

CLINICAL UPDATE

Selected Issues in Psychiatry

POSTER HIGHLIGHTS: MAY 1-5, 2004, NEW YORK, NY

Anticonvulsants and Psychiatric Disorders



Joseph F. Goldberg, MD
Director of Bipolar
Disorders Research
The Zucker Hillside Hospital-
North Shore Long Island
Jewish Health System
Glen Oaks, N.Y.

Dating back to the 1980s, promising clinical results with divalproex and carbamazepine sparked considerable interest in the potential value of

anticonvulsants in the treatment of mood and anxiety disorders. Unfortunately, with only a few exceptions, that promise has not extended to bipolar illness, wherein newer anticonvulsants have generally produced disappointing results. The notable exceptions have been in the subgroup of patients with depression in bipolar illness and in the prevention of relapse, again primarily with respect to depression in bipolar illness.

As a consequence of the disappointing results in bipolar illness, recent controlled clinical studies of anticonvulsants have tended to focus on associated symptoms and conditions, such as craving and binge eating. More positive data from those investigations have provided a new context for clinical evaluation of anticonvulsants as potentially useful therapies for

treatment of specific symptoms or comorbidities of bipolar illness. Curiously, clinical investigation of anticonvulsants in bipolar illness until recently has devoted scant attention to comorbid anxiety, which is extremely common. Encouraging results with agents such as pregabalin and gabapentin have helped renew interest in the use of anticonvulsants for treatment of anxiety symptoms and syndromes, such as panic syndrome and social anxiety disorder.

Within the clinical context described above, investigation of the

anticonvulsant levetiracetam in psychiatric disorders has proceeded at a modest pace. Levetiracetam

“As clinical evaluation moves forward, the performance of a therapy in patients with nonrefractory mood and anxiety disorders provides a better indication of the therapy’s potential role in clinical practice.”

has novel mechanisms of action that center on indirect modulation of the γ -aminobutyric acid system, which has a key role in mood and anxiety disorders. To date, levetiracetam’s data cache has come primarily from preclinical studies, particularly studies related to anxiety disorders.

Several good animal models exist for different types of anxiety disorders, and levetiracetam has demonstrated ability to improve symptoms in several

of these model systems. Less extensive preclinical data exist for depression or manic/depression, primarily because of a lack of good model systems to evaluate candidate therapies.

The following CLINICAL UPDATE summarizes selected poster presentations from a continuing education program held in May. The studies reported by Drossner et al and by Biel et al demonstrate that patients with psychiatric disorders frequently have illnesses that are complicated by medical comorbidity or co-occurring psychiatric disorders. The studies emphasize the importance of comprehensive patient evaluation that encompasses both physical and mental health, followed by development of a clinical management strategy

Continued on page 2

Treatment of Varied Psychiatric Disorders in an Outpatient Setting

Antiepileptic drugs (AEDs) have been used to treat patients with a variety of psychiatric disorders (*Curr Psychiatry Rep.* 2002;4:331-337). The AED levetiracetam has a unique mechanism of action that includes γ -aminobutyric acid (GABA)-ergic modulation, which might be beneficial in the treatment of psychiatric conditions, including anxiety and mood disorders (*Am J Psychiatry.* 2002;159:148, *Int J Neuropsychopharmacol.* 2002;5 [suppl 1]:S57. Abstract, *J Clin Psychiatry.* 2003;64:781-784, *Epilepsy*

Behav. 2001;2:454-459, *Epilepsia.* 2002;43:9-18). The drug also has an established safety profile and a low risk of interaction with concomitant medications (*Pharmacol Ther.* 2000;85:77-85, *Epileptic Disord.* 2003;5 [suppl 1]:S33-S37, *Physicians’ Desk Reference.* Montvale, NJ:Thomson Healthcare; 2004:3230-3233). Clinicians should note that this usage is investigational and not approved by the US Food and Drug Administration.

The efficacy and tolerability of levetiracetam were evaluated in a retrospective chart review of 99

psychiatric outpatients treated with the drug. Patients were included in the review on the basis of receiving levetiracetam for treatment of the specific symptoms of labile mood, anxiety, panic, and agitation, and the secondary symptoms of racing thoughts, irritability, and impulsivity.

The patients ranged from 11 to 72 years of age (mean, 38.6), and 61 of 99 were female. Mood disorders and symptoms for which levetiracetam was prescribed in-

Continued on page 4

Prevalence of ADHD in Adults

Little information exists about the prevalence of attention deficit hyperactivity disorder (ADHD) in adults as compared to children. Current estimates of adult ADHD prevalence rely on longitudinal follow-

up studies of children with ADHD into adulthood, community surveys using samples of convenience, and family studies of childhood ADHD. The studies have resulted

Continued on page 4

Table. Prevalence of ADHD by Type of Diagnostic Criteria

Diagnosis	Broad, %	Narrow, %
Hyperactive-impulsive	3.7	1.1
Inattentive	5.8	0.7
Combined	6.9	1.1
Total	16.4	2.9

Treatment of Mild or Moderate Bipolar Disorder

Patients with bipolar disorder typically require long-term, if not lifelong, treatment that often must address one or more comorbid psychiatric conditions, including anxiety disorders, drug and alcohol abuse, and attention deficit hyperactivity disorder (ADHD)/attention deficit disorder (ADD). In many instances, treatment involves multiple concomitant medications.

Anticonvulsants may have a role in the management of some patients with bipolar disorder. The novel anticonvulsant levetiracetam was evaluated in 109 outpatients with bipolar disorder. The patients were retrospectively identified from records of a large private psychiatric practice. Clinicians should note that this usage is investigational and not approved by the US Food and Drug Administration.

The principal inclusion criterion was prescribed treatment with levetiracetam for mild to moderate bipolar I, bipolar II, or bipolar II subsyndromal (not otherwise specified [NOS]). Patients were excluded if they had been prescribed levetiracetam for bipolar disorder but had been treated for less than 14 days.

The patients' median age was 30 years, and they had an even gender distribution. Most of the patients

had diagnoses of bipolar II (45%) or bipolar II NOS (37%). On average, the patients had two comorbid conditions and were on two concurrent medications. The most common comorbid diagnoses were drug and alcohol abuse, generalized anxiety disorder, and ADHD. Antidepressants were the most frequently prescribed concomitant medication.

In most cases, levetiracetam was the initial medication for bipolar disorder. Levetiracetam treatment duration averaged 76 days and ranged between 14 days and 1 year. The average levetiracetam dose was 1838 mg/day, ranging from 125 to 5250 mg/day. Patient response was assessed retrospectively by means of an electronic medical record (Behavior2004), and symptom severity was tracked by means of a Likert scale.

Approximately half the patients had a good response to treatment, and 20% had partial responses, resulting in significant improvement in overall symptom severity ($P < 0.001$). Separate analysis of selected individual symptoms demonstrated statistically signifi-

cant ($P < 0.01$) improvement in irritability, racing thoughts, mood swings, and extra energy.

Compliance with levetiracetam was good, and the incidence of side effects was low, as 81% of patients reported no adverse effects during treatment with the anticonvulsant. The most common side effect associated with levetiracetam was sedation (9%), which was managed by dosing the affected patients at bedtime. Overall, 8% of patients discontinued treatment, 5% because of lack of efficacy.

The results of this open-label, retrospective study suggest that levetiracetam has promise as an alternative therapy for selected patients with bipolar disorder. Further study is necessary to confirm and clarify the potential role of levetiracetam in the treatment of bipolar disorder. ■

Based on: Deutschman DA, Deutschman DH, Jones J. Levetiracetam: Efficacy, tolerability, safety in bipolar disorder. Poster presented at: 157th Annual Meeting of the American Psychiatric Association; May 1-6, 2004; New York, NY. Abstract NR373.

"Anticonvulsants may have a role in the management of some patients with bipolar disorder."

Prevalence of Medical Comorbidity in Severe Psychiatric Disorders

Comorbid physical and medical problems can complicate management of patients with psychiatric diagnoses. Recognizing the frequency with which these comorbid conditions occur can help clinicians develop clinical management strategies that address patients' physical and mental health issues. A study was undertaken to determine the prevalence of comorbid physical conditions among 77 young adults (16 to 25 years of age) receiving services through a community-based mental health organization. All the patients had severe and persistent psychiatric disorders associated with limited functionality. Primary psychiatric diagnoses included schizophrenia, schizoaffective disorder, psychosis not otherwise specified, bipolar disorder, and major depression.

The patients' physical health status was evaluated by review of medical records and compared with data from an age-matched population without a history of severe or persistent mental health problems. The review showed that 56.5% of the patients were obese

and 71.7% were overweight or obese. Additionally, 64.2% of the patients had hypercholesterolemia, 35.7% had abnormal glucose metabolism, and 12.9% were hypertensive. Rates for all of the comorbid conditions exceeded those of the control group.

The results emphasize the frequency of comorbid medical conditions in patients with primary psychiatric disorders. The patient population came predominantly from low-income and minority backgrounds, which contrasts with many clinical psychiatric practices. Nonetheless, the findings point to the need for comprehensive health evaluations for psychiatric patients and appropriate interventions to address the patients' physical health problems as well as their mental health problems. ■

Based on: Drossner DM, Aschenbrand L, Malamud T. Medical-physical comorbidity in young adults, 16-to-25 year-old age group, with a severe and persistent mental illness. Poster presented at: 157th Annual Meeting of the American Psychiatric Association; May 1-6, 2004; New York, NY. Abstract NR148.

Anticonvulsants and Psychiatric Disorders

Continued from page 1

that addresses the entire spectrum of a patient's health care needs.

Attention deficit hyperactivity disorder (ADHD) has been well documented in children and adolescents, but the prevalence and impact of the condition in adults have not been studied extensively. The report by Faraone and Biederman provide data to suggest that as many as 16% of US adults might be affected by ADHD.

The remaining summaries relate to clinical investigation of levetiracetam in several types of psychiatric disorders. In general, the studies involve few patients, are not controlled, and, in some instances, are based on retro-

spective assessment. Additionally, low starting doses were used in some cases, begging the question of whether higher doses would have resulted in better outcomes, and the studies did not universally employ standard, validated outcome measures. Given these limitations, the reports cannot provide definitive evidence of levetiracetam's safety or efficacy. However, the studies do provide a starting point for open-label investigation of the agent. They also offer evidence of a potential signal of benefit that eventually might lead to further investigation in larger, controlled studies.

From a broader perspective, the studies of levetiracetam can be viewed as a potentially positive signal for use of anticonvulsants in the psychiatric disorders en-

compassed by the studies. As previously stated, many newer anticonvulsants have demonstrated little value in bipolar illness. The data reported herein perhaps will provide encouragement for further investigation, including the management of comorbid symptoms and syndromes often seen in patients with bipolar illness.

Finally, clinical results reported from these studies should be considered with the understanding that new therapies often result from clinical evaluation in patients who have proved to be treatment resistant. As clinical evaluation moves forward, the performance of a therapy in patients with nonrefractory and nonresistant mood and anxiety disorders provides a better indication of the therapy's potential role in clinical practice. ■

This CLINICAL UPDATE was supported by an educational grant from UCB Pharma, Inc. This supplement is based on a faculty interview and poster reviews. The supplement was produced by the medical education department of International Medical News Group. Neither the Editor of CLINICAL PSYCHIATRY NEWS, the Editorial Advisory Board, nor the reporting staff contributed to its content. The opinions expressed in this supplement are those of the faculty and study investigators and do not necessarily reflect the views of the supporter or of the Publisher.

Writer: Charles Bankhead Designer: Lehner & Whyte, Inc.

Faculty Disclosure: Dr Goldberg has received funding for clinical grants from and is a consultant to Abbott Laboratories, AstraZeneca, Bristol-Myers Squibb Company, Eli Lilly and Company, and GlaxoSmithKline. He discusses the off-label use of levetiracetam for the treatment of psychiatric disorders.

Copyright 2004 Elsevier Inc. All rights reserved. No part of this publication may be reproduced or transmitted in any form, by any means, without prior written permission of the Publisher. Elsevier Inc. will not assume responsibility for damages, loss, or claims of any kind arising from or related to the information contained in this publication, including any claims related to the products, drugs, or services mentioned herein.

Evaluation of Therapy for Aggression Disorders

Aggression disorders comprise a variety of conditions that include oppositional defiant disorder (ODD), conduct disorder (CD), and intermittent explosive disorder (IED). Characteristics of these conditions include defiant, disobedient, and hostile behavior toward authority figures, violation of basic rights of others, and serious acts of assault or destruction of property. Estimated prevalence of the conditions ranges between 5% and 10% of the population in general, and higher in adolescent males.

In the search for an effective, well-tolerated therapy for aggression disorders, the novel anticonvulsant levetiracetam was evaluated in 54 outpatients, who were treated for 1 year. Safety and efficacy data were analyzed retrospectively. Patients were included in the analysis if they were prescribed levetiracetam for treatment of ODD, CD, or IED. Patients treated for less than 14 days were excluded. Clinicians should note that this usage is investigational and not approved by the US Food and Drug Administration.

The patients ranged from 5 to 48 years of age (median, 13), and 39 of the patients were male. A majority of the patients (62%) had a diagnosis of ODD. The patients had a variety of comorbid mental conditions, including attention

deficit hyperactivity disorder (ADHD)/attention deficit disorder, bipolar disorder, depression, dysthymia, drug and alcohol abuse, obsessive-compulsive disorder, pervasive developmental disorders, and generalized anxiety.

For most patients, levetiracetam was the first medication trial for aggressive behavior. However, their medical records reflected concomitant use of a wide range of drugs that included antidepressants, ADHD therapies, anticonvulsants, and antipsychotics.

Median duration of levetiracetam therapy was 52 days and ranged between 14 days and 1 year. The levetiracetam dose averaged 1835 mg/day, and the dose range for the population was 125 to 5000 mg/day. An electronic medical record (Behavior2004) was used to assess response to treatment. Symptom severity was followed by means of a Likert scale.

Overall symptom severity improved significantly during treatment with levetiracetam ($P=0.003$). About 45% of the patients had a good response, and an

additional 15% had partial responses. Moreover, significant improvement ($P<0.05$) was seen in the individual symptoms of anger, violence, opposition, and impulsivity.

The only notable adverse effect associated with levetiracetam was sedation, which occurred in 9% of patients. The side effect was used to advantage by dosing the affected patients at bedtime. Eleven percent of patients discontinued levetiracetam therapy because of lack of efficacy, and 12% stopped for various other reasons, including non-compliance.

The results of this open-label, retrospective study suggest that levetiracetam has promise as a potential alternative treatment approach for aggression disorders. Further study is required to confirm the findings.

Based on: Deutschman DH, Deutschman DA, Jones J. Levetiracetam: Efficacy, tolerability, safety in aggressive disorders. Poster presented at: 157th Annual Meeting of the American Psychiatric Association; May 1-6, 2004; New York, NY. Abstract. NR372.

“Estimated prevalence of the [aggression disorders] ranges between 5% and 10% of the population in general, and higher in adolescent males.”

Prevalence of Comorbid Anxiety Disorders

A substantial proportion of patients with primary diagnoses of anxiety or major depression have been reported to have comorbid anxiety disorders (*J Nerv Ment Dis.* 1986;174:63-72, *J Affect Disord.* 1990;19:287-296). To provide further estimates of comorbidity, the prevalence of comorbid anxiety disorders in a community psychiatric setting was investigated.

The study involved 706 patients who received care at a community outpatient clinic affiliated with an academic medical center. The patients had primary diagnoses of panic disorder, obsessive-compulsive disorder (OCD), social phobia, generalized anxiety disorder (GAD), or depression.

Overall, less than 30% of pa-

tients met criteria for a single diagnosis (206 of 706). For each of the primary diagnoses, a majority of patients had one or more comorbid anxiety diagnoses (Table).

The results confirm previous reports of high rates of comorbidity among patients with anxiety disorders. Medical records of the patients showed that a greater number of anxiety diagnoses was associated with poorer response to treatment.

Based on: Biel MG, Case BGS, Peselow ED, Pressman MA, Guardino MT. Comorbidity of anxiety disorders in a community setting. Poster presented at: 157th Annual Meeting of the American Psychiatric Association; May 1-6, 2004; New York, NY. Abstract NR7.

Table. Prevalence of Comorbid Anxiety or Depression

Primary Diagnosis	N	%
Panic	196/255	76.9
Depression	192/281	68.2
Social phobia	28/48	58.3
OCD	57/90	63.3

Evaluation of Therapy for Bipolar Mania

Preclinical studies have suggested that the novel N-type calcium channel blocker levetiracetam might have antimanic or anxiolytic properties that could be useful in the treatment of selected patients with bipolar disorder. Few data from empiric investigation exist regarding levetiracetam's possible psychotropic properties. However, preliminary open-label studies have provided evidence of potential efficacy in the treatment of mood disorders (*J Clin Psychiatry.* 2003; 64:781-784). Clinicians should note that this usage is investigational and not approved by the US Food and Drug Administration.

The effects of levetiracetam in bipolar mania were evaluated in an initial series of five adult outpatients who had bipolar illness with features of hypomania that had responded poorly to standard pharmacotherapy. The objective was to estimate the potential antimanic and antidepressant effects of levetiracetam in patients with bipolar mania or hypomania.

The series consisted of four patients with a diagnosis of bipolar I and one with bipolar II. Levetiracetam was administered as monotherapy in four cases and as add-on therapy in the remaining case. The patient who received the drug as

add-on therapy was being treated concomitantly with olanzapine and divalproex. The mean dose of levetiracetam was 1700 mg/day, and follow-up continued for 6 weeks.

Four of five patients completed the study; one withdrew because of nausea and vomiting after 3 weeks. Common side effects during the study were nausea, vomiting, sedation, dizziness, and dry mouth.

Response data included the patient who discontinued levetiracetam treatment prematurely. During treatment, the mean score on the Young Mania Rating Scale declined significantly from 22 at baseline to 9 at the end of the

study ($P=0.043$). Scores on the Clinical Global Impression of Severity decreased from a mean of 4.2 at baseline to 3.4 and demonstrated a trend toward significance ($P=0.059$). The mean score on the Positive and Negative Syndrome Scale decreased slightly from 53 to 44, and the average score on the Hamilton Depression Scale increased from 11.2 to 17.8, which was not significant.

Overall, levetiracetam was well tolerated and associated with improvement in hypomanic symptoms in adult patients with bipolar disorder. The drug appeared to have a neutral effect on depressive symptoms, although

the small number of patients precluded definitive conclusions.

Anecdotal observations suggested that levetiracetam favorably affected symptoms associated with anxiety and attentional impairment. Larger, controlled trials are required to provide a more thorough assessment of the potential utility of levetiracetam in bipolar disorder.

Based on: Goldberg JF, Burdick KE. Preliminary experience with levetiracetam in bipolar mania. Poster presented at: 157th Annual Meeting of the American Psychiatric Association; May 1-6, 2004; New York, NY. Abstract NR408.

Evaluation of Add-On Therapy for Bipolar Disorder Therapy

Patients with bipolar disorder often have unresolved symptoms despite the use of agents such as mood stabilizers and anticonvulsants (*J Clin Psychopharmacol.* 2001;21:182-192, *CNS Drugs.* 2001;15:701-718). Additionally, conventional therapy for bipolar disorder often causes side effects that can interfere with treatment.

Clinical and preclinical evidence suggests that the novel antiepileptic drug levetiracetam offers potential benefits as add-on therapy for bipolar disorder (*Int J Neuropsychopharmacol* 2002;5[suppl 1]:557. Abstract, *J Clin Psychiatry.* 2003;64:781-784, *Epilepsy Behav.* 2001;2:454-459). Levetiracetam also has demonstrated a favorable safety profile when used concomitantly with other medications (*Pharmacol Ther.* 2000;85:77-85, *Epileptic Disord.* 2003;5[suppl 1]:533-537, *Physicians' Desk Reference.* Montvale, NJ: Thomson Healthcare;2004:3230-3233). Clinicians should note that this

usage is investigational and not approved by the US Food and Drug Administration.

The safety and efficacy of levetiracetam were evaluated retrospectively in a chart review of 30 patients with bipolar illness treated with the drug. The patients included nine children 5 to 12 years of age, three adolescents 13 to 16 years of age, and 18 adults 18 to 50 years of age. Five patients had a diagnosis of bipolar disorder I, 10 a diagnosis of bipolar disorder II, and 15 had a bipolar disorder diagnosis that was not specified.

The duration of bipolar disorder averaged 9.6 years for the entire group, including 3.6 years in children, 2.0 years in adolescents, and 13.9 years in adults. The patients had a varied treatment history (past and current) that included antiepileptics, antidepressants, medications for attention deficit hyperactivity disorder, antipsychotics, hypnotics, anxiolytics, analeptics, and mood stabilizers.

The starting daily dose of levetiracetam ranged between 150

and 500 mg in children, 250 and 500 mg in adolescents, and 250 and 750 mg in adults. The initial dose was titrated at the discretion of the treating physician on the basis of response and tolerability. Mean duration of levetiracetam therapy was 4.7 months overall, including 3.4 months in children, 3.3 months in adolescents, and 5.6 months in adults.

Response to levetiracetam was rated on a scale of 0 (no response) to 4 (excellent) on the basis of physician evaluation and patient self-reports. Additionally, the overall impression of a patient's status was rated on a scale of 0 to 4.

Most patients demonstrated some degree of response to treatment with levetiracetam. Mean response scores by age group were 3.8 in children, 2.4 in adolescents, and 3.0 in adults. Mean scores by diagnosis were 2.6 for bipolar disorder I, 3.1 for bipolar disorder II, and 2.9 for unspecified bipolar diagnosis. With respect to overall impression, 10 patients were rated as excellent, nine as

good, seven as fair, and four as poor.

Associated symptoms that were most often reported as improved during levetiracetam therapy were mood swings, racing thoughts, irritability, poor sleep, and impulsivity. No adverse events related to levetiracetam were reported during follow-up.

The results suggest that levetiracetam might improve selected symptoms of bipolar disorder when added to existing therapy. Levetiracetam's established safety profile and low risk of interaction with concomitant medications, combined with suggested efficacy in bipolar disorder, warrant prospective evaluation in other studies involving a larger number of patients. ■

Based on: Ahmadi A, Ekhtari S. Levetiracetam as an add-on in adults and children with bipolar disorder. Poster presented at: 157th Annual Meeting of the American Psychiatric Association; May 1-6, 2004; New York, NY. Abstract NR404.

Treatment of Varied Psychiatric Disorders

Continued from page 1

cluded major depressive disorder (29.3%), bipolar disorder (23.2%), generalized anxiety disorder (GAD, 22.2%), and panic disorder (12.1%). About a third of patients (32 of 99) had a history of treatment with AEDs, the most common being topiramate (10 patients). Nine patients had received more than one prior AED.

The most common starting dose of levetiracetam was 250 mg/day, and the total daily dose ranged between 250 and 3000 mg. Treatment duration ranged from 2 weeks to 15.5 months.

Response to levetiracetam was determined on the basis of clinical impression and patient reports and rated on a scale of 0 (no response) to 4 (excellent). In the intention-to-treat analysis including all 99 patients, the mean response score was 2.1. Among 84 patients with complete follow-up data, 27 (31.8%) had response scores of "very good" (3) or "excellent" (4).

Levetiracetam response scores tended to be better in patients with diagnoses of panic attack (2.8), GAD (2.5), or attention deficit hyperactivity disorder (2.5). Scores were lower in patients with primary diagnoses of major depressive disorder (2.0) or bipolar disorder (1.5).

In the patients with complete follow-up data, 60 reported no adverse events during treatment with levetiracetam. The most commonly reported adverse event was sedation (6 patients), which was consistent with the drug's safety profile. Five of 15 unevaluable patients reported no adverse events.

Although limited by their retrospective nature, the data indicate that levetiracetam might offer clinically relevant benefits to patients with a variety of psychiatric diagnoses. ■

Based on: Ray DW, Choate N. Levetiracetam: Efficacy and tolerability in a psychiatric clinic population. Poster presented at: 157th Annual Meeting of the American Psychiatric Association; May 1-6, 2004; New York, NY. Abstract NR729.

Prevalence of ADHD in Adults

Continued from page 1

in widely ranging prevalence estimates of adult ADHD, and the results might not be applicable to the general population.

In an attempt to address limitations of existing data on adult ADHD, a telephone survey of 1,019 randomly selected adults was undertaken to estimate the prevalence of the disorder in the community. Participants completed an 18-question survey based on DSM-IV symptoms (inattentive, hyperactive-impulsive, and combined). Respondents were asked to evaluate each symptom retrospectively (childhood experience) and currently (within the previous 6 months).

The survey data provided the basis for two approaches to ADHD diagnosis. A narrow diagnosis estimated the prevalence of ADHD in adulthood by identify-

ing a group of adults demonstrating strong evidence of ADHD in childhood and adulthood. Patients were considered symptom positive if they reported that a symptom occurred often. A broad diagnosis estimated the screening prevalence (what would be expected by use of a more inclusive ADHD definition to identify patients for further assessment by a clinician) and was made on the basis of whether a symptom or symptoms occurred sometimes or often.

The broad screening diagnosis resulted in a higher prevalence of adult ADHD than did the narrow diagnosis. By the broad criteria, 16.4% of individuals surveyed met criteria for a diagnosis of ADHD, compared to 2.9% with application of the narrow diagnos-

tic criteria (Table on page 1). Use of broad diagnostic criteria resulted in a prevalence of ADHD across age groups ranging from a low of 14.5% for respondents 60 years of age or older to a high of 19.1% for respondents 40 to 49 years of age. By the narrow criteria, the highest prevalence was seen in the 40 to 49 age group (5.2%), and the 60-plus age group had the lowest prevalence (0.2%).

Neither type of ADHD diagnosis was influenced by ethnicity. By either definition, ADHD was more common in urban than in rural areas. Geographically, ADHD (both diagnostic criteria) was more common in northeastern and north central states than in southern or western states. By either diagnostic criterion, people

"The broad screening diagnosis resulted in a higher prevalence of adult ADHD than did the narrow diagnosis."