

Pharmacist Medication Management of Adults with Attention Deficit: An Alternative Clinical Structure

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Perm J 2020;24:19.122

E-pub: 03/18/2020

<https://doi.org/10.7812/TPP/19.122>

ABSTRACT

Introduction: Attention-deficit/hyperactivity disorder (ADHD) is one of the most common psychiatric conditions in youth. This disorder can persist into adulthood, with an estimated prevalence of 4.4% to 5.2% in the US.

Objective: To review adult ADHD diagnostic criteria, adult clinical presentation, and resulting impairments in function and to describe our adult psychiatry clinic's pharmacist-comanaged ADHD medication management program as a model to provide safe and effective care that is accessible, efficient, and well monitored.

Methods: The program consists of 1) screening (urine toxicology, diagnostic evaluation, data collection) by physicians, 2) program participation and treatment agreement with establishment of care goals, and 3) patient maintenance and monitoring. Pharmacists in the Department of Psychiatry manage refills, distributing the clinical caseload among a broader clinician base.

Results: This program created a standardized protocol for assessment, referral, and follow-up of adult patients with ADHD, with close monitoring and titration of controlled medications, systematic use of screening measures, and a stimulant treatment contract.

Discussion: Development of this program and workflow model could increase care delivery efficiency, potentially improving patient satisfaction and outcomes. There is a great need to use alternative patient management strategies such as this to maintain access to high-quality care while there is a nationwide need for more psychiatric clinicians.

Conclusion: We believe this program offers a solution to a component of this growing problem, and other clinical sites would benefit from such a program. Next steps include analysis and publication of results of implementation, including patient outcomes, engagement in treatment, and satisfaction.

INTRODUCTION

Attention-deficit/hyperactivity disorder (ADHD) is one of the most common childhood and adolescent psychiatric conditions with a childhood diagnosis rate of 7.8%.¹ Most children with ADHD (60%-85%) will continue to meet criteria for the disorder during their teenage years,¹ and studies have shown that ADHD can persist into adulthood.^{2,3} Epidemiologic studies of ADHD using a representative sample of adults aged 18 to 44 years have estimated the current prevalence to be 4.4% to 5.2% in the US^{3,4} and a 2.8% prevalence of ADHD in adults across the 18 countries surveyed.³ Adult ADHD is increasingly recognized as a global health issue. Prevalence data on adult ADHD support the notion that there is a need for clinicians to focus on understanding the impact of ADHD in their adult patients, which can often be underdiagnosed and undertreated.⁵ Additionally, this influx of adult patients requires thoughtful screening and evaluation regarding potential ADHD and consistent management of medications.

When the prevalence of this condition is considered, management of these patients can pose a substantial impingement on access to already strained Psychiatry Departments.

Published data suggest that up to 90% of those with adult ADHD did not have the diagnosis in childhood.⁶⁻⁸ This finding may suggest a distinct developmental trajectory, a delay in diagnosis owing to stigma or resource limitations, or effective coping strategies that facilitate sufficient successes to progress through childhood until adult workplace demands overrun these strategies.⁶⁻⁸ Other possible explanations include a change in informant reporting of ADHD symptoms (adult patient directly seeking treatment vs parent and teacher reports in a child), a deficit of attention reflecting one or more other mental health disorders than ADHD, or childhood ADHD that was masked by the family environment or a high intelligence quotient.⁹ These theories suggest that a program that improves access to clinicians for evaluation and management of adult ADHD may prove beneficial to patients and allow for management of these patients such that Psychiatry Departments are able to care for them efficiently.

In this article, we review the diagnostic criteria for adult ADHD, the clinical presentation commonly seen in adults, and the functional impairments that can occur with ADHD in day-to-day life. Finally, we share a description of our adult ADHD medication management program, which is dually managed by the Psychiatry and Pharmacy Departments. The program is an example of a care model that provides safe and effective care that is accessible, efficient, and well monitored. We believe this program has the potential to greatly enhance the patient care experience.

REVIEW OF LITERATURE

Diagnosis of Attention-Deficit/Hyperactivity Disorder

The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V) diagnostic criteria for ADHD are used in both children and adults. These criteria include a persistent pattern of inattention and/or hyperactivity-impulsivity symptoms that clearly interfere with development and have a direct negative impact on, or reduce the quality of, social, academic, or occupational functioning. In Table 1, the symptoms of ADHD are divided into 2 criterion domains: Inattention (criterion A1)

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Keywords: adult attention deficit hyperactivity disorder, clinical guidelines, pharmacist, psychiatry

Table 1. DSM-V diagnostic criteria for attention-deficit/hyperactivity disorder (ADHD)¹⁰

ADHD predominantly inattentive symptoms (criterion A1)	ADHD predominantly hyperactive-impulsive symptoms (criterion A2)
Fail to give close attention to details or make careless mistakes	Fidget with hands or feet or squirm in chair
Have difficulty sustaining attention in activities	Difficult staying in seat appropriately
Do not appear to listen (mind seems elsewhere)	Run about or climb excessively; extreme restlessness in adults
Do not follow through with instructions	Have difficulty engaging in activities quietly
Have difficulty organizing tasks or activities	Act as if "driven by a motor"
Avoid or dislike tasks requiring sustained mental effort	Talk excessively
Lose things necessary for tasks	Blurt out answers before questions are completed
Are easily distracted	Have difficulty awaiting turn
Are forgetful in daily activities	Interrupt or intrude upon others

DSM-V = Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition.

and hyperactivity/impulsivity (criterion A2). There are 3 presentation types: Predominantly inattentive (patient meets criterion A1 only), predominantly hyperactive/impulsive (patient meets criterion A2 only), and combined type (patient meets both criteria A1 and A2). For a diagnosis of ADHD, whether in childhood or adulthood, symptoms must have emerged before age 12 years, and symptoms must be present in 2 or more settings (ie, school, home, work, with friends or relatives, or other activities) for at least 6 months.¹⁰ In adults, ADHD is more likely characterized by symptoms of inattention rather than overt manifestations of hyperactivity or impulsivity.¹¹ In addition, the DSM-V requires fewer symptoms to establish a diagnosis of ADHD in individuals older than 17 years; adults need just 5 of 9 criteria in either inattention or hyperactivity/impulsivity criterion areas instead of the 6 of 9 criteria used for children and adolescents. There are also modifiers to indicate severity or whether the disease state is in partial remission.¹⁰

Clinical Presentation and Impact of Impairment

Adult ADHD is often comorbid with other psychiatric disorders. In US samples, adults with ADHD were more likely than adults from the general population to have co-occurring psychiatric disorders, including mood disorders, anxiety disorders, any substance use disorder, or intermittent explosive disorder. The rate of comorbid psychiatric disorders in adults with ADHD tends to increase with age.^{4,12,13} Many times, adults with ADHD are diagnosed and treated for a comorbid condition, but the ADHD goes unrecognized or untreated. Adults with ADHD also are at higher risk of having comorbid medical disorders, such as obesity, sleep disorders, asthma, and migraines.¹⁴ Because of the impact of ADHD symptoms on the management and outcomes of medical illnesses, these patients require careful lifestyle and medication management.

In adults, ADHD is characterized by symptoms of inattention, impulsiveness, restlessness, deficits in executive functioning (self-directed actions needed to choose goals and to create, enact, and sustain actions toward those goals), and emotional dysregulation. Adults are challenged with staying on task for sustained periods, organizing activities, or prioritizing responsibilities, which can manifest as being forgetful or struggling with time management; these symptoms may be markedly obvious in their work and personal lives.¹⁰ Adults with ADHD may struggle with

meeting deadlines, and inattentive symptoms can be related to driving errors, speeding, and having traffic tickets.¹⁵ Some adults present with impairment only later in life when confronted with new or increasingly complex tasks that characterize adulthood and cannot be managed with their existing capacity for executive functioning. A systematic review shows that adults with ADHD had higher levels of unemployment compared with control groups and had an increased risk of accidents, trauma, and workplace injuries.¹⁶ They also exhibited workplace impairment, reduced productivity, and reduced educational achievement as well as increased substance abuse rates and criminal behavior. Adults who have abused substances may have struggled with their impairment and have developed poor coping strategies, including a desire to self-medicate or seek external substances for relief.¹⁷

DESCRIPTION OF PROGRAM

Utility of Medication Management Program

Given that ADHD in adulthood is associated with a substantial impairment in occupational, academic, and social functioning, we have created an adult ADHD-specific program to accurately and efficiently identify potential cases of ADHD and to subsequently provide safe and effective pharmacologic management to patients with ADHD with the assistance of the pharmacist under a physician's supervision. This program was created after clinicians and administrators in the adult psychiatry clinic identified specific areas of patient care that would be amenable to such a novel design that would offer improved patient access and efficiency in patient panel management. This program is in addition to the health education and therapeutic programmatic options offered in our clinic that attempt to assist patients with some of the functional challenges associated with ADHD.

The program has several potential areas that could improve care for patients, including the following:

- a standardized protocol for assessment, referral, and follow-up
- closer monitoring and titration of controlled medications
- minimizing the potential for misuse or abuse of controlled medications through effective screening measures and use of a stimulant treatment contract to clearly communicate goals of treatment and appropriate management of controlled substances
- assessing patient response to various stimulant and nonstimulant medications

- providing safe and effective treatment by following standard-of-care interventions¹⁸
- increasing clinic efficiency.

Program Structure and Eligibility

Figure 1 details the workflow for program operations. The design of the program was based on clinical management recommendations and clinic needs.^{18,19} The program is designed to have 1 or 2 pharmacists assisting 13 to 14 physicians with the initiation and management of stimulant medications. Patients are referred to this program by their treating psychiatrists. Management of stimulant medications is done by the pharmacist via telephone, video, or office visits.

For eligibility, the patient must be a current Health Plan member and have an established clinician in the group practice. The exclusion criteria for the program include pregnancy or breastfeeding, long QT syndrome, uncontrolled hypertension,

history of cardiac problems (broadly defined to maximize patient safety) or family history of sudden cardiac death at a young age, bipolar disorder, psychotic illnesses, acute suicidality, acute or uncontrolled depression or anxiety, continued use of cannabis and unwillingness to stop, current substance abuse or treatment or recent history of substance abuse with less than 12 months sobriety, traumatic brain injury within the last 12 months, and patient unwillingness to sign the stimulant treatment agreement. The stimulant treatment agreement (contract) lays out specific risks of stimulant medications, stresses their appropriate management in terms of taking as prescribed and not diverting medication, allows for repeated urine drug screens if needed, and underscores that misuse of medications may result in stoppage of further prescriptions.

Exceptions to the enrollment criteria can be made under several circumstances. If the patient has a history of cardiac problems, s/he needs an electrocardiogram performed and clearance by a cardiologist. If the patient has a history of acute or uncontrolled depression or anxiety, s/he can start stimulant treatment concomitant with antidepressant medication if the supervising physician deems that the benefits outweigh the risk. Patients declining pharmacologic treatment of depression or anxiety but actively working with therapists or attending groups are considered for enrollment. If the patient is currently using cannabis and is willing to stop, that individual may be enrolled in the program but must have a negative urine drug screen before the next refill. If the urine drug screen is positive, the patient is offered nonstimulant treatment options. If the patient refuses these options, his/her care returns to the referring psychiatrist. Patients with traumatic brain injury within the last 12 months can be enrolled in the program if cleared by a neurologist.

California’s prescription drug monitoring program, CURES (Controlled Substance Utilization Review and Evaluation System), is used to review dispensations of controlled substances in the state with each new controlled prescription order and to document findings (per state law). If there are discrepancies, findings are routed to the referring clinician to determine next steps before the patient is enrolled in the program.

Program Workflow

The program workflow includes 3 phases. During the initial assessment phase (phase 1), patients must submit a urine drug screen sample, complete the Conners Continuous Performance Test, third edition (CPT 3) and computerized testing of attention and concentration (MHS Scoring Software, version 5.7.0, Multi-Health Systems Inc, Toronto, Ontario, Canada), and have an intake visit with a psychiatrist. If the physician, after clinical evaluation, makes a diagnosis of ADHD and rules out other comorbid conditions and the patient does not meet any of the exclusion criteria mentioned earlier, s/he can be referred to the pharmacist-managed ADHD Medication Management program. If the referring psychiatrist deems that the patient is at risk of substance abuse, s/he indicates that the patient is to be prescribed a nonstimulant medication only. If being treated with stimulant medication, patients are asked to sign a stimulant treatment agreement. This agreement reiterates the basic requirements of

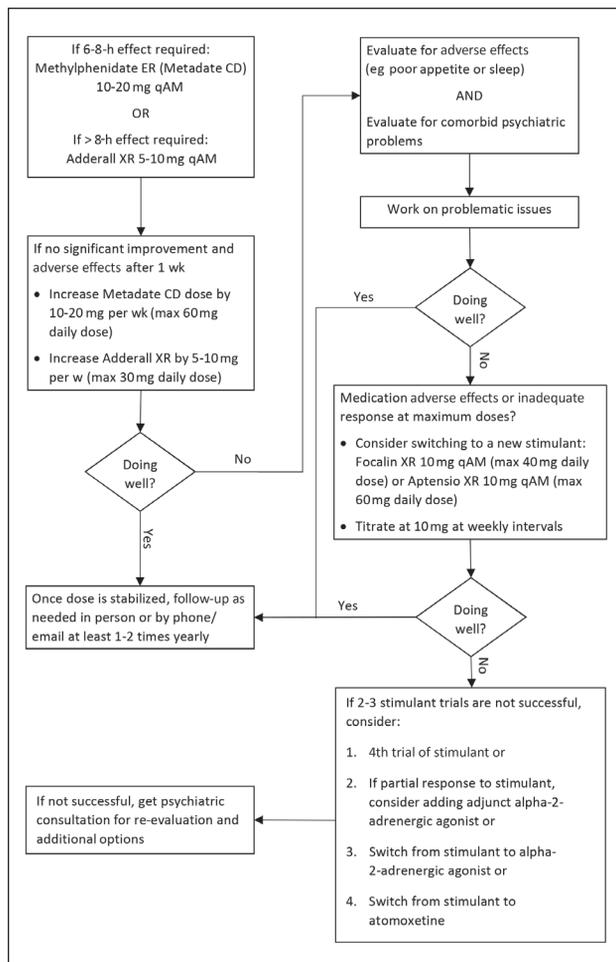


Figure 1. Medical algorithm for adult attention-deficit/hyperactivity disorder medication management program.

Adderall = brand name of amphetamine and dextroamphetamine; Aptensio = brand name of methylphenidate hydrochloride; ER = extended release; Focalin = brand name of dexamethylphenidate; qAM = every morning; XR = extended release.

continuing in the medication management program, appropriate management of a controlled substance, and reasons a patient may be discharged from the program (eg, urine drug screen positive for an illicit substance).

The initiation/titration phase (phase 2) includes a visit with the pharmacist via a telephone, video, or office visit, at which the goals of treatment are solidified. If the patient is being treated with a stimulant medication and the stimulant treatment agreement was not previously completed, the patient is asked to sign the agreement. A urine drug screen and vital signs, including weight, heart rate, and blood pressure, are obtained before the patient starts treatment with the medication. Medication regimens are started on the basis of the goals of treatment, and doses are titrated until a stable dose of medications is reached within the range of dosing approved by the US Food and Drug Administration for each medication (Figure 1). It is recommended that patients have monthly visits (phone or video, or email in exceptional circumstances) until they are receiving a stable dose of their medications.

The third phase involves treatment maintenance and monitoring. Patients are monitored on a yearly basis at a minimum by the pharmacist, who can consult with the referring psychiatrist if new symptoms arise or if a diagnosis reevaluation is needed. All patients receiving stimulants, atomoxetine, or α_2 agonists in the titration phase will have routine vital signs taken (blood pressure, pulse, and weight) until the dose of their medication stabilizes. After dose stabilization, patients have their vital signs checked annually. These vital signs can be completed by attending in-person appointments with their psychiatrist or the pharmacist at the outpatient clinic of the group practice, being seen at another appointment in another specialty, or blood pressure check appointments with their primary care office. A urine drug screen sample is collected before the first treatment visit and annually while the patient is in the ADHD medication treatment program. Patients may have additional urine drug screen samples collected randomly during treatment if the pharmacist believes it is clinically indicated. After the dose of medication remains stable for 6 months, the pharmacist will continue to follow-up with the patient at least once yearly.

DISCUSSION

The goals of this medication management program include providing safe and effective care to adult patients with ADHD with the assistance of the pharmacist under supervision of a physician. Another goal is to ensure improved access and closer follow-up of adult patients with a diagnosis of ADHD.

The program has multiple benefits, including a standardized protocol for assessment, referral, and follow-up as well as closer monitoring and titration of controlled medications and minimizing the potential for abuse of controlled medications. Other benefits include assessing the responsiveness to various stimulant and nonstimulant medications for patients with ADHD; providing safe and effective treatment by following standard-of-care interventions; and increasing the efficiency of the clinic. Pharmacist management of patients in phases 2 and 3 of the program using highly efficient phone, video, and/or office visits greatly

unloads controlled substance refills from a physician's workload and provides an alternative point of contact in the clinic for these patients. Management is distributed across several psychiatrists in the clinic, which enhances the psychiatrists' ability to focus clinical efforts on higher acuity patients and more urgent patient management.

Potential limitations of this model that will require future evaluation include the interappointment intervals, patient satisfaction with the model in the long term, the frequency of need for psychiatrist consultation/intervention, and the long-term cost-effectiveness in our health care system and in other systems of care where staff funding may originate from various sources.

CONCLUSION

ADHD is one of the most common neuropsychiatric disorders in childhood and adolescence and often persists in adults. Many studies have reported that ADHD in adults is often underdiagnosed and untreated,⁵ with common symptoms of inattention, impulsivity, restlessness, and impairment in executive function. Given the major struggles that an adult with ADHD faces, it is imperative to have a program and workflow that adequately address the needs of this patient population. We believe that the Adult Psychiatry/Pharmacist ADHD Medication Management Program optimally standardizes the protocol for assessment, referral, and follow-up for patients with ADHD and will greatly enhance the patient care experience in multiple facets. With improved access and closer monitoring and administration of controlled medications, it should provide a safe, efficient, and effective system for identifying adult patients with undiagnosed and untreated ADHD, as well as allowing appropriate follow-up and monitoring for ongoing treatment. Patient satisfaction and other potential benefits are being evaluated and present future opportunities for study and program refinement. ❖

Disclosure Statement

The author(s) have no conflicts of interest to disclose.

Acknowledgments

Kathleen Loudon, ELS, of Loudon Health Communications performed a primary copy edit.

How to Cite this Article

Huang R, Ridout SJ, Harris B, Raja K. Pharmacist medication management of adults with attention deficit: An alternative clinical structure. *Perm J* 2020;24:19.122. DOI: <https://doi.org/10.7812/TPP/19.122>

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