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CME PSYCHCAST™

BEST PRACTICES IN ADULT ADHD: EPIDEMIOLOGY, IMPAIRMENTS, AND DIFFERENTIAL DIAGNOSIS

FACULTY

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CME]

ABSTRACT

Attention-deficit/hyperactivity disorder (ADHD) is commonly thought to be a pediatric disorder whose symptoms attenuate or disappear in adulthood. In fact, ~4% of adults in the United States have ADHD, and many of these adults are unaware that they have the disorder. Because symptoms of ADHD manifest differently in adults and children, physicians who are familiar with childhood ADHD have difficulty identifying the disorder in adults. Adults with ADHD themselves may be poor informants about their symptoms and impairments. A high prevalence of mood and other co-morbid disorders in adults with ADHD can also complicate diagnosis and treatment. Adults with ADHD experience high rates of anxiety disorders, mood disorders, substance use disorders, and impulse disorders. Adult ADHD is related to impairments in executive functioning and adaptive functioning; these patients have unique deficits related to their roles as parents, caregivers, and employees. Physicians should use impairments to guide treatment design. Early identification and treatment of ADHD can alter the developmental course of co-morbid disorders. Unfortunately, metrics for impairment in adult ADHD are still in their infancy.

This Expert Roundtable PsychCast™ represents part 1 of a 3-part PsychCast™ series on adult ADHD led by Lenard A. Adler, MD. In this activity, Thomas J. Spencer, MD, reviews the epidemiology of adult ADHD in the US and around the world; Mark A. Stein, PhD, reviews data on the impairments resulting from adult ADHD; and Jeffrey H. Newcorn, MD, discusses the differential diagnosis of adult ADHD and common co-morbidities.



This activity is jointly sponsored by the Mount Sinai School of Medicine and MBL Communications, Inc.



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CME Course Director

This activity has been peer reviewed and approved by Eric Hollander, MD, Chair and Professor of Psychiatry at the Mount Sinai School of Medicine. Review Date: July 22, 2008.

Faculty Affiliations

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Faculty Disclosure Policy Statement

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Faculty Disclosures

Dr. Adler is a consultant to and on the advisory boards of Abbott, Cephalon, Cortex, Eli Lilly, Novartis, Ortho-McNeil, Janssen, Johnson and Johnson, Merck, New River, Organon, Pfizer, Psychogenics, sanofi-aventis, and Shire; is on the speaker's bureaus of Eli Lilly and Shire; and receives grant/research support from Abbott, Bristol-Myers Squibb, Cephalon, Cortex, Eli Lilly, Janssen, Johnson and Johnson, Merck, National Institute of Drug Abuse, New River, Novartis, Ortho-McNeil, Pfizer, and Shire.

Dr. Newcorn is a consultant to Abbott, Biobehavioral Diagnostics, Eli Lilly, Lupin, Novartis, Ortho-McNeil, Psychogenics, sanofi-aventis, and Shire; and receives research support from Eli Lilly and Ortho-McNeil.

Dr. Spencer is a speaker for Eli Lilly, GlaxoSmithKline, Janssen, Novartis, Ortho-McNeil, and Shire; is on the advisory boards of Cephalon, Eli Lilly, GlaxoSmithKline, Janssen, Novartis, Ortho-McNeil, Pfizer, and Shire; and receives research support from Cephalon, Eli Lilly, GlaxoSmithKline, Janssen, National Institute of Mental Health, Novartis, Ortho-McNeil, Pfizer, and Shire.

Dr. Stein is a consultant/advisor to Abbott, Novartis, and Pfizer; is a speaker for Novartis and Ortho-McNeil; and receives research support from Eli Lilly, National Institute of Mental Health, Organon, Ortho-McNeil, and Pfizer.

Peer Reviewer

Eric Hollander, MD, reports no affiliation with or financial interest in any organization that may pose a conflict of interest.

Learning Objectives

- Review the epidemiology of attention-deficit/hyperactivity disorder (ADHD), including prevalence, persistence, and co-morbid tendencies.
- Explain the common impairments associated with adult ADHD and how to incorporate assessment of impairment levels into the diagnostic process.
- Discuss the differential diagnosis and psychiatric co-morbidities that require consideration in the assessment of adult ADHD.

Statement of Need and Purpose

Although attention-deficit/hyperactivity disorder (ADHD) has traditionally been considered a pediatric disorder, up to 65% of children diagnosed with this disorder continue to display behavioral problems and symptoms of the disorder into their adult lives. ADHD has a deleterious impact upon the daily functioning of these adults, who often demonstrate functional impairments in multiple domains, including educational performance, occupation, and relationships. Accurate diagnosis of ADHD in adults is challenging and requires careful consideration of other psychiatric and medical disorders. The majority of adults with ADHD exhibit at least one co-morbid psychiatric disorder, which may confound a proper ADHD diagnosis. Although adult ADHD is a substantial source of morbidity in both psychiatric and primary care settings, only 25% of adults with this disorder had been diagnosed in childhood or adolescence. Among patients who had not received a prior diagnosis, more than half had complained about ADHD symptoms to other healthcare professionals, without being diagnosed. Recognition and treatment of adult ADHD is often based on upwardly extended models of child and adolescent care. However, differing patterns of co-morbidity and symptom heterogeneity in adults pose new conceptual, diagnostic, and treatment challenges. Although several organizations have issued practice guidelines for the assessment of adults with ADHD, there remains confusion and a continued need to determine best practices with regard to these patients. The expert opinions of clinical and research thought leaders in the field provide insight relevant to clinicians faced with the task of recognizing impairment and diagnosing adult ADHD.

Target Audience: psychiatrists, primary care physicians

Accreditation Statement

This activity has been planned and implemented in accordance with the Essentials and Standards of the Accreditation Council for Continuing Medical Education (ACCME) through the joint sponsorship of the Mount Sinai School of Medicine and MBL Communications, Inc. The Mount Sinai School of Medicine is accredited by the ACCME to provide continuing medical education for physicians.



Credit Designation

The Mount Sinai School of Medicine designates this educational activity for a maximum of 1 *AMA PRA Category 1 Credit(s)*™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

To Receive Credit for this Activity

Listen to the Expert Roundtable PsychCast™, reflect on the information presented, and complete the CME posttest and evaluation. To obtain credit, you should score 70% or better. Early submission of this posttest is encouraged. Please submit this posttest by September 1, 2010 to be eligible for credit.



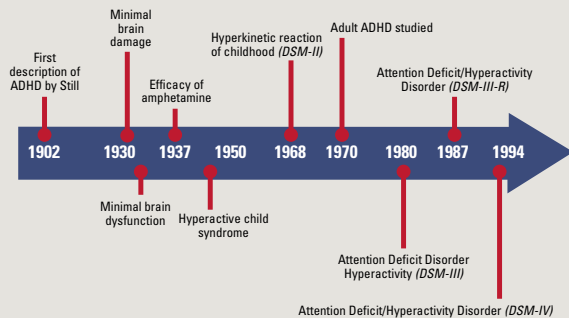
EPIDEMIOLOGY, IMPAIRMENTS, AND DIFFERENTIAL DIAGNOSIS IN ADULT ADHD: *INTRODUCTION*

By Lenard A. Adler, MD

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SLIDE 1

ADHD: Timeline of Definitions



SLIDE 2

ADHD: DSM-IV Criteria⁵

- A. Symptoms must be present for the past 6 months
 - Inattention and/or hyperactivity/impulsivity
- B. Some symptoms must be present before 7 years of age
- C. Some impairment from symptoms must be present in two or more settings (eg, school and home)
- D. Significant impairment: social, academic, or occupational
- E. Symptoms cannot be accounted for by another mental disorder

SLIDE 3

Inattention Symptoms and their Manifestation in Adults

Many adults do not recognize that inattention severely impairs their lives

DSM-IV Symptom Domain

- Difficulty sustaining attention
- Does not listen
- No follow-through
- Cannot organize
- Loses important items
- Easily distractible, forgetful

Common Adult Manifestation

- Poor Management
- Difficulty
- Initiating/completing tasks
- Changing to another task when required
- Multi-tasking
- Procrastination
- Avoids tasks that demand attention
- Adaptive behavior
- Self select lifestyle
- Support staff



THE EPIDEMIOLOGY OF ADULT ADHD

By Thomas J. Spencer, MD

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SLIDE 1

Demographic Correlates of Adult ADHD¹

	<u>%</u>	<u>OR</u>
Sex		
Female	35.9	1.0
Male	64.1	1.8*
Age		
18–29	43.5	1.0
30–44	56.5	1.1
Education (years)		
<12	18.1	1.7*
12	26.7	1.1
13–15	37.3	1.6
≥16	17.9	1.0
Employment		
Working	71.1	1.0
Student	4.9	0.9
Homemaker	4.8	1.2
Retired	0.7	4.8
Other	18.6	2.4*
Race		
Caucasian	73.5	1.0
African-American	6.2	0.3*
Hispanic	15.0	0.7
Other	5.3	0.7
Marital		
Married/cohabitates	52.5	1.0
Separated/divorced	12.1	1.7*
Never married	35.5	1.2

*P=.05. OR=odds ratio.

SLIDE 2

Psychiatric Comorbidities of Adult ADHD¹

	12-Month		Lifetime	
	<u>%</u>	<u>OR</u>	<u>%</u>	<u>OR</u>
Any mood	29.9	3.5*	45.4	3.0*
Any anxiety	47.0	3.4*	59.0	3.2*
Any substance	14.7	2.8*	35.8	2.8*
Any impulse†	35.0	5.6*	69.8	5.9*
Any psychiatric	66.9	4.2*	88.6	6.3*

*P=.05. OR=odds ratio.

† Includes antisocial personality disorder, oppositional defiant disorder, conduct disorder, intermittent explosive disorder, bulimia, and gambling.

SLIDE 3

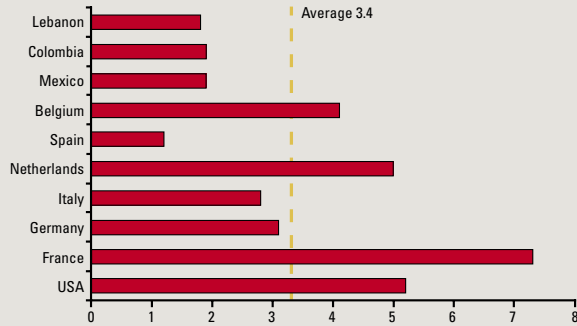
Impairments in 30-Day Functioning Associated With Adult ADHD¹

	<u>% ADHD</u>	<u>% No ADHD</u>	<u>OR</u>
High time out of role	15.8	6.0	2.9*
Low role functioning	15.0	6.1	2.7*
Low social functioning	18.7	5.9	3.7*
Low cognition	23.3	5.5	5.2*
Low mobility	8.3	4.7	1.8
Low self-care	6.1	4.0	1.6

*P=.05. OR=odds ratio.

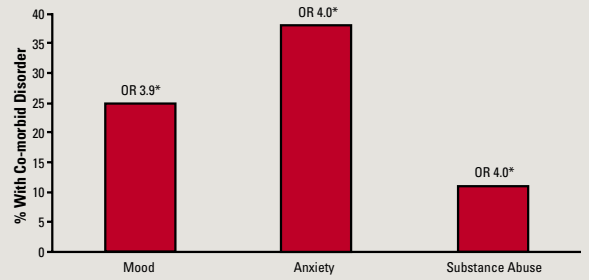
SLIDE 4

Cross-national Prevalence and Correlates of Adult ADHD²



SLIDE 6

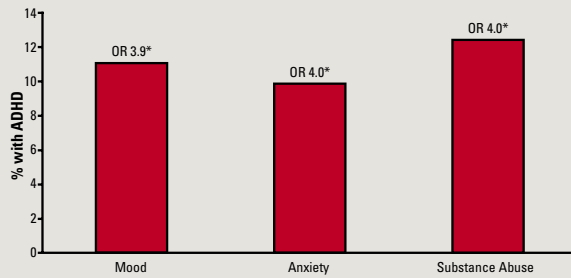
Prevalence of Comorbid Disorders in ADHD²



*P=.05. OR=odds ratio.

SLIDE 5

Prevalence of ADHD in Other Disorders²



*P=.05. OR=odds ratio.

References

1. Kessler RC, Adler L, Barkley R, et al. The prevalence and correlates of adult ADHD in the United States: results from the National Comorbidity Survey Replication. *Am J Psychiatry*. 2006;163(4):716-723.
2. Fayyad J, De Graaf R, Kessler R, et al. Cross-national prevalence and correlates of adult attention-deficit hyperactivity disorder. *Br J Psychiatry*. 2007;190:402-409.



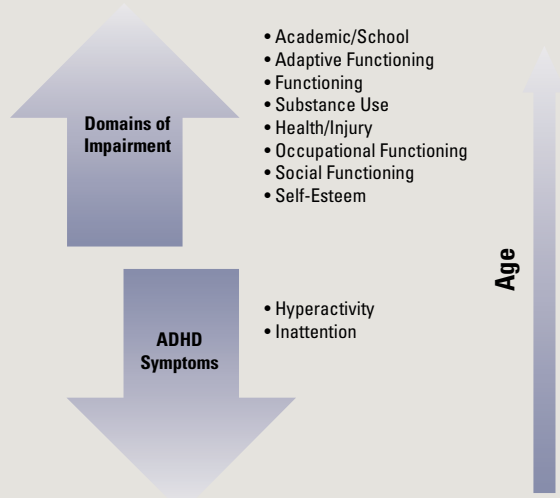
IMPAIRMENT ASSOCIATED WITH ADULT ADHD

By Mark A. Stein, PhD

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SLIDE 1

Adult ADHD: Domains of Impairment



SLIDE 4

Issues Related to Impairment

Criteria for diagnosis

- Symptoms without impairment is not ADHD
- Performance enhancement versus treatment of a psychiatric disorder

Often the chief complaint (eg, cannot keep job, unstable relationships, low self esteem) should be the focus or goal of treatment

- Impairment guides treatment planning
- Patient may not be best informant (“lots of friends”)

Few standardized impairment measures for adults

- Often related to ADHD symptoms plus impairments in executive and adaptive functioning

Overlap of co-morbidity with impairment

SLIDE 2

What Do We Know About Impairment?

Longitudinal studies of children with ADHD, combined type

- Academic and vocational underachievement
- Substance use and abuse
- Early and risky sexual behavior
- Poor adaptive skill performance
- Poor executive functioning
- Less stability in life
- Demoralization and low self esteem
- Caveat: may be less severe for inattentive type

SLIDE 5

Influence of Impairment on Treatment

Consider the setting where impairments occur

Consider duration or time (at work, after work, socially)

Operationalize impairment and monitoring strategy (eg, percentage of bills paid, listening to spouse, improved marital satisfaction, attendance record)

Beyond symptom improvement, is treatment adequate in focus, duration, or intensity to reduce impairment?

SLIDE 3

Chart Review of Presenting Symptoms of ADHD Adults¹

Poor school/work performance

Poor interpersonal skills (few friends, marital dissatisfaction)

Emotional problems (low self-esteem)

Antisocial behavior (substance abuse, crime)

Adaptive deficits

- Less educated than others of cognitive ability
- Poor financial management
- Chaotic personal and family life (divorces, moves)

Reference

1. Murphy K, Barkley RA. Attention deficit hyperactivity disorder adults: comorbidities and adaptive impairments. *Compr Psychiatry*. 1996;37(6):393-401.



CO-MORBIDITY IN ADULTS WITH ADHD

By Jeffrey H. Newcorn, MD

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SLIDE 1
Developmental Trajectory of ADHD Symptoms: From Childhood to Adulthood

The nature and frequency of ADHD symptoms changes with age

Children		Motoric hyperactivity Aggressiveness Low frustration tolerance Impulsiveness
Adolescents		Easily distracted Inattentiveness Shifts activities
Adults		Easily bored Impatient Restlessness

SLIDE 2
Why Focus on Co-morbidity in Adults with ADHD?

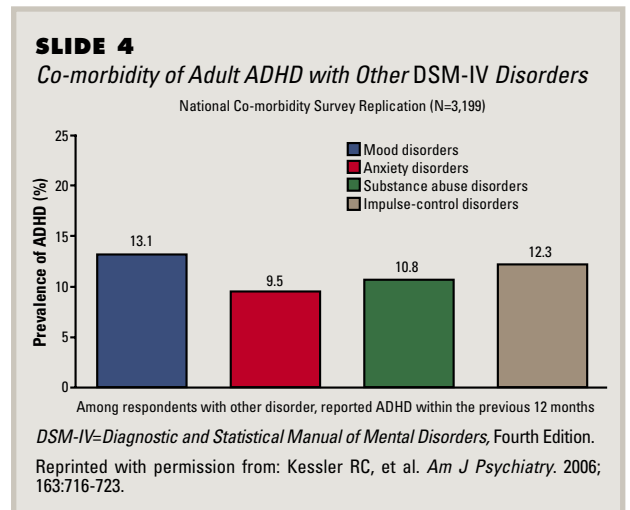
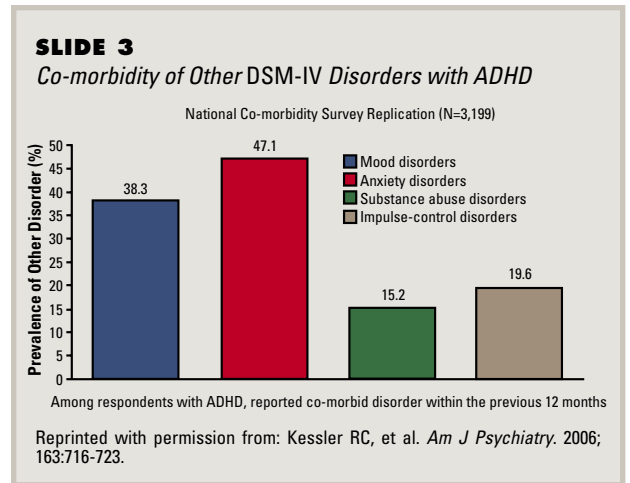
ADHD remains highly co-morbid across the lifespan

The nature of co-morbidity may differ in adolescents and adults with ADHD compared to children with ADHD

Impairment from co-morbidity increases with age

Co-morbidity should inform treatment decisions because:

- Co-morbidity may alter the response to ADHD therapy
- Co-morbid disorders often require treatment independent of, and distinct from, therapy for ADHD
- Co-morbidity may alter the sequence of interventions
- Prevention of co-morbidity should be a goal of treatment



SLIDE 5

Understanding the Relationship Between ADHD and Co-morbid Disorders

Some “co-morbid” disorders may be a direct reflection of ADHD symptoms and their impact (eg, ODD, some anxiety and mood disorders)

Risk for certain “co-morbid” disorders is increased by ADHD (eg, CD, other disorders of impulsivity)

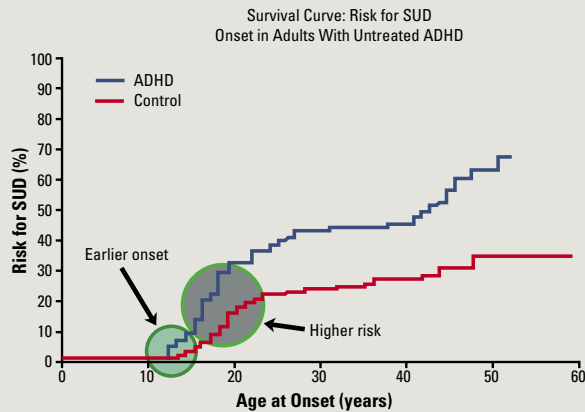
Other “comorbid” disorders are likely genetic variants of ADHD (eg, TS; ADHD+CD; ADHD+BPD)

Several disorders share environmental risk factors with ADHD, so would expect “co-morbidity” (eg, depression, CD)

ODD=oppositional defiant disorder; CD=conduct disorder; TS=Tourette’s syndrome; BPD=borderline personality disorder.

SLIDE 6

ADHD and Substance Use Disorder (SUD)

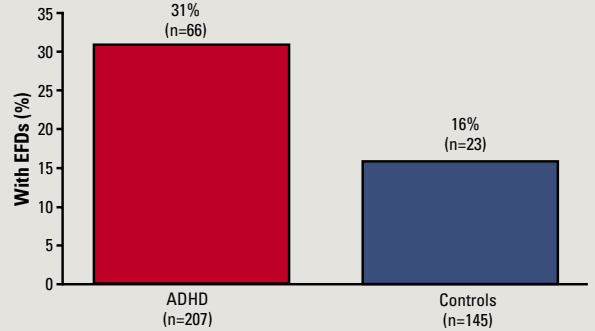


$P \leq .001$.

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SLIDE 7

Executive Function Deficits in Adults With and Without ADHD



EFDs include: sustained attention/vigilance, planning and organization, response inhibition, set shifting and categorization, selective attention and visual scanning, verbal and visual learning, and memory.

EFDs=executive functioning deficits.

Reprinted with permission from: Biederman J, et al. *Am J Psychiatry.* 2006;163:1730-1738.

BEST PRACTICES IN ADULT ADHD: EPIDEMIOLOGY, IMPAIRMENTS, AND DIFFERENTIAL DIAGNOSIS

CME QUESTIONS

- 1. According to the National Co-morbidity Survey-Replication (NCS-R), what percentage of adults in the United States have adult attention-deficit/hyperactivity disorder (ADHD)?**
 - A. 0.1%
 - B. 1.0%
 - C. 4.4%
 - D. 20.0%
- 2. According to the NCS-R, what percentage of adults with ADHD in the US are being treated for ADHD?**
 - A. 1%,
 - B. 11%
 - C. 50%
 - D. 100%
- 3. Which statement is *not* true of adults with ADHD?**
 - A. They have lower educational attainment
 - B. They are less likely to be employed
 - C. They are more likely to be separated or divorced
 - D. More women than men have adult ADHD
- 4. Relative to individuals with ADHD combined type, much less is known about the types and stability of impairments in individuals with the inattentive subtype of ADHD.**
 - A. True
 - B. False
- 5. Measures of impairment used in ADHD studies include:**
 - A. Clinical Global Impressions-Severity scale
 - B. Weiss Functional Impairment Rating Scale
 - C. A measure of executive functioning (eg, BRIEF, Brown scales)
 - D. All of the above
- 6. The goal of treatment in ADHD is to:**
 - A. Reduce symptoms
 - B. Reduce symptoms and impairment
 - C. Reduce symptoms and risk of stimulant abuse
 - D. None of the above
- 7. Frequently occurring co-morbid conditions in adults with ADHD include all of the following except:**
 - A. Antisocial personality disorder
 - B. Mood and anxiety disorders
 - C. Schizophrenia
 - D. Learning disorders
- 8. Which of the following statements regarding co-morbidity of ADHD in adults is most accurate?**
 - A. Co-morbidity is more or less continuously present from childhood to adulthood
 - B. Co-morbidity of mood and anxiety disorders is higher in adults than children
 - C. Rates of substance use disorders continue to increase over time in adults with ADHD
 - D. The rate of co-morbidity in longitudinal studies of children with ADHD followed into adulthood is more or less equal to that seen in cross-sectional studies of newly diagnosed adults with ADHD

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Please circle your answers

1. A B C D 2. A B C D 3. A B C D 4. A B 5. A B C D 6. A B C D 7. A B C D 8. A B C D

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1. Was this activity relevant to your practice? Yes No

2. Were the following objectives met?

A. Review the epidemiology of attention-deficit/hyperactivity disorder (ADHD), including prevalence, persistence, and co-morbid tendencies. Yes No

B. Explain the common impairments associated with adult ADHD and how to incorporate assessment of impairment levels in the diagnostic process. Yes No

C. Discuss the differential diagnosis and psychiatric co-morbidities that require consideration in the assessment of adult ADHD. Yes No

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