### Assessment of Physician Practices in Adult Attention-Deficit/Hyperactivity Disorder

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#### ABSTRACT

**Objective:** Adult attention-deficit/hyperactivity disorder (ADHD) is a common neuropsychiatric disorder, yet only 1 in 10 affected adults receives treatment. The study objective was to assess gaps in knowledge and describe current practice patterns of primary care physicians and psychiatrists in the United States in the management of adult patients with ADHD.

**Method:** Primary care physicians and psychiatrists completed an Internet survey as a needs assessment of customary care related to management of adults with ADHD. Adult clinical case vignettes were followed by practice, confidence, and barrier questions. Survey data were collected from April 15, 2010, to August 22, 2010, and were deidentified and analyzed in aggregate to maintain confidentiality.  $\chi^2$  and *t* tests were used to compare responses of primary care physicians with those of psychiatrists.

Results: The survey was completed by 1,924 physicians: 1,216 primary care physicians and 708 psychiatrists. Fewer primary care physicians than psychiatrists were "extremely confident" in diagnosis (8% vs 28%, respectively, P<.001) and treatment (8% vs 27%, respectively, P < .001). Limited experience with ADHD diagnosis was more of a barrier in primary care than in psychiatry (44% vs 19%, respectively, P<.001). Mean scores on 12 evidence-based guestions were lower for primary care physicians than for psychiatrists (6.1 vs 6.8 correct, respectively, P < .001). Awareness of adult ADHD prevalence was lower among primary care physicians than among psychiatrists (32% vs 47% correct, respectively, P < .001). Fewer primary care physicians than psychiatrists recognized comorbid substance use disorder (76% vs 82%, respectively, P = .002), but more primary care physicians than psychiatrists recognized eating disorders (35% vs 21%, respectively, P < .001).

**Conclusions:** The self-assessment survey results indicate physician practices in primary care and psychiatry differ and show areas in which further education will be useful to improve care for adults with ADHD.

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Submitted: October 28, 2011; accepted February 29, 2012. Published online: August 2, 2012. Corresponding author: David W. Goodman, MD, Department of Psychiatry and Behavioral Sciences, Johns Hopkins University School of Medicine at Green Spring Station, 10751 Falls Road, St 306, Baltimore, MD 21093 (dgoodma4@jhmi.edu). A ssessment and improvement of physician performance in adult attention-deficit/hyperactivity disorder (ADHD) management is important, as the disorder has a prevalence rate of 4.4%, making it a common neuropsychiatric disorder in adults in the United States, second only to major depression.<sup>1</sup> ADHD is marked by poor regulation of attention and behavior, with a broad impact on life functioning related to risks for educational and occupational underachievement, motor vehicle accidents, substance abuse, social dysfunction, and legal difficulties.<sup>2–6</sup> The National Comorbidity Survey Replication, conducted from 2001 to 2003, found that only 1 in 10 adults identified as having ADHD were being treated for their ADHD,<sup>1</sup> even though 45% had been in treatment for other mental health disorders during the previous year. This finding suggests that mental health professionals are often overlooking ADHD in their clinical evaluations.

The current, most widely used system for identification of ADHD in adults is found in the *DSM-IV-TR*, which uses criteria developed for male children.<sup>7</sup> Emerging guidelines developed for adults are based on expert opinion in Canada (Canadian ADHD Resources Alliance),<sup>8</sup> the United Kingdom (National Institute for Health and Clinical Excellence),<sup>9</sup> and Europe (European Network).<sup>10</sup> However, US physicians lack guideline support for adult ADHD management. Until recently, physicians have had little basis for learning how to diagnose and treat ADHD in adults.

In April 2010, we created an Internet survey as a needs assessment of customary care related to management of adults with ADHD. The survey included questions related to "simple" adult ADHD, ADHD in adults with psychiatric comorbidity, and ADHD in adults with medical comorbidity, all typical of adults seen in primary care. The purpose was to assess gaps in knowledge and describe current practice patterns of primary care physicians (PCPs) and psychiatrists in the United States in the management of adult patients with ADHD.

#### METHOD

#### Design

The major survey component was clinical case vignettes of adult patients who were seen in primary care for initial screening and treatment of ADHD (Appendix 1). Previous research demonstrated that clinical case vignettes, when compared with other methods such as patient chart reviews and seeing standardized patients (trained actors who present unannounced to physicians' clinics), provide a valid, cost-effective, and noninvasive method to measure physician practices.<sup>11,12</sup>

Participants answered 14 questions related to the case vignettes, selecting multiple-choice answers. Free text response was not permitted. The best answer choices were designated on the basis of available evidence.<sup>6–9,13–20</sup> The survey included questions about confidence in ADHD management, barriers to optimal care, and respondent demographics. The survey was reviewed by community-based physicians to improve clarity and relevance to the target audience. Medscape is accredited by the Accreditation Council for Continuing Medical Education (CME) to provide CME for physicians and certified this assessment for 0.25 hours of CME credit.

- Limited experience with adult attention-deficit/ hyperactivity disorder (ADHD) diagnosis and treatment is a barrier to adequate care in both primary care and psychiatry practice, and difficulty distinguishing ADHD from other disorders is a significant barrier to ADHD management.
- All patients who present with significant mental health symptoms should be evaluated for ADHD because of the high prevalence rate in the general population and the high rate of comorbid psychiatric disorders (ie, depression, anxiety, and substance use disorders).
- Although awareness of ADHD has grown, further education about adult ADHD will improve patient care by both primary care physicians and psychiatrists.

#### Participants

The survey was available with free online access on the Medscape Web site from April 15, 2010, through April 15, 2011, for credit as a self-assessment.<sup>21</sup> Participants were recruited by e-mailed newsletters to registered members of the health care information site who had previously listed an interest in psychiatry-related CME. Inclusion criteria were free registration at the health care information site as a US physician and completion of the survey as a CME activity. Primary care providers and psychiatrists were selected as the most relevant subgroups of specialists for analysis. To collect participant data, completion of the online survey for CME credit was tracked. All participant response data were deidentified and analyzed in aggregate to maintain the confidentiality. Data included responses from April 15, 2010, through August 22, 2010, from all physician participants in the primary care and psychiatry specialties.

#### Measurements

All statistical analyses were completed with PASW Statistics 18 (SPSS Inc, Chicago, Illinois). Descriptive statistics were used to summarize demographic characteristics of participants and responses. Chi-square and t tests were used to compare responses according to several variables, including PCPs versus psychiatrists.<sup>22</sup> For questions with evidence-based answers, 1 *P* value is shown to compare samples selecting the appropriate response. For questions with no preferred response or questions that were "select all that apply," *P* values show differences between each potential response.

#### RESULTS

#### **Survey Participant Demographics**

Overall, 1,924 US physicians completed the survey for CME credit from April 15, 2010, through August 22, 2010. Of these, 63% (n = 1,216) identified themselves as PCPs and 37% (n = 708) identified themselves as psychiatrists (Table

1). No statistically significant differences among regions were identified; 37% of PCPs and 37% of psychiatrists were from the South, 21% of PCPs and 22% of psychiatrists were from the Northeast, 21% of PCPs and 17% of psychiatrists were from the Midwest, and 20% of PCPs and 23% of psychiatrists were from the West. In clinical practices, 71% of PCPs saw at least 1 adult with ADHD per week, and 59% saw up to 5 per week. Among psychiatrists, 93% saw at least 1 adult with ADHD each week, 60% saw up to 5 per week, and 21% saw up to 10 per week.

#### Confidence, Barriers, and Knowledge of Adult ADHD

Physician confidence in adult ADHD management differed significantly between specialties (Figure 1A–C). Fewer PCPs than psychiatrists (8% vs 28%, respectively, P < .001) were "extremely confident" in diagnosing an adult with ADHD; far more PCPs than psychiatrists were "not confident" (31% vs 7%, respectively, P < .001). Likewise, fewer PCPs than psychiatrists reported that they were "extremely confident" about treatment (8% vs 27%, respectively, P < .001), and more PCPs than psychiatrists considered themselves "not confident" (36% vs 7%, respectively, P < .001). For managing adult ADHD and comorbid cardiovascular disease, even fewer respondents reported that they were "extremely confident" (5% of PCPs vs 13% of psychiatrists).

The greatest barrier to diagnosis among PCPs was limited experience with ADHD diagnosis in adults (44% for PCPs vs 19% for psychiatrists, P < .001) (Table 2). For psychiatrists, the most often reported barrier was difficulty distinguishing ADHD from other disorders, at 40%. PCPs and psychiatrists reported diagnosis in patients who did not exhibit classic symptoms of hyperactivity and impulsivity as a significant barrier (21% for PCPs vs 19% for psychiatrists, P = not significant). Although more than one-fourth of PCPs (28%) have difficulty distinguishing ADHD from other disorders as a barrier to diagnosis, this was the most frequently reported barrier for ADHD management by both groups (53% for PCPs vs 61% for psychiatrists, P=.006). Other barriers were safety concerns regarding pharmacotherapy, stigma associated with diagnosis, and patient adherence to therapy.

Awareness of adult ADHD prevalence at 4% was lower among PCPs versus psychiatrists (32% vs 47%, respectively, P<.001); most respondents overestimated the prevalence (Table 3). Regarding comorbidities in adults with ADHD, overall, 77% knew that depression is frequent and 73% recognized anxiety, with no significant differences between groups. Fewer PCPs than psychiatrists (76% vs 82%, respectively, P=.002) recognized substance use disorder, and more PCPs than psychiatrists (35% vs 21%, respectively, P<.001) recognized eating disorders.

#### Management of Adult ADHD

For the 12 questions with evidence-based responses to adult ADHD management, mean ± SD scores of PCPs

Table 1. Demographics of Physician Survey Participants <sup>a</sup>					
		Primary			
		Care		P	
Demographic	Overall	Physicians	Psychiatrists	Value <sup>b</sup>	
Health care provider specialty	1,924 (100)	1,216 (63)	708 (37)	NA	
Adults with ADHD	1,427	879	548	P < .001	

seen per wk, n				
0	295 (21)	258 (29)	37 (7)	
1-5	849 (59)	521 (59)	328 (60)	
6-10	177 (12)	63 (7)	114 (21)	
11-15	51 (4)	20 (2)	31 (6)	
>15	55 (4)	17 (2)	38 (7)	
Region of the	1,924 (100)	1,216 (63)	708 (37)	NS
United States				
Northeast	411 (21)	254 (21)	157 (22)	
Midwest	378 (20)	257 (21)	121 (17)	
South	707 (37)	444 (37)	263 (37)	
West	408 (21)	246 (20)	162 (23)	
Other/no response	20 (1)	15 (1)	5 (1)	
Access to psychiatrist	NA	633 (72) <sup>c</sup>	NA	NA

<sup>a</sup>Data are presented as n (%) unless otherwise specified.

<sup>b</sup>Significance of difference between primary care and psychiatry groups is shown.

 $c_{n} = 879$ 

for patient referral

Abbreviations: ADHD = attention-deficit/hyperactivity disorder, NA = not applicable, NS = not significant.

were lower compared with those of psychiatrists  $(6.1 \pm 2.1)$ vs  $6.8 \pm 2.2$ , respectively, P<.001). Approximately twothirds of participants screen adults who complain of typical symptoms for ADHD; however, few screen for ADHD in the initial mental health evaluation (22% of PCPs vs 20% of psychiatrists, P < .001) (Table 4). Viewed differently, 80% of psychiatrists were not screening for ADHD in an initial evaluation in which there were presenting symptoms. Few PCPs or psychiatrists reported screening for ADHD when adult patients complained about feeling anxious or depressed (14% for PCPs vs 10% for psychiatrists, P = .008). More PCPs than psychiatrists reported not screening for adult ADHD at all (17% vs 3%, respectively, P<.001). Of those physicians screening for ADHD, most (57% of psychiatrists vs 64% of PCPs, P<.001) used an ADHD rating scale. However, few physicians overall (25%), and fewer PCPs than psychiatrists, conducted an extended interview to ascertain patients' history (20% of PCPs vs 35% of psychiatrists, P < .001).

The patient in case 1 was a 38-year-old man who met criteria for ADHD, was taking no medications, and had a normal electrocardiogram. Fewer PCPs than psychiatrists chose a long-acting stimulant as initial therapy (43% vs 50%, respectively, P < .001) (Table 5). Approximately a quarter of PCPs and psychiatrists chose an immediate-release, short-acting stimulant as initial therapy (27% vs 26%, respectively, P=not significant). As follow-up care, the majority of physicians, but fewer PCPs than psychiatrists, reported that they would schedule an appointment within 3 weeks of initiating therapy (78% vs 94%, respectively, P < .001, combined 1-week and 3-week follow-up). Further, overall, 69% would use a rating scale to monitor symptomatic response at each visit until the patient was stabilized on medication and then would evaluate the patient every 3

# Figure 1. Physician Confidence in Diagnosis, Treatment, and Management of Adult Attention-Deficit/Hyperactivity Disorder (ADHD)<sup>a</sup>





B. Treatment of Adults With ADHD<sup>b</sup>



C. Managing Care of Adults With ADHD and Comorbid Cardiovascular Disease<sup>c</sup>



<sup>a</sup>Differences between primary care physicians and psychiatrists are significant at *P* < .001 for diagnosis, treatment, and management of ADHD/cardiovascular comorbid care.

<sup>b</sup>Primary care physicians: n = 1,145; psychiatrists: n = 600. <sup>c</sup>Primary care physicians: n = 948; psychiatrists: n = 570.

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Fable 2. Physician Survey Participants' Self-Reported Barriers to Optimal Management of
Adult Attention-Defict/Hyperactivity Disorder (ADHD)

	Resp			
		Primary Care		P
Assessment Item	Overall	Physicians	Psychiatrists	Value
Significant barriers to ADHD diagnosis in adults <sup>b</sup>				
Concerns about validity of a diagnosis in patients without hyperactivity and impulsivity	357 (20)	244 (21)	113 (19)	NS
Limited corroborating history from family or close friends	212 (12)	80 (7)	132 (22)	<.001
Difficulty distinguishing ADHD from other disorders	557 (32)	318 (28)	239 (40)	<.001
Limited experience with ADHD diagnosis in adults	619 (36)	503 (44)	116 (19)	<.001
Significant barriers to ADHD management in adults (select all	that apply)			
Difficulty distinguishing ADHD from other conditions	807 (57)	468 (53)	333 (61)	.006
Lack of adherence to prescribed medications	184 (13)	95 (11)	89 (16)	.003
Difficulty gauging response to pharmacotherapy	117 (8)	72 (8)	45 (8)	NS
Safety concerns regarding pharmacotherapy in adult patients	250 (18)	173 (20)	77 (14)	.007
Patient perception of stigma attached to ADHD diagnosis	198 (14)	153 (17)	45 (8)	<.001
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Significance of difference between primary care and psychiatry groups is shown.

<sup>b</sup>Overall: n = 1,745; primary care physicians: n = 1,145; and psychiatrists: n = 600. <sup>c</sup>Overall: n = 1,427; primary care physicians: n = 879; and psychiatrists: n = 548.

Abbreviation: NS = not significant.

#### Table 3. Adult Attention-Deficit/Hyperactivity Disorder (ADHD) Epidemiology Knowledge of Physician Survey Participants

	Respoi	Responses by Specialty, n (%)				
		Primary				
		Care		Р		
Assessment Item	Overall	Physicians	Psychiatrists	Value <sup>a</sup>		
Prevalence of ADHD among adults in the United States (select only 1) <sup>b</sup>						
<1%	82 (5)	49 (5)	33 (5)			
2%	272 (17)	172 (18)	100 (15)			
4%	623 (38)	311 (32)	312 (47)	<.001		
7%	382 (23)	248 (26)	134 (20)			
9%	272 (17)	183 (19)	89 (13)			
Recognition of ADHD co	omorbidity (s	elect all that	apply) <sup>c</sup>			
Anxiety	1,187 (73)	687 (71)	500 (75)	.055		
Depression	1,257 (77)	738 (77)	519 (78)	NS		
Insomnia/sleep disorder	1,001 (61)	598 (62)	403 (61)	NS		
Substance use disorder	1,275 (78)	728 (76)	547 (82)	.002		
Eating disorder	484 (30)	341 (35)	143 (21)	<.001		
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<sup>a</sup>Significance of difference between primary care and psychiatry groups is shown.

<sup>b</sup>Overall: n = 1,631; primary care physicians: n = 963; and psychiatrists: n = 668.

Overall: n = 1,631; primary care physicians: n = 965; and psychiatrists: n = 666.

Abbreviation: NS = not significant.

Symbol:  $\dots = P$  values were not calculated for these variables.

months thereafter. Only 11% of respondents overall opted not to use a rating scale to titrate stimulant dose.

The patient in case 1 had improvement of symptoms but new-onset headache, light-headedness, and palpitations. Fewer PCPs than psychiatrists selected performing a cardiac workup, reducing the stimulant dose, or switching to an alternative agent (33% vs 44%, respectively, P < .001). More PCPs than psychiatrists selected no cardiac workup, reduce the stimulant dose, and monitor side effects (45% vs 28%, respectively) (Table 5). Only 7% of both groups elected to switch to pharmacologic treatment. As a nonpharmacologic strategy for this patient, fewer PCPs than psychiatrists chose environmental restructuring (47% vs 76%, respectively, P<.001), whereas more PCPs than psychiatrists chose psychodynamic psychotherapy (30% vs 8%).

#### Management of Adult ADHD With Comorbidities

The patient in case 2 was a 34-year-old woman who met criteria for ADHD, with hypertension and cardiovascular risk factors. For this patient, more PCPs than psychiatrists recommended treatment with a long-acting stimulant (44% vs 40%, respectively, P < .001). Fewer PCPs than psychiatrists would use a nonstimulant (25% vs 33%, respectively). Relatively fewer PCPs and psychiatrists recommended an antidepressant with known ADHD benefits (19% of PCPs vs 18% of psychiatrists, P =not significant) (Table 5).

For the patient in case 3, a 28-year-old man with symptoms of depression and ADHD, 71% of participants identified "withdrawn, apathetic, and low motivation for pleasurable activities" as symptoms that distinguish depression from ADHD (Table 4). Fewer PCPs than psychiatrists selected antidepressants as initial therapy (39% vs 56%, respectively, P < .001) when further information was presented on recent major depression. More PCPs than psychiatrists selected stimulant therapy to help both depression and ADHD (20% vs 15%, respectively). In addition, 30% of PCPs referred the patient to a psychiatrist for follow-up treatment. Overall, only 10% of participants elected to start treatment with nonstimulant medication.

The patient in case 4 was a 20-year-old student with a history of childhood ADHD who reported getting drunk 2–3 nights a week and smoking marijuana 3 times a week. Most PCPs and psychiatrists selected referral for substance abuse counseling as their initial approach (69% and 64%, respectively, P<.001) (Table 5). However, some PCPs and psychiatrists initially chose treatment with either a long-acting stimulant or nonstimulant (21% vs 17%, respectively, P=.08). Fewer PCPs than psychiatrists started therapy with an antidepressant that has known benefits for ADHD (7% and 16%, respectively). After successful substance abuse treatment, for continuing symptoms of ADHD, most PCPs

	Resp			
		Primary Care		P
Assessment Item	Overall	Physicians	Psychiatrists	Value <sup>a</sup>
Typical screening of an adult patient for ADHD occurs when the patient (select all that apply) <sup>b,c</sup>				
Requests screening for ADHD	535 (37)	324 (37)	211 (39)	NS
Complains of common ADHD symptoms	942 (66)	565 (64)	377 (69)	.024
Has a child, sibling, or parent diagnosed with ADHD	354 (25)	183 (21)	171 (31)	<.001
Complains about feeling anxious or depressed	175 (12)	121 (14)	54 (10)	.008
Presents for an initial mental health evaluation	301 (21)	193 (22)	108 (20)	<.001
I do not screen adult patients for ADHD in my practice	164 (11)	149 (17)	15 (3)	<.001
Symptoms more characteristic of ADHD in adults than in children (select only 1) <sup>d</sup>				
Constantly on the go, as though "driven by a motor"	136 (7)	85 (7)	51 (7)	
Disorganized with inconsistent follow through	1,688 (88)	1,047 (86)	641 (91)	<.001
Hyperactive/impulsive symptoms	100 (5)	84 (7)	16 (2)	
Approach to initial screening of adult patient suspected to have ADHD (select only 1) <sup>d</sup>				
Conduct extended life history interview	490 (25)	240 (20)	250 (35)	
Interview third party about current/past projects	94 (5)	61 (5)	33 (5)	
Give a trial of psychostimulant to observe a response	49 (3)	34 (3)	15 (2)	
Refer for neuropsychological testing	114 (6)	105 (9)	9(1)	
Use a rating scale for current ADHD symptoms	1,177 (61)	776 (64)	401 (57)	<.001
History that indicates a diagnosis of depression rather than ADHD (select only 1) <sup>e</sup>				
Tendency to avoid activities that others tell the patient he or she has an aptitude for	145 (9)	97 (10)	48 (7)	
Withdrawn, apathetic, low motivation for pleasurable activities	1,188 (71)	697 (70)	491 (73)	NS
Level of impairment related to low interest and energy	141 (8)	84 (8)	57 (8)	
Sleep disruption	202 (12)	121 (12)	81 (12)	

Table 4. Adult Attention-Deficit/Hyperactivity Disorder (ADHD) Screening Practices of Physician Survey Participants

<sup>a</sup>Difference between primary care and psychiatry groups is shown for the most appropriate response; bolding indicates the most appropriate answer. <sup>b</sup>This question does not have a most appropriate response; therefore, *P* values are shown for each.

°Overall: n = 1,427; primary care physicians: n = 881; and psychiatrists: n = 546.

<sup>d</sup>Overall: n = 1,924; primary care physicians: n = 1,216; and psychiatrists: n = 708.

eOverall: n = 1,676; primary care physicians: n = 999; and psychiatrists: n = 677.

Abbreviation: NS = not significant.

and psychiatrists chose to start a long-acting stimulant medication (72% and 78%, respectively, P < .001). Relatively few PCPs or psychiatrists selected treatment with a short-acting stimulant (9% and 4%, respectively) or chose a medication that required dosing 2 to 3 times per day (5% for both groups). As nonpharmacologic strategies, PCPs and psychiatrists recommended cognitive-behavioral therapy and school accommodations (42% vs 41%, respectively, P=.028), and 41% of both groups would refer the patient to an educational support group and substance abuse counseling.

#### DISCUSSION

Participation of nearly 2,000 physicians in this needs assessment survey demonstrates strong interest in clinical practice to diagnose and treat ADHD in adults. The results provide insights on customary care. Survey respondents are active in patient care, and the majority of respondents see up to 5 adults with ADHD each week. PCPs were significantly less confident about diagnosing and treating ADHD in adults and managing patients' cardiovascular risks compared with psychiatrists. Significant barriers to the optimal management of ADHD in adults included ability to recognize and screen for ADHD in adults in a setting of common clinical complexity. PCPs expressed concern about making a diagnosis in patients who do not display classic childhood symptoms of hyperactivity and impulsivity.<sup>23</sup> PCPs identified limited experience with ADHD in adults as the most significant barrier to diagnosis.

PCPs scored significantly lower than psychiatrists on evidence-based questions in the survey. Nearly half of PCPs and one-third of psychiatrists surveyed overestimated the prevalence of ADHD in adults above 4%.<sup>1</sup> The high prevalence rate of adult ADHD should prompt an assessment during every initial adult psychiatric evaluation. However, survey results show that high percentages of both PCPs and psychiatrists assess for ADHD only when an adult complains of common ADHD symptoms. This finding reflects complaint-focused evaluations without further explorations of coexisting disorders, possibly a function of training or lack of time for a full evaluation.

Although ADHD is known to be highly heritable,<sup>24</sup> fewer PCPs than psychiatrists surveyed screen an adult for ADHD when a family member has ADHD. Significantly more PCPs than psychiatrists use a rating scale as an initial screening step; however, psychiatrists are significantly more likely to conduct an extended life history interview. This finding may relate to more extensive training that psychiatrists receive in mental health interview techniques, reimbursement issues, or time limitations faced in primary care settings. These patterns are similar to those found in a recent survey of the management of childhood ADHD.<sup>25</sup>

Identification of ADHD in adults requires recognition of commonly occurring comorbidities. Few PCPs and significantly fewer psychiatrists chose to screen a patient for ADHD when the patient complained of feeling anxious or depressed. This result agrees with published findings<sup>26</sup> that show greater comfort with diagnosing depression and anxiety than ADHD. Our results show that

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#### Table 5. Adult Attention-Deficit/Hyperactivity Disorder (ADHD) Management Choices of Physician Survey Participants

	Responses by Specialty, n (%)			
		Primary Care		P
Assessment Item	Overall	Physicians	Psychiatrists	Value <sup>a</sup>
Case 1: A 38-year-old man reports trouble at work, missed deadlines in childhood, current inability t	o complete pro	ojects, trouble con	ncentrating, mi	splacing
items, forgetting family activities, and tension at home with family. There are no significant med	lical problems	, and he is not t	aking any med	ications.
In the second se				
Initial treatment approach <sup>o</sup>	508 (26)	226 (27)	192 (26)	
Long-acting stimulant	871 (45)	520(27) 517(43)	354(50)	< 001
Antidepressant with known ADHD benefit	316 (16)	238 (20)	78 (11)	<.001
Nonstimulant	229 (12)	135 (11)	94 (13)	
Next approach if this patient was started on a long-acting stimulant and noticed improvement but	. ,			
developed headaches, light-headedness, and palpitations <sup>b</sup>				
Cardiac workup, no change in dose given clinical response	91 (5)	56 (5)	35 (5)	
Cardiac workup, reduce stimulant dose	247 (13)	132 (11)	115 (16)	
No cardiac workup, reduce stimulant dose, and monitor side effects	746 (39)	550 (45)	196 (28)	. 001
Cardiac workup, reduce stimulant dose, or change to alternative agent	709 (37)	396 (33)	313 (44)	<.001
Vonnharmacologic strategies <sup>b</sup>	131 (7)	82(7)	49 (7)	
Psychodynamic psychotherapy	426 (22)	370 (30)	56 (8)	
Environmental restructuring	1,110 (58)	569 (47)	541 (76)	<.001
Relapse prevention techniques	109 (6)	79 (6)	30 (4)	
Deep breathing and relaxation techniques	167 (9)	120 (10)	47 (7)	
I would not recommend a nonpharmacologic strategy	112 (6)	78 (6)	34 (5)	
Follow-up scheduling after initial therapy <sup>b</sup>				
l wk	549 (29)	267 (22)	282 (40)	0.01
3 WK	1,067 (55)	687 (56)	380 (54)	<.001
6 WK	258 (13)	221 (18)	37 (5)	
2 1110 Use of a rating scale to monitor symptom progress <sup>b</sup>	30(3)	41 (3)	9(1)	
Each visit until stabilized, then every 3 mo	1,325 (69)	840 (69)	485 (69)	.401
At the initial visit and if the patient's symptoms return	161 (8)	98 (8)	63 (9)	
At each visit until symptoms have resolved by 50%	230 (12)	154 (13)	76 (11)	
Would not use; rating scales are not particularly helpful when titrating medication dose	208 (11)	124 (10)	84 (12)	
Case 2: A 34-year-old woman meets all criteria for ADHD and has well-controlled hypertension and	cardiovascula	r risk factors		
Initial treatment approach <sup>c</sup>				
An anxiolytic	75 (4)	56 (5)	19 (3)	
A nonstimulant	482 (28)	257 (25)	225 (33)	
An antidepressant with known benefits for ADHD	318 (19)	198 (19)	120 (18)	
A short-acting stimulant	112(7) 728(42)	63 (6) 456 (44)	49(7)	< 001
Case 3: A 28 year old man with symptoms of depression and ADHD	728 (42)	430 (44)	272 (40)	<.001
Linitial treatment approach <sup>d</sup>				
Start an antidepressant	763 (46)	388 (39)	375 (56)	< 001
Start stimulant treatment to help with depression and ADHD	298 (18)	200 (20)	98 (15)	1.001
Start a nonstimulant for depression and ADHD	169 (10)	106 (11)	63 (9)	
Refer to a psychiatrist	434 (26)	297 (30)	137 (20)	
Case 4: A 20-year-old college sophomore with a history of ADHD in childhood and current substan	ce abuse of alc	ohol and marijua	ana	
Initial treatment approach <sup>e</sup>				
Start a long-acting stimulant or a nonstimulant	323 (20)	206 (21)	117 (17)	
Refer for educational evaluation	55 (3)	38 (4)	17 (3)	
Start an antidepressant with known benefits for ADHD	169 (10)	65 (7)	104 (16)	0.01
Refer for substance abuse counseling	1,104 (67)	672 (69)	432 (64)	<.001
Approach after elimination of substance abuse Start a short acting stimulant once a day	117(7)	87 (0)	30 (4)	
Start a short-acting stimulant 2 or 3 times a day	77(5)	45 (5)	32(5)	
Start a long-acting stimulant or nonstimulant	1,210 (74)	690 (72)	520 (78)	<.001
Start a combination of short-acting and long-acting stimulants	54 (3)	44 (5)	10(1)	
Refer for substance abuse counseling	55 (3)	24 (2)	31 (5)	
Refer to a psychiatrist	118 (7)	73 (8)	45 (7)	
Nonpharmacologic recommendations <sup>t</sup>				
Social skills groups and school accommodations	145 (9)	95 (10)	50 (7)	
Cognitive-behavioral therapy and school accommodations	675 (41)	403 (42)	272 (41)	.028
violiting with a nonnework coach Educational support group and substance abuse counseling	144 (9) 667 (41)	70(7) 395(41)	74(11) 272(41)	
BDifference het voor meiner ware en die such ister andere is als our fan the most annen niete norman	. holding in di	575 (41)	2/2 (41)	

<sup>b</sup>Overall: n = 1,924; primary care physicians: n = 1,216; and psychiatrists: n = 708. The *P* value reflects the combined 1- and 3-week follow-up numbers for For the system of the system

<sup>f</sup>Overall: n = 1,631; primary care physicians: n = 963; and psychiatrists: n = 668.

physicians are even less comfortable with treatment choices. Significantly fewer PCPs than psychiatrists recommended antidepressants. For the patient with ADHD and comorbid major depression, the majority of PCPs selected treatments for ADHD, whereas experts recommend management of the mood disorder first. A recent study<sup>27</sup> indicates that a majority of adults with ADHD in the community may have a major Axis I comorbid condition that should be managed carefully in order for ADHD pharmacotherapy to be effective. This finding reflects the need for clear, evidence-based clinical strategies for PCPs to facilitate rapid support for patients with such comorbid presentations.

The US Food and Drug Administration approved 4 long-acting stimulant medications and 1 nonstimulant medication for the treatment of ADHD in adults. However, our results show that one-fourth of both PCPs and psychiatrists would use an unapproved, immediate-release stimulant as initial treatment. Further, significantly more PCPs than psychiatrists would use a short-acting stimulant to treat an adult with ADHD and substance use disorder. This finding reveals poor understanding of potential for abuse of immediate-release stimulants. It may reflect health insurance provider preferences for less costly generic agents or patient preference. Referral for substance abuse counseling is the correct approach for a patient with active substance abuse and ADHD and was chosen by a large majority of both PCP and psychiatrist survey respondents.

Physician survey responses show confusion about how to address cardiovascular treatment side effects of stimulants. Significantly fewer PCPs than psychiatrists selected performing a cardiovascular workup for these symptoms. This result may reflect a lack of comfort on the part of psychiatrists in distinguishing cardiac symptoms that require a workup from those that do not. The survey results indicate a possible lack of awareness that some nonstimulants can also have cardiovascular effects.<sup>28</sup>

A number of studies correlate adherence to medications for chronic conditions with good therapeutic alliance, effective communication, and close follow-up.<sup>29–31</sup> Most respondents, both PCPs and psychiatrists, intended to follow up within 3 weeks of the initial prescription, an unexpectedly good result. Actual follow-up care of pediatric patients taking medication for ADHD is low, at only 40%, according to a report of Healthcare Effectiveness Data and Information Set performance measures.<sup>32</sup> Only about onefourth of PCPs follow up with their patients with ADHD within the recommended 30 days of initiating treatment, and only half of the physicians reported routine follow-up visits for children diagnosed with ADHD.<sup>32</sup>

Our results show a gap in follow-up linkage to care. More than one-fourth of PCPs do not have access to referral to specialty care for adults with symptoms of ADHD. Access to specialists did not differ significantly among US geographic regions, and access showed improvement over findings of the 2004–2005 survey of PCPs, in which two-thirds of 3,400 respondents were unable to obtain the outpatient mental health services they needed, with large majorities citing a shortage of specialists or lack of or inadequate insurance coverage.  $^{\rm 33}$ 

#### Limitations and Strengths of the Study

The participants in this survey were self-selected and thus potentially biased toward an interest in ADHD or a perceived need to update practices. Another limitation is use of self-reported physician data, which might be biased toward socially desirable responses. Strengths of the study include participation in the online survey by a large study group, participation by both PCPs and psychiatrists, and inclusion of patient case studies with comorbidities of ADHD.

In conclusion, the self-assessment survey results indicate a growing awareness of adult ADHD among PCPs and psychiatrists. Levels of confidence in diagnosis, treatment, and management have improved, but considerable gaps remain among both PCPs and psychiatrists regarding information about the disease state, treatment, and management. The growing public awareness necessitates that all physicians be able to identify adult ADHD and either institute recommended treatments or refer the patient to specialist care. This survey represents the current state of adult ADHD care and the need for continued physician education in the specific areas of deficiencies.

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Appendix 1 follows this article.



### **Supplementary Material**

Article Title: Assessment of Physician Practices in Adult Attention-Deficit/Hyperactivity Disorder

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#### List of Supplementary Material for the article

1. <u>Appendix 1</u> Adult Attention-Deficit/Hyperactivity Disorder (ADHD) Clinical Practice Assessment Survey

#### **Disclaimer**

This Supplementary Material has been provided by the author(s) as an enhancement to the published article. It has been approved by peer review; however, it has undergone neither editing nor formatting by in-house editorial staff. The material is presented in the manner supplied by the author.

### Appendix 1. Adult Attention Deficit/Hyperactivity Disorder (ADHD) Clinical Practice Assessment Survey

*Case #1:* A 38-year-old man presents for a check-up to see if there could be a medical reason for increasing problems he is having in dealing with work and family issues. He works in advertising at a large company. When interviewed, he reports the following: He recently was put on probation at work for inability to complete projects in a timely and error-free manner. He has trouble concentrating at work because it is so boring; then he gets behind because he puts off the really "mind-numbing" tasks in projects. He has always put off anything that is just not interesting and it has worked out, even though in school his grades suffered because he missed deadlines. He prefers the excitement of giving presentations over writing up all the materials that lead up to the presentations. His habit of misplacing items like his keys and forgetting family activities has caused tension recently with his wife. His patience has worn thin with his really hyper 12-year-old son. He complains that he is now worrying about work outcomes and getting along with his wife. You perform a physical examination that is unremarkable. He reports no significant medical problems, only a tonsillectomy as a child and a broken leg. He is not taking any medications. A review of systems is unremarkable. His ECG is normal.

### 1. Which of the Following is More Characteristic of Presenting Attention-Deficit/Hyperactivity Disorder (ADHD) Symptoms in Adults Than in Children? (Select Only 1)

- A. Constantly on the go, as though "driven by a motor"
- B. Disorganized, with inconsistent follow-through
- C. Hyperactive/impulsive symptoms

#### 2. How Would you Initially Screen This Patient for ADHD? (Select Only 1)

- A. Conduct an extended life history interview
- B. Interview third-party sources about current or past symptoms
- C. Give a trial of a psychostimulant to observe a response
- D. Refer for neuropsychological testing
- E. Use a rating scale for current ADHD symptoms

#### 3. How Confident are you in Diagnosing an Adult Patient With ADHD? (Select Only 1)

- A. Not at all confident
- B. Somewhat confident
- C. Extremely confident

## 4. Which of the Following is the Most Significant Barrier to Diagnosis of ADHD in Adults? (Select Only 1)

- A. Concerns about the validity of an ADHD diagnosis in patients without hyperactivity and impulsivity
- B. Limited corroborating history from family or close friends
- C. Difficulty distinguishing ADHD from other disorders
- D. Limited experience with ADHD diagnosis in adults

## 5. What Pharmacologic Treatment Approach is Recommended for This Patient as the First Treatment? (Select Only 1)

- A. A short-acting stimulant
- B. A long-acting stimulant
- C. An antidepressant with known benefits for ADHD
- D. A nonstimulant

#### 6. When Would you Follow up With This Patient? (Select Only 1)

- A. 1 week
- B. 3 weeks
- C. 6 weeks
- D. 2 months

# 7. Assuming you had the Patient Self-Rate his or her ADHD Symptoms Before Starting Treatment, how Often Would you Use a Rating Scale to Track Symptom Progress When Treating ADHD?(Select Only 1)

- A. At each visit until stabilized and then every 3 months
- B. At the initial visit and if the patient's symptoms return
- C. At each visit until the patient's symptoms have resolved by 50%
- D. Would not use; rating scales are not particularly helpful when titrating medication dose

8. If the Patient had Been Started on a Long-Acting Stimulant and Noticed Improvement but Reported Having new-Onset Headaches, Intermittent Lightheadedness, and Discomforting Palpitations (With no History of These Symptoms), What Would be Your Next Step for This Patient? (Select Only 1)

- A. Cardiac work up and no change in dose given clinical response
- B. Cardiac work up and reduce the stimulant dose
- C. No cardiac work up, reduce stimulant dose and monitor side effects
- D. Cardiac work up and reduce stimulant dose or change to alternative agent
- E. Cardiac work up, switch to nonpharmacologic treatment

#### 9. What Nonpharmacologic Strategies Could you Recommend for This Patient? (Select Only 1)

- A. Psychodynamic psychotherapy
- B. Environmental restructuring
- C. Relapse prevention techniques
- D. Deep breathing and relaxation techniques

#### 10. How Confident are you in Treating Adult Patients With ADHD? (Select Only 1)

- A. Not at all confident
- B. Somewhat confident
- C. Extremely confident

*Case #2:* A 34-year-old woman who has recently moved to the area presents to your office with her records from her previous physician. She is concerned that "she just can't seem to get on top of things, or get around to, stick with, or complete what she wants to." The records reveal a history of high cholesterol with recommended diet changes and a recent diagnosis of hypertension. When asked about family history, she reveals her father was treated for atrial fibrillation at age 67, and 2 of her grandparents died of "heart attacks" in their 70s. Her physical examination and vital signs are normal. Her blood pressure is under control with hydrochlorothiazide. An ECG is normal. You screen her for ADHD and she meets all criteria, including childhood onset and lifelong impairments. She wants to start medication immediately, saying that she thinks it would make a profound improvement in her life.

#### 11. What Treatment Approach Would you Use for This Patient? (Select Only 1)

- A. An anxiolytic
- B. A nonstimulant
- C. An antidepressant with known benefits for ADHD
- D. A short-acting stimulant
- E. A long-acting stimulant

### 12. How Confident are you in Managing the Care of an Adult Patient With ADHD and Cardiovascular Disease? (Select Only 1)

- A. Not at all confident
- B. Somewhat confident
- C. Extremely confident

*Case #3:* A 28-year-old man presents for the first time to your office seeming distressed and disheartened. When you start the patient interview, he says, "I just can't seem to get it together. All my friends are done with their degrees or settling into careers, and I can't seem to make it work. I've had so many disappointments–losing my job several weeks ago just makes me want to quit trying." He reports he had bouts of depression in his teens but thought he had grown out of the problem. Further into the interview, he mentions problems with focusing, follow-through, accuracy with details, forgetfulness, misplacing things, and organizing his daily activities and physical space. He feels sad, is having difficulty sleeping well, feels stuck and continues to ruminate about his poor performance, has

withdrawn socially, and has to force himself to "go through the motions" of each day. When he was a child, his teachers and parents had concerns back to second grade about his ability to follow through when he was asked to do schoolwork or minor chores, as well as his ability to pay attention in lessons and conversations.

## 13. Which of the Following Aspects of his History Could Help Clarify if he is Suffering From Depression, Rather Than Demoralization due to Chronic ADHD Challenges? (Select Only 1)

A. Tendency to avoid activities others tell him he has aptitude for

- B. Withdrawn, apathetic, and low motivation for pleasurable activities
- C. Level of impairment related to low interest and energy

D. Sleep disruption

*Case #3 (cont.):* Talking more with the patient and obtaining collateral information from his wife, you learn that he has been making fatalistic and hopeless comments like "What's the point of even trying" and "There's no hope for me" frequently over the past few weeks. When asked, he is having difficulty seeing a future for himself and wishes he would die in his sleep. You determine that he meets the criteria for lifelong ADHD and recently has entered into major depression.

#### 14. What Would you do at This Time? (Select Only 1)

A. Start an antidepressant

B. Start stimulant treatment, because it will help both depression and ADHD symptoms

- C. Start a nonstimulant for ADHD, because it will help both depression and ADHD symptoms
- D. Refer to a psychiatrist

*Case #4:* A 20-year-old college sophomore in good physical health presents asking for "Ritalin® or something that will get me more focused." She says her friend uses Ritalin and thinks she should take it to get her schoolwork done and "to stop being so spacey." She reports getting drunk at college parties "2 or 3 nights a week" and smoking marijuana about 3 times a week since coming to school a year ago. She had planned to cut down on both pot and alcohol a few times in the past year, but has not been able to. She admits to missing some classes because of a hangover and received a driving while intoxicated citation 6 months ago. Her physical examination is unremarkable, and she is not taking any medications. You find that she clearly meets the criteria for ADHD with impairing symptoms in childhood.

#### 15. Which of the Following Would be Your Next Step? (Select Only 1)

- A. Start a long-acting stimulant or a nonstimulant
- B. Refer for educational evaluation
- C. Start an antidepressant with known benefits for ADHD
- D. Refer for substance abuse counseling

*Case #4 (cont.):* During follow-up visits over 6 months, she reports that she has eliminated the use of marijuana and has been able to limit alcohol to 2 drinks per occasion. Results of a urine drug screen including marijuana came back negative. She still reports significant cognitive symptoms consistent with ADHD.

#### 16. Which of the Following Would you do now? (Select Only 1)

- A. Start a short-acting stimulant once a day
- B. Start a short-acting stimulant 2 or 3 times a day
- C. Start a long-acting stimulant or nonstimulant
- D. Start a combination of short- and long-acting stimulants
- E. Refer for substance abuse counseling
- F. Refer to a psychiatrist

### 17. Which of the Following Nonpharmacologic Recommendations Would you be Most Likely to Recommend for This Patient now? (Select Only 1)

- A. Social skills groups and school accommodations
- B. Cognitive behavioral therapy and school accommodations
- C. Working with a homework "coach "
- D. Educational support group and substance abuse counseling

## 18. Which of the Following is the Most Significant Barrier to the Optimal Management of ADHD in Adults? (Select Only 1)

- A. Difficulty clinically distinguishing ADHD from other conditions
- B. Lack of adherence to prescribed medications
- C. Difficulty gauging therapeutic response to pharmacotherapy
- D. Safety concerns regarding pharmacotherapy in adult patients
- E. Patient perception of stigma attached to ADHD diagnosis

#### 19. Do you Have Reasonable Access to a Psychiatrist for Patient Referral?(Select Only 1)

- A. Yes
- B. No

# 20. What is the Chance That an Adult in the United States Could Have a Lifelong History of ADHD Symptoms, Meeting Criteria for Adult ADHD? (Select Only 1)

- A. <1%
- **B**. 2%
- C. 4%
- D. 7%
- E. 9%

#### 21. When do you Typically Screen an Adult Patient for ADHD? (Select all That Apply)

- A. When the patient requests screening for ADHD
- B. When the patient complains of common ADHD symptoms
- C. When the patient has a child, sibling, or parent who has been diagnosed with ADHD
- D. When the patient complains about feeling anxious or depressed
- E. When a new patient presents for an initial mental health evaluation
- F. I do not screen adult patients for ADHD in my practice

#### 22. Which of the Following may be Related to ADHD in Adults? (Select Only 1)

- A. Anxiety
- B. Depression
- C. Insomnia/sleep disorder
- D. Substance use disorder
- E. Eating disorder

#### 23. Please Indicate how Relevant These Self-Assessment Questions are to Your Practice: Approximately how Many Adult Patients With ADHD do you see Each Week? (Select Only 1)

- A. 0
- B. 1–5
- C. 6–10
- D. 11–15

#### 24. What is Your Degree? [MD/DO; PA; NP; RN; Other]

25. What is Your Specialty? [Psychiatry; Internal Medicine; Family Medicine; Other]