

Managing ADHD Across the Lifespan in the Primary Care Setting

DOI: 10.3810/pgm.2011.09.2456

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Abstract: Attention-deficit/hyperactivity disorder (ADHD) is a chronic neurobehavioral condition that affects most patients throughout their lives and is associated with occupational underachievement, psychiatric comorbidity, and substance abuse. Primary care physicians (PCPs) are at the forefront of helping patients with ADHD manage symptoms and overcome functional impairments. In this article, the problems of recognizing and effectively managing ADHD are explored through the presentation of 2 composite patient cases based on real patients in the authors' practices. Both cases highlight maturational changes in ADHD-related problems as patients develop through childhood, adolescence, and into adulthood. The striking differences between the cases serve to illustrate the highly varied clinical presentation and developmental trajectories of ADHD, moderated by family environment, patient characteristics, and life events. Emphasis is placed on understanding the crucial developmental turning points from early childhood through adulthood at which patients with ADHD are most likely to need increased support and specialized behavioral interventions. Diagnosis of adult ADHD is also reviewed, including an overview of potentially clinically relevant patient characteristics that should alert PCPs to the possible presence of ADHD and use of the World Health Organization's rapid 6-item adult ADHD Self-Report Scale as a screening device. The present discussion challenges PCPs to recognize the varied presentations of what ADHD "looks like," and describes the need for PCPs to establish and maintain working partnerships with families, patients, and mental health care professionals in their local communities to successfully treat ADHD across the lifespan.

Keywords: attention-deficit/hyperactivity disorder; lifespan; adult; chronic care; development

Introduction

Attention-deficit/hyperactivity disorder (ADHD) is a neurobiological condition presenting in childhood and persisting as an impairing disorder into adulthood in up to approximately 65% of these children.^{1,2} Currently, there is no established framework within the health care system to support the recognition and continued treatment of patients with ADHD as they transition from pediatric care into the adult primary care system. In the United States, primary care physicians (PCPs) and pediatricians treat the majority of children and adolescents with ADHD.³ To reduce ADHD symptoms, these patients are often prescribed a recommended stimulant, such as an extended-release once-daily dosage form of methylphenidate or amphetamines, or an approved nonstimulant medication, such as atomoxetine, clonidine extended-release, or guanfacine extended-release.⁴⁻⁶ Pediatric patients significantly benefit from concurrent behavioral therapy.^{7,8} There is also growing literature providing evidence-based support for the benefit of psychosocial treatment in adults with ADHD.^{9,10} However, as adolescents or adults, many patients continue to experience symptoms yet do not continue to receive care. Most teens with a childhood diagnosis of ADHD cease their stimulant treatment during high school,¹¹⁻¹⁴ with only 5% of patients persisting with medication by

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age 21 years.¹³ Continuity of care during this transition phase is a complex issue involving factors such as lack of symptom awareness, a developing need for independence, and fear/denial of having a chronic, lifelong illness. Epidemiologic data suggest that this pattern of undertreatment persists in the adult population; only about 1 in 10 US adults with ADHD receive medication treatment.¹⁵ These data demonstrate that most patients with childhood ADHD never transition to adult care, and other adults with undetected ADHD remain undiagnosed and/or untreated.

During the time period when patients tend to drop out of care, they are making decisions that can exert a significant and lasting impact on the remaining course of their lives.^{16,17} When ADHD persists into adulthood, it has been associated with adverse life experiences or outcomes, including academic and occupational underattainment,^{15,18} divorce, substance abuse, motor vehicle accidents, and arrest.^{15,19–23} Attention-deficit/hyperactivity disorder treatment continued during or beyond the childhood years has been shown to significantly mitigate risks for such measured outcomes.^{24–28} As such, it is critical to establish a system or framework to identify patients with ADHD and provide uninterrupted primary care to patients of all ages with ADHD. This framework should also include access to evidence-based behavioral and cognitive-behavioral treatments, as well as psychosocial support at developmental turning points or during crisis events.^{9,10}

To more vividly illustrate the chronic nature of ADHD and the varied clinical presentation of ADHD across individuals and life stages, 2 hypothetical cases are presented. These hypothetical patients are composites of characteristics and circumstances of real patients and are described from a lifespan perspective, which takes into account the gradual shift from childhood symptoms to adult presentation and illustrates the heightened need for treatment and support at important transition points in the patients' lives.

Case 1: John Y

The case of John Y, a male who was diagnosed with ADHD combined subtype when he was 7 years old, spans many years. He was referred for evaluation based on symptoms that included disruptiveness at home and school, marked by always seeming to be on the go, talking out of turn, and engaging in impulsive behaviors, such as shouting at siblings or classmates, chasing pets, and being rowdy. At school, teachers described his academic performance as not up to potential, and he was regarded socially as the class clown.^{29,30}

The development of basic academic and social competencies and self-esteem is critical during the early school years.³¹ Children with ADHD experience impairments in school and at home when they fail to acquire and master academic and social skills and behaviors that instill confidence and self-esteem. They begin to be seen as different because of their academic failures, and they experience peer rejection related to such social behaviors as aggression, over- or under-talkativeness, or shyness.³² At home, behavior problems create strain in family relationships between the child with ADHD and the parents, between the child and siblings, and between the parents.^{32–34} Quality of life (QOL) typically suffers as a result of such impairments; in one study, boys with ADHD scored lower than comparative norms in all domains of QOL, including social/emotional functioning, self-esteem, mental health, behavior, parent time, and family activities, as well as parents' emotional well-being and their ability to focus on their own personal needs.^{32,35}

On diagnosis of ADHD, John Y was prescribed a once-daily stimulant medication that improved symptoms within days. His academic performance and behavior at home were noted to improve over the following weeks. Teachers noticed better attention in class, less interruption, improved task completion, and greater peer acceptance, as evidenced by children being more inclined to play with John Y during recess. His parents reported that John Y was better able to sustain attention on homework, followed a morning routine before school, got along better with his younger sister, and had fewer emotional outbursts. John Y's mother maintained his medication regimen successfully for several years, in part because the side effects that occurred initially had diminished. From first to fifth grade, John Y continued to exhibit average, satisfactory performance at school, and social functioning and peer relationships were good.

School-aged children with combined-subtype ADHD, such as John Y, are most often treated with a long-acting stimulant medication as recommended by the American Academy of Child and Adolescent Psychiatry (AACAP) guidelines.¹ This approach is effective in the majority of patients, having been proven to significantly reduce the core ADHD symptoms of inattention, hyperactivity, and impulsivity.^{1,36} As seen in John Y, a consistently followed stimulant medication regimen can lead to functional improvements across the academic, social, and family domains.^{37,38}

Subsequently, John Y's parents experienced conflict over child-rearing issues related to John Y. While his mother agreed to and supervised John Y's stimulant medication use, John Y began to object to continued medication and

his father supported this, questioning whether his son was “growing out” of ADHD. John Y’s mother reported marital difficulties; John Y’s father had a quick temper compounded by financial difficulty related to the loss of his job. As a result of their differences and conflicts, exacerbated by disagreement about issues related to John Y’s treatment, John Y’s parents divorced. John Y’s mother retained full custody of John Y and his younger sister. With the demands of single parenthood, and John Y’s growing desire for independence, his adherence to medication was inconsistent, leading to an increase in ADHD symptoms at home and school. Parent-teacher conferences throughout middle school and high school revealed poor classroom behavior, as well as occasional incidents of aggressive behavior, tardiness, and truancy. At age 15 years, John Y announced that he would no longer take his ADHD medication, explaining that he did not like how it made him feel (eg, “flat and boring”) and that he “didn’t need it anyway” because he had indeed “grown out of ADHD.”

The divorce of John Y’s parents is a family crisis that occurred during the often difficult transition from childhood into adolescence. This period is marked by a search for identity and adult roles in the world³¹ and by increased reliance on peer interactions, social competence, and friendship formation for determining self-worth.³⁹ During this period in patients with ADHD, overt manifestations of hyperactivity may decline while inner restlessness, impulsiveness, and inattention may persist.⁴⁰ Adolescents with ADHD need to learn to cope more independently with ADHD-related impairments of self-regulation, planning, motivation, and emotional control given that parental supervision and support tend to decrease as children get older. Because of these significant challenges, there is the potential for serious negative consequences of ADHD to emerge at this transition point, as illustrated in the case of John Y. These may include a loss of friends, grade repetition, dropping out of high school, suspensions, expulsions, substance abuse, incarceration, intentional injury, attempted suicide, teen pregnancy, sexually transmitted infections, and being fired from employment.⁴¹ Randomized controlled trials in children with ADHD have shown good efficacy with a number of behavioral interventions and parent-training programs, including those that target organizational and time-management skills, externalizing behaviors (eg, aggression and defiance), and social skills.^{7,8,42–45} Additionally, the effectiveness of behavioral treatment, either alone or in combination with pharmacotherapy, was evaluated in the Multimodal Treatment Study of Children with ADHD (MTA).⁴⁶ While rates of successful treatment response were lower with behavioral treatment alone than with

pharmacotherapy alone, almost three-fourths of the behavioral treatment group were treated for 14 months without acute exacerbations or other situations requiring the administration of pharmacotherapy. Ultimately, combination treatment of pharmacotherapy and behavioral therapy was superior to either treatment alone⁴⁶ for selected outcomes. However, there are no evidence-based behavioral interventions available for adolescents, and those used for children with ADHD may not be appropriate for teens.⁴⁷ Some potentially useful strategies may include school- and home-based behavioral interventions such as contingency contracting, parental behavioral management, communications training for families, academic interventions, and self-management programs.^{48,49} To help preteen and adolescent patients gain necessary social and time-management skills, specialized behavioral training beyond the symptom management afforded by medication is likely to be needed, particularly for young teens with ADHD going through a difficult developmental period.

The case of John Y further illustrates how a family crisis during the transition from childhood to adolescence can have a negative impact on treatment and functional outcomes over the long term. An irregular medication regimen and the absence of specialized psychological support or counseling allow unmanaged symptoms to affect academic and social impairments. For patients with ADHD, it is at these times—when resources to organize time, manage impulses and emotions, and focus on daily tasks and routines are already impaired—that they are likely to become overwhelmed.⁴¹ To make timely and appropriate referrals, PCPs must be alert to detecting such crises and be familiar with psychological and mental health services in the community specializing in ADHD treatment.

Another transitional task relevant to this period is helping patients come to terms with the often chronic nature of ADHD, to develop a greater awareness of ADHD-related symptoms and impairments, and to gradually assume control over their treatment regimen. Adolescents with persistent ADHD may question or deny their diagnosis and they may deny having any symptoms. With less parental supervision, medication regimens are often not maintained,^{11–14} and support related to ADHD management may be rejected; by age 21 years, few patients still take medication for ADHD.¹³ Although parents may disagree with the adolescent regarding discontinuing medication, they may acquiesce to the adolescent’s decision, feeling that teenagers and young adults should have autonomy in making these decisions. In line with this, John Y claims he has “grown out of” the disorder. Often, such reasons hide an adolescent patient’s deeper concern about being “abnormal,”

for which the medication serves as a reminder. Primary care physicians must remind patients that a decrease in hyperactive behavior does not indicate resolution of ADHD. The nature of ADHD symptoms often change with maturation.⁴⁰ Overt hyperactivity may be gradually replaced with feelings of restlessness or fidgety behavior (ie, tapping feet, shifting position); inattentiveness also persists, marked by difficulty completing work or school assignments.^{40,50} John Y, similar to other adolescents with ADHD, may recognize this decrease in overt hyperactivity while being unaware of his remaining symptoms, and greatly underestimate his ADHD-related functional impairments.⁵¹

Impairments in attentional focus are important to consider in the teen who is beginning to drive an automobile. Parents and patients should know that adolescent patients with ADHD who drive a vehicle are at a 2- to 4-fold increased risk of traffic accidents and related injuries compared with peers without ADHD.⁵² Responsible adults must be encouraged to take active steps to maintain control over treatment decisions, particularly when teens aged < 18 years do not demonstrate adequate awareness of ADHD-related functional impairments and could pose a danger to themselves and others when driving. Potentially, in John Y's case, prohibiting him from driving unless he was taking his medications could motivate him to continue treatment.

Over time, older preteen and teen patients should be taught to recognize their ADHD symptoms and any resulting impairments, as well as how those symptoms may change over time yet continue to result in impairment. It is also important that they recognize how their symptoms contrast when they are on and off medication. Moreover, older children and young adolescents should be encouraged to begin to take medications independently and to develop a daily routine. Timing for this move from parent-managed to patient-managed care is determined on a case-by-case evaluation of the patient's level of maturity, motivation, and parental support. For patients with ADHD who have trouble with organization and maintaining a routine, using electronic reminders, pill boxes, or other mnemonic devices can be helpful.⁴¹ If adolescents are permitted to make the choice to discontinue medication or if they actively refuse medication, PCPs are encouraged to cultivate and maintain a supportive relationship. This can be facilitated by understanding the critical elements of medical communication with adolescents. Britto et al⁵³ questioned 155 adolescents with chronic medical illnesses and rank-ordered factors related to their perceived quality of medical care. Physician trust and respect were the highest rated, patient power and control over treatment was

second, and caring and closeness of the patient–physician relationship was third.

John Y passed his high school academic requirements, although his performance was marked by many late or missed assignments in spite of his mother's attempts to provide oversight for evening homework. The aggression seen in middle school abated, but alcohol use started. John Y took auto shop courses in school and he and his closest friends shared a hobby repairing old cars. His mother and PCP encouraged this interest because it built John Y's self-esteem. After high school, John Y lived at home and attended a community college. However, he struggled to keep up with school assignments and eventually withdrew after 1 year. His interest in cars motivated him to attend automotive repair trade school where he successfully finished his schoolwork because learning was hands-on. Unfortunately, with continued alcohol abuse and hangovers, he missed classes and completed the program later than his enrollment peers. Following certificate completion, he obtained a full-time job at a car dealership. Within 2 years, he moved in with his girlfriend. However, soon after, she broke off the relationship due to his temper outbursts, unreliability, and continued drinking.

Many individuals with ADHD, as in the case of John Y, have no difficulty attending to and excelling at activities in which they are intensely interested and find engaging.⁵⁴ Young adults with ADHD may make occupational choices that suit these interests as a way to avoid or minimize the functional impairments they encounter in other settings⁵⁵ and may do well in such careers. Nevertheless, even with ADHD-friendly occupations, adults with this disorder will likely exhibit impaired organizational and social skills, compromising their ability to advance in their chosen profession. Many adults with ADHD have significantly lower annual incomes than their non-ADHD counterparts.¹⁹

Although John Y's job performance was adequate, he had difficulty following his boss's directives, was often late to work or absent, made inappropriate comments to coworkers, and was argumentative with his superiors. Subsequently, after a series of warnings, John Y was dismissed from this job. It took him 3 months to find another mechanic job and he had to start again at an entry-level salary. This compounded the financial strain from 3 months of unemployment and no income. His drinking continued. With John Y's daily alcohol use, his new boss suspended him from work and requested that he seek a psychiatric evaluation. John Y saw his PCP, complaining of depression and confessed to his drinking pattern. The PCP strongly recommended alcohol treatment at a local outpatient treat-

ment center. During the course of alcohol treatment, John Y was evaluated for ADHD, in part because of his childhood history. It was determined that he had significant persistent adult ADHD symptoms. In recovery for 2 months, he agreed to try ADHD medication again but he requested a different long-acting medication from his childhood treatment because of previous side effects that he did not like. As a result of the request, the PCP prescribed a newer formulation with proven long duration of action in adults. His PCP monitored John Y's symptoms with an adult ADHD self-report symptom checklist.

As in the case of John Y, many adult patients with ADHD may present to their PCP and are referred to receive treatment for a psychiatric comorbidity such as substance abuse, depression, or anxiety.¹⁵ Treatment of the comorbid disorder may unmask residual ADHD symptoms—sometimes only then is adult ADHD detected.⁵⁶ When ADHD is found with a comorbid psychiatric condition that also requires medical management, a treatment regimen targeting both ADHD symptoms and relevant psychiatric comorbidities might be used with attention to possible drug–drug or drug–condition interactions.

Case 2: Lisa W

The following recounts Lisa W's case history. When Lisa W was 9 years old, her teachers noted her to be distractible. In the third grade, she showed uneven quality of schoolwork. Her parents noticed that she was disorganized at home and had few friends, situations that they expected to improve with maturation. Lisa W's parents helped her read and understand directions for homework and projects and made sure she completed her homework. With this help, she performed reasonably well in most of her school subjects throughout primary school, although she experienced some continuing difficulty in math. During these years, she continued to be socially isolated, spending her free time with her younger siblings and their friends. At age 11 years, Lisa W experienced increased difficulty during the transition to middle school with the change to multiple teachers and increased demands for independent work and organization. She showed academic underachievement, continued social isolation, and increased social anxiety. These difficulties prompted psychiatric evaluation, and Lisa W was diagnosed with ADHD, predominantly inattentive subtype. Her parents delayed medication therapy, believing symptoms were not severe enough to warrant such treatment.

Among children with ADHD, the predominantly inattentive subtype of ADHD is more commonly diagnosed in girls than boys.^{57,58} Girls such as Lisa W also tend to be diagnosed with ADHD at a later age, perhaps due to the greater likelihood

of girls being diagnosed with predominantly inattentive ADHD^{58–60} and the lower level of disruptive behaviors seen with the inattentive subtype (compared with combined-subtype ADHD),^{61–63} which draws less attention to their symptoms. Girls are also less likely to receive medication treatment on diagnosis,⁵⁷ perhaps due to the presence of less severe symptoms (compared with boys); parents or physicians may consider the condition not severe enough to warrant medication. In recent years, however, increased recognition and treatment of ADHD in girls has been reported,⁶⁴ likely due to educational efforts aimed at increasing awareness about the disorder.

In high school, Lisa W's difficulties paying attention in the classroom and staying on task to complete work in class and at home became more apparent. She had particular difficulty organizing and completing essays and book reports. Her grades dropped significantly so that she was receiving mostly Bs and Cs and was at risk of failing math and science. A psychological test at age 14 years revealed Lisa W's IQ to be in the high-average range, which served to highlight the discrepancies between Lisa W's level of intellectual ability and her academic performance. The test determined considerable difficulty in the attentional subsets. Observations by parents and teachers suggested that she was also lagging in development of social skills, and clinical evaluation revealed significant social phobia. Her parents agreed to begin treatment with a once-daily stimulant formulation along with cognitive-behavioral therapy to enhance social skills and reduce social anxiety. Improvement in academic performance was soon noticeable; Lisa W received very satisfactory grades, with a particular improvement in math and science. Social anxiety was diminished, self-esteem improved, and she developed a small circle of friends. She also became active in a school youth group that worked with underprivileged children. Lisa W graduated from high school with honors.

Patients with ADHD can exhibit poor academic performance that is “not up to the potential” of their innate intellectual abilities. The range of functional intellectual capacity is independent of ADHD and appears to be generally similar between patients with ADHD and those without the condition.²³ Similar proportions of children and adults with and without ADHD score in the high or gifted range on intelligence tests.^{23,65,66}

Lisa W began attending a 4-year state university away from home. Her difficulties with attention, organization, and time-management recurred in college, and Lisa W felt overwhelmed. Nevertheless, she was ambivalent and inconsistent about taking her medication and reluctant to seek other available services (ie, student disabilities center). She made few

friends and felt she did not fit into the social setting. Her grades fell and she was placed on probation at the end of the year. Her earlier success in high school was in dramatic contrast to these experiences in college. Feeling discouraged and despondent, she returned to live with her parents and took a partial course load at a local community college. With reduced academic demands, the emotional support and structure of living at home, and more consistent use of medication, Lisa W's academic performance improved. She earned an associate's degree in 2 years, got a part-time job, and continued to live at home.

The young adult period is marked by choice, striving, and eventual attainment of career-path life occupation and by formation of adult intimate relationships.³¹ In the young adult years, individuals also make important decisions about occupational direction.¹⁷

When they attend college, they are often living on their own, independent of parental support for the first time in their lives. For some patients with ADHD, the loss of parental guidance when living away from the parents' home during the transition to young adulthood often reveals significant functional impairments.⁵⁴ Lisa W, similar to other young adults with ADHD, exhibited academic underattainment²³ in the absence of her parents' support in managing her medication, time, and schoolwork schedule.

Many children with ADHD continue to have significant impairments in adult life.⁶⁷ Continued adult impairment is most strongly predicted by childhood symptoms of distractibility and their inability to sustain attention to tasks (inattentive symptoms) and feeling restless and having difficulties awaiting their turn (hyperactive/impulsive symptoms).^{68,69} Number and severity of symptoms is strongly associated with the level of impairment in adults with ADHD.⁷⁰ Many functional impairments in adults with ADHD can be effectively treated with cognitive-behavioral therapy and skills training.^{9,10} A recent randomized controlled trial showed that a 12-session course of group cognitive-behavioral therapy significantly reduced symptoms of inattention, and that functional benefits were seen in terms of improved time management, organization, and planning.^{10,71}

Moreover, Lisa W, as are other adults with ADHD, is at high risk for psychiatric comorbidities, including major depressive disorder and anxiety disorders.^{15,21,72} Other risks include nicotine dependence, recreational drug use, substance abuse, antisocial behavior, teen pregnancy, and sexual promiscuity.^{18,19} Among girls such as Lisa W with the inattentive ADHD subtype, anxiety disorders, particularly social anxiety disorder, are more common than among boys with this subtype.⁷³

Continuing attentional dysfunction may be misinterpreted by potential friends as disinterest, and impulsive and intrusive social behaviors may be viewed as invasion of their privacy/personal space.^{74,75}

Until recently, the absence of medical insurance for young adult patients with ADHD severely limited their ability to access affordable care.^{12,76} However, as of 2010, current federal regulations now allow these young adults to remain on a parent's health insurance coverage until age 26 years. For older young adults and those not eligible for such coverage, the problem of access to medical care for patients with ADHD is compounded by lower occupational attainment or unemployment.²³ In one investigation of adults with this disorder, the presence of ADHD combined subtype, substance abuse, and a reported history of depression or anxiety were correlated with being out of work.²⁶ Although not the case with Lisa W, young adult women are more likely than their male counterparts to be on Medicaid.⁷⁶

When Lisa W was 26 years old, she got married, and this relationship provided significant emotional support and stability for her. She resumed full-time college study, maintaining consistent use of an ADHD once-daily stimulant medication regimen. At age 30 years, she graduated with a 4-year degree and gained full-time employment as a project manager for a nonprofit organization. Although Lisa W received positive recognition at work for her dedication and affability, she had problems with planning, meeting deadlines, organization, attention to detail, and follow-up. She received negative feedback from her supervisors in performance reviews, after which she became depressed, had difficulty sleeping, and felt anxious at work. Her husband urged her to seek counseling and her PCP referred her to a therapist who specialized in cognitive-behavioral treatment of ADHD and with whom she learned new strategies for time management and accomplishing tasks more efficiently and effectively. The result was enhanced job performance, reduced anxiety, and improved mood.

Recognizing Atypical Presentation of ADHD in Adult Patients

For decades, it was believed that ADHD was a problem seen almost exclusively in young boys, marked by trouble sitting still, doing schoolwork, following rules, and getting along with others, which tended to resolve with maturation into adulthood. With continued research, this old stereotype has gradually been discarded and replaced with a better understanding of how ADHD symptoms may vary by subtype and persist into adulthood. The hypothetical cases of John Y and Lisa W illustrate how ADHD symptoms may vary greatly

among patients, as well as change and persist across the lifespan. These cases also challenge PCPs to expand their personal vision of what ADHD looks like clinically. Attention-deficit/hyperactivity disorder is now understood to be a highly heritable, chronic, neurodevelopmental disorder that, in most cases, does not resolve with age.⁷⁷⁻⁷⁹ A significant proportion (approximately one-third to one-fourth) of those affected are female^{21,58,80}; in adulthood, the proportion is approximately 40% female.¹⁵ Importantly, clinical presentation gradually changes as the patient develops into adulthood.^{40,50,55,72,81} The contrasting childhood and adult expressions of different ADHD symptom dimensions are shown in Table 1.^{50,55,82} In many adult cases, as in the hypothetical case of John Y, the patients may mistakenly consider their childhood ADHD to have resolved years ago. Even though adults with ADHD may exhibit fewer overt symptoms than children with the disorder, significant functional impairments persist.^{50,55,83} Primary care physicians may misinterpret such adult ADHD symptoms for those of a comorbid psychiatric disorder such as anxiety, depression, or bipolar disorder.⁸⁴ Treatment of the comorbid condition, however, leads to only partial recovery; the persisting symptoms may indicate ADHD.⁵⁶

The case of Lisa W further emphasizes that adolescent and adult patients with ADHD do not always exhibit the stereotypical disruptive, externalizing pattern of behaviors, and that ADHD can occur in patients with high intellectual

functioning⁶⁶ who may appear to be shy or socially withdrawn. These internalizing psychiatric symptoms may also reflect comorbidities such as anxiety disorders and major depression, which are 3- to 4-fold more prevalent in adults with ADHD compared with non-ADHD counterparts.¹⁵

Diagnosis and Management of ADHD From a Lifespan Perspective

With recognition of ADHD as a chronic disorder, the challenge that stands before pediatricians and PCPs who treat adults is to develop the knowledge and skills necessary to recognize and treat ADHD across the patient's life course. For those diagnosed in childhood, particular emphasis should be placed on management plans for crucial developmental transition periods from childhood to adolescence and from adolescence into adulthood to achieve maximal success. Primary care physicians may find that collaborating with and obtaining support from a psychiatrist or behavioral therapist in their community can help them better address the needs of patients in transition or crisis. These are times when external support from parents and school personnel is reduced, cognitive demands and behavioral stressors are increased, and patients may be reevaluating or questioning their ADHD diagnosis and treatment. Moreover, during these periods, patients may need behavioral interventions aimed at helping them meet specific developmental goals, cope with interpersonal crises, and develop age-appropriate symptom awareness and self-management skills.

To facilitate the transition from pediatric to adult care, a consensus among various professional medical organizations⁸⁵ recommends that, for youth with a chronic medical or psychiatric condition, an explicit plan for transitioning to adult care be made by the time the patient reaches age 14 years. Providers should also create and maintain up-to-date medical summaries that are portable. This approach will require pediatricians to lay the groundwork for transition by gradually shifting from parent-managed care to patient-centered care, which includes teaching patients with ADHD to self-monitor their behavior and recognize impairments. Evidence-based cognitive-behavioral treatments may aid in acquiring executive self-management skills and can also reinforce a daily routine for medication self-administration. With these skills in place, adolescents or young adults can transition their care to practitioners treating adult patients. With effective continuity of care there may be a stronger expectation of positive outcomes.

Primary care physicians will be challenged not only to treat adult patients with a childhood ADHD diagnosis, but

Table 1. Child and Adult Expression of ADHD Symptoms^{50,55,82}

Symptom Dimension	Childhood	Adulthood
Hyperactivity	Running, climbing, jumping	Driving at high speed
	Fidgeting	Difficulty waiting in line
	Out of seat	Can't relax
	Excessive talking	Restlessness
Inattention		Excessive talking
		Impatience
	Daydreaming	Procrastination
	Seems not to listen	Late/misses appointments
	Careless mistakes	Careless mistakes
	Works slowly	Disorganization
Impulsivity	Poor reading comprehension	Forgetfulness
	Incomplete assignments	Losing things such as keys, glasses
		Driving accidents and citations
		Verbal impulsivity
	Does not wait turn	Quits jobs
	Interrupts others	Starts multiple projects
	Blurts out answers	Promiscuity
	Does not follow directions	Temper outbursts
	Temper outbursts	Impulsive spending

also to screen for potentially undiagnosed adult cases given that only 25% of adult patients with ADHD were diagnosed in childhood.⁸⁶ An important issue in adult ADHD diagnosis is obtaining valid diagnostic information (Table 2⁵⁰). Primary care physicians can quickly screen adult patients using a 6-item, self-report scale derived from the 18-item World Health Organization's (WHO) Adult ADHD Self-Report Scale (ASRS)⁸⁷ that can be freely accessed via the Internet (Appendices⁸⁷⁻⁸⁹). Other Web-based practice guidelines that can be accessed on the Internet and provide useful tools for clinicians in Canada and Europe include the www.caddra.ca and www.adhdeurope.eu Web sites, respectively.^{90,91} Patients who screen positive for possible ADHD should be referred to a specialist for a full diagnostic evaluation that consists of a clinical interview concerning current and lifetime symptoms and a thorough developmental history, as well as behavioral questionnaires completed by the patient and, if possible and with patient consent, by a secondary informant such as a family member (Table 2⁵⁰). For adults with a confirmed ADHD diagnosis, the importance of the PCP talking with a family member (with patient consent) during follow-up visits to obtain observer input may be helpful because adults with ADHD may have limited awareness of the scope of their symptoms, and their insight into their symptoms may be limited or fragmented. The patient may be aware of restlessness, for example, but may not identify other difficulties that disturb family members, such as impaired social skills or temper outbursts. Table 3 summarizes effective clinical queries and red flags of ADHD-related

functional impairments in adults.^{51,55,87,92} Acquiring this information may reveal functional impairments and symptoms of ADHD that may persist even with a medication regimen. Persistent impairments may necessitate referral to specialized psychiatric treatment or cognitive-behavioral therapy. As they do with younger patients, PCPs who treat adults should plan ahead and proactively anticipate a need for additional supportive care during more challenging life periods, such as those that include increased academic demands, new job, job promotion, marriage, and children as well as for dealing with crisis events such as illness, death, job loss, or divorce. To establish this support framework, PCPs should form working partnerships with local specialist providers and other community resources useful for patients with ADHD (ie, psychiatrists, psychologists, counselors, adult ADHD support groups, ADHD coaches, or organizational professionals). Primary care physicians can direct adult patients to improve self-management and awareness of functional impairments by defining short-term, achievable goals, and maintaining an open-door policy to enhance follow-up and contact, even though the patient may choose not to take medication or engage in behavioral treatment for ADHD. A potential benefit of the PCP's involvement may be increased patient adherence with other concomitant medical treatments.

Conclusion

Attention-deficit/hyperactivity disorder is not limited to childhood but affects many patients throughout their lives. Currently, most adolescents and adults with ADHD do not receive proper treatment of their disorder. Interrupted or inadequate care may result in poor long-term adult outcomes. For children and adults, care can involve medication that reduces symptoms and behavioral interventions, skills training, and psychological counseling and support when needed, particularly during key developmental transition periods. As children with ADHD begin to more regularly transition to adult care, PCPs are being called on to coordinate patient management. Primary care physicians are also being increasingly required to screen for ADHD in undiagnosed adults who are likely to present with complex psychosocial difficulties. Formation of close professional relationships with local mental health specialists and community resources will help PCPs provide patients access to the supportive behavioral and psychiatric care they will occasionally need. Provision of continuous primary care for patients with ADHD may help them better manage symptoms throughout life and particularly during crucial transition points, potentially improving the long-term course.

Table 2. Assessment of Adult ADHD⁵⁰

Assessment Dimension	Content
Clinical interview	Mental status Psychiatric history Medical history Family psychiatric history Objective functional information Educational attainment Employment status Number of jobs fired from or quit Number of marriages/marital conflict Driving citations/accidents Arrests/incarcerations Social activities
ADHD assessment scales, questionnaires	Adult ADHD Self-Report Scale (ASRS) Conners' Adult ADHD Rating Scale (CAARS) Brown Attention Deficit Disorder Scale (BADDs)
Secondary informant (with patient consent)	Spouse, parent, other family member

Table 3. ADHD Interview Queries and Clinically Relevant Symptoms of ADHD in Adults^{51,55,87,92}**Clinical interview questions***Do you...?*

frequently make careless mistakes at work or school?
 find it difficult or uncomfortable to sit through meetings?
 find it difficult to concentrate while doing specific tasks?
 get distracted while doing tasks?
 start multiple projects before finishing one?
 have trouble completing tasks?
 make impulsive purchases?

Do you...?

lose things frequently?
 forget appointments, pay bills late?
 get frustrated easily?
 feel impatient?
 have temper outbursts?
 over-react emotionally or react before thinking?
 have trouble with clutter, hoarding, or disorganization?
 smoke, drink, use marijuana?

Clinically relevant outcomes of untreated/undertreated ADHD in adults^{55,92}

Numerous job changes
 Complaints of residual symptoms during treatment for a mood or anxiety disorder
 Numerous sexual partners, multiple marriages, sexually transmitted infections

Numerous driving citations or accidents
 Difficulty managing finances
 Other people are aware of chronic tardiness, inconsistent performance, and undependable task completion rate

Acknowledgments

Shire Development Inc. provided funding to Ogilvy CommonHealth Scientific Communications (OCHSC) for support in writing and editing this manuscript. Editorial assistance in formatting, proofreading, copy editing, and fact checking was also provided by OCHSC. Bryan Dirks, MD, from Shire Development Inc. also reviewed and edited the manuscript for scientific accuracy. Although Shire Development Inc. was involved in the topic concept and fact checking of information, the content of this manuscript, the ultimate interpretation, and the decision to submit it for publication in *Postgraduate Medicine* were made by the authors independently.

Conflict of Interest Statement

David Goodman, MD, receives/has received research support from McNeil, and Shire Inc.; receives/has received honoraria from McNeil, Shire Inc.; is/has been a speaker for American Professional Society of ADHD and Related Disorders, Audio-Digest Foundation, CME Inc, Medscape, McNeil, Shire Inc., SynerMed Communications, Temple University, Veritas Institute, WebMD; is/has been a consultant for Avacat, Clinical Global Advisors, McNeil, Novartis, Schering-Plough, Shire Inc., Major League Baseball, and Thomson Reuters; and receives royalties from MBL Communications, Inc. Robert Lasser, MD, is an employee of Shire and holds stock and/or stock options in Shire. Thomas Babcock, DO, is an employee of Shire and holds stock and/or stock options in Shire. Michael Pucci, PhD, is an employee of Ogilvy CommonHealth Scientific Communications (OCHSC). OCHSC was funded by

Shire Development Inc. for support in writing and editing this manuscript. Mary Solanto, PhD, has been a speaker for Shire and is a member of Shire's Medical Advisory Board.

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Appendix A 6-item, Adult ADHD Self-Report Scale (ASRS)-based Screener^{87,88}**Adult ADHD Self-Report Scale (ASRS-VI.I) 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?					

Scoring

- Questions 1 to 3: response of "Sometimes", "Often", or "Very Often"
- Questions 4 to 6: response of "Often" or "Very Often"

Answering 4 or more questions with the answers indicated above suggests symptoms highly consistent with ADHD in adults, and further investigation is warranted. High scores on this screening quiz may also be related to anxiety, depression, or mania. These conditions must be ruled out before a diagnosis of ADHD can be made.

ASRS-VI.I Screener © 2003 World Health Organization (WHO). Reprinted with permission of WHO. All rights reserved.

Appendix B. Complete 18-Item Self-Report Checklist^{87,89}

Adult ADHD Self-Report Scale (ASRS-VI.I) 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					

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