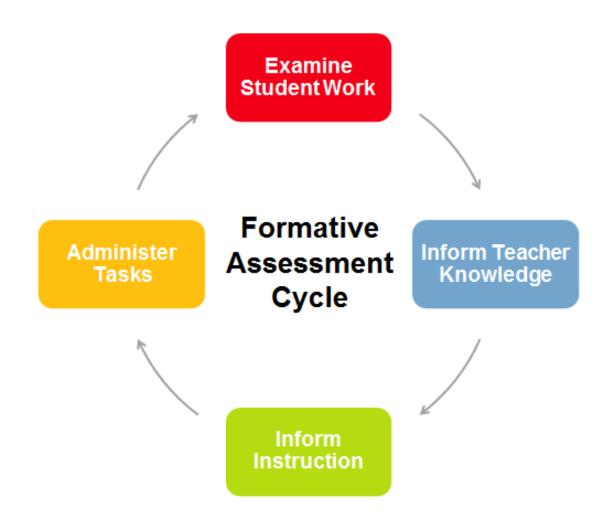
## Appendix B

## **Model for Improvement / PDSA**



# **Appendix C**

# **Formative Assessment Cycle**



Appendix D

## **Chart Review Raw Data**

Pre-intervention Total Patient Encounters

Date	APRN 1	APRN 2	Total # of encounters
November 2019	106	72	178
December 2019	74	89	163
January 2020	149	110	259
Total # of encounters			600

## Post-intervention Total Patient Encounters

Date	APRN 1	APRN 2	Total # of Encounters
June 2020	104	117	221
July 2020	89	99	188
August 2020	79	103	182
Total # of encounters	272	319	591

# Data tracking pre-intervention

APRN 1	Date of medication initiation	Date of follow up	# of days between initiation and follow up
	1/10/2020	03/05/2020	55
	11/22/2019	12/20/19	28
	1/9/20	3/6/20	57
	1/9/20	3/12/20	63
	11/15/19	11/21/19	6
	12/6/19	1/24/20	49
	1/10/20	2/26/20	46
	1/8/20	3/4/20	56
	1/8/20	3/11/20	63
	1/9/20	3/12/20	63
	1/10/20	3/5/20	55
	1/10/20	2/26/20	47
	1/15/20	4/15/20	91

# Data tracking pre-intervention

APRN 2	Date of medication initiation	Date of follow up	# of days between initiation and follow up
	11/4/19	12/9/19	35
	11/4/19	12/5/19	31
	11/7/19	12/19/19	42
	12/4/19	1/9/19	36
	11/16/19	12/16/19	30
	12/12/19	01/14/20	33
	12/19/19	01/22/20	34
	12/4/19	1/9/20	36
	12/24/19	1/13/20	20
	12/30/19	3/3/20	63
	1/15/20	1/27/20	12
	1/3/20	3/5/20	62
	1/28/20	2/25/20	28

# Data Tracking Post-intervention

APRN 1	Date of medication initiation	Date of follow up	# of days between initiation and follow up
	6/19/20	6/30/20	11

# Data Tracking Post-intervention

APRN 2	Date of medication initiation	Date of follow up	# of days between initiation and follow up
	6/17/20	07/13/20	26
	7/6/20	08/03/20	28
	6/26/20	7/27/20	31
	6/29/20	7/31/20	32