

# Who First Suggests the Diagnosis of Attention-Deficit/Hyperactivity Disorder?

Leonard Sax, MD, PhD

Kathleen J. Kautz, RN, BSN

Montgomery Center for Research in Child and Adolescent Development (MCRCAD), Poolesville, Md

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## ABSTRACT

**PURPOSE** We wanted to survey physicians in the Washington, DC, metropolitan area regarding the frequency with which physicians, teachers, parents, and others first suggest the diagnosis of attention-deficit/hyperactivity disorder (ADHD).

**METHODS** A questionnaire was mailed to all family physicians, primary care pediatricians, and child psychiatrists in greater Washington, DC. In answer to the question, "Who first suggests the diagnosis of ADHD?" respondents assigned percentages to primary care physicians, consultants, parents, teachers, etc.

**RESULTS** Teachers were most likely to be first to suggest the diagnosis of ADHD (46.4%; 95% CI, 44.1%-48.7%), followed by parents (30.2%; 95% CI, 28.3%-32.0%), primary care physicians (11.3%; 95% CI, 9.7%-12.8%), school personnel other than teachers (6.0%; 95% CI, 4.9%-7.2%), consultants such as child psychiatrists or psychologists (3.1%; 95% CI, 2.3%-3.9%) and other specified categories (3.0%; 95% CI, 2.4%-3.6%).

**CONCLUSIONS** Teachers and other school personnel are often the first to suggest the diagnosis of ADHD in children in the greater Washington, DC, area. Regional variations in the prescribing of medication for ADHD may be caused at least in part by variations in the likelihood of a teacher suggesting the diagnosis of ADHD.

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## INTRODUCTION

The prescribing of medication for attention-deficit/hyperactivity disorder (ADHD) has increased substantially in the United States during the past 10 years. The amount of methylphenidate (eg, Ritalin, Concerta) prescribed in the United States increased by more than 500% between 1991 and 1999, while the prescribing of amphetamines (eg, Dexedrine, Adderall) increased by more than 2000% during the same interval.<sup>1</sup> The number of physician office visits devoted to evaluating and treating children with ADHD also increased during this time period, although by a smaller amount. For girls, the number of ADHD-related office visits increased threefold between the beginning of 1990 and the end of 1998; for boys, a 2.2-fold increase occurred in ADHD-related office visits during the same period.<sup>2</sup>

Several studies have found wide regional variation in the prescribing of stimulants for the treatment of ADHD.<sup>3,4</sup> Some authors have questioned whether all children receiving medication for ADHD actually meet standard diagnostic criteria for ADHD. One study of students in North Carolina found that only 43% of students taking medication for ADHD met the *Diagnostic and Statistical Manual of Psychiatric Disorders* (DSM-III-R) criteria for ADHD.<sup>5</sup> An investigator commenting on this paper conjectured that "parents and teachers may be lobbying doctors to write stimulant prescriptions in the hope that they will help children do better in school."<sup>6</sup>

Few published studies have attempted to delineate the process by which children are diagnosed and treated for ADHD in community set-

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### CORRESPONDING AUTHOR

Leonard Sax, MD, PhD  
Poolesville Family Practice  
PO Box 108  
Poolesville, Md 20837  
leonardsax@prodigy.net

tings, as opposed to the setting of the referral clinic. In particular, we are not aware of any published study that has attempted to determine, on a regional or national basis, how often and to what extent teacher recommendations and parental preferences play a role in the diagnosis or treatment of ADHD.

A scholarly commentary on this topic concluded that "research is urgently needed to elucidate the most common pathways leading to children's referral, diagnosis, and treatment [for ADHD] and to evaluate the impact on this process by variables such as parental perception of impairment, social and academic expectations, [and] schools' attitudes. ..."<sup>7</sup>

We conceived this project as an initial effort to study one aspect of "the most common pathways leading to referral, diagnosis, and treatment"<sup>7</sup>; namely, who first suggests the diagnosis of ADHD? We reasoned that the most cost-effective approach to an initial study of this question would be to survey physicians, while recognizing that it would be useful in the future to survey teachers and parents as well. For this study, we surveyed family physicians, primary care pediatricians, and child psychiatrists in the greater Washington, DC, area (Washington, DC, suburban Maryland, and northern Virginia).

## METHODS

### Selection of Survey Recipients

The *Washington Physicians Directory* (Silver Spring, Md), lists all licensed physicians practicing in the greater Washington, DC, area, including the District of Columbia, suburban Maryland, and northern Virginia. For this survey, we obtained mailing labels for all family physicians, pediatricians, and child psychiatrists with office locations in the District of Columbia, in northern Virginia, and in Prince Georges County, Maryland, and Montgomery County, Maryland.

Surveys were sent to all family physicians, primary care pediatricians, and child psychiatrists in these areas. We defined primary care pediatricians as pediatricians who were not listed as subspecialists and followed the directory in defining a family physician as any physician who describes herself or himself as a family physician.

### The Survey

The survey instrument was an anonymous, 1-page questionnaire asking physicians to "Please estimate, by percentages, the frequency with which each of the following first suggests the diagnosis of ADHD to the parents: MD primary-care provider, MD consultant, teachers, other school personnel, parents, other relatives, neigh-

bors, professional caregivers, and other. Please specify." Physicians also were asked, "For what percentage of children whom you diagnose with ADHD do you also recommend medication?" Surveys were mailed on September 24, 2001. No follow-up surveys were mailed.

### Statistical Analysis

All analyses were performed using ASP software (DMC Software, Grand Blanc, Mich). The statistical method employed was a fixed-effects analysis of variance, with 3 factors: jurisdiction (Maryland, Virginia, or the District of Columbia), specialty (pediatrics, family practice, or child psychiatry), and sex of respondent. Significant differences were determined at  $P < .05$ .

## RESULTS

### Response Rates

Surveys were sent to 512 family physicians, 412 primary care pediatricians, and 165 child psychiatrists (1,089 total). A total of 491 responses were received, which yielded an overall response rate of 45%. Response rates varied as a function of specialty. Primary care pediatricians had the highest response rate (54%); child psychiatrists had a response rate of 34%, and family physicians had a response rate of 30%.

### Percentage of Children Taking Medication for ADHD

Family physicians estimated that 6.9% of the children in their practice were taking medication for ADHD (95% CI, 6.6%-7.1%). Pediatricians estimated that 10.8% of children in their practice were taking medication for ADHD (95% CI, 10.6%-11.0%), while child psychiatrists estimated that 55.6% of children in their practice were taking medication for ADHD (95% CI, 55.0%-56.2%). These differences between specialties were highly significant ( $P < .0001$ ). No significant differences were noted between jurisdictions or between female and male physicians who responded.

### Proportion of Children Who Were Boys

Respondents estimated that 75.4% of children taking medication were boys (95% CI, 74.1%-76.7%). The jurisdiction, specialty, or sex of the respondent physician had no significant effects.

### Who First Suggests the Diagnosis of ADHD?

Teachers were the most likely to be the first to suggest the diagnosis of ADHD, followed by parents, primary care physicians, school personnel other than teachers, MD consultants, paid caregivers other than relatives, relatives other than parents, neighbors, and

**Table 1. Doctors' Estimates: Who First Suggests the Diagnosis of ADHD?**

Group	Percent (95% CI)
Teachers	46.4 (44.1-48.7)
Parents	30.2 (28.3-32.0)
Primary care physicians	11.3 (9.7-12.8)
School personnel other than teachers	6.0 (4.9-7.2)
MD consultants	3.1 (2.3-3.9)
Paid caregivers	1.1 (0.7-1.5)
Relatives (other than parents)	1.1 (0.7-1.5)
Neighbors	0.6 (0.4-0.8)
Other	0.3 (0.1-0.5)

"other" (see Table 1). Only one significant effect of specialty ( $P < .001$ ) was noted. Child psychiatrists were significantly more likely to indicate MD consultants as being the first to suggest the diagnosis of ADHD. Child psychiatrists indicated MD consultants in 9.6% of cases (95% CI, 9.3%-9.9%). Pediatricians indicated MD consultants in 2.7% of cases (95% CI, 2.6%-2.8%), and family physicians did so in just 1.2% of cases (95% CI, 1.1%-1.3%).

### In What Percentage of Children With ADHD is Medication Prescribed?

Overall, physicians estimated that they prescribed medication for 77% of patients diagnosed with ADHD (95% CI, 75%-79%). The physician's specialty had a significant effect ( $P < .001$ ). Child psychiatrists prescribed medication for 88% of children diagnosed with ADHD (95% CI, 87%-89%); the corresponding figure was 77% (95% CI, 76%-78%) for pediatricians and 72% for family physicians (95% CI, 71%-73%). No significant differences between respondents from Maryland, Virginia, and the District of Columbia were noted, and no differences between female and male respondents were noted.

## DISCUSSION

Physicians who responded to our survey estimated that the diagnosis of ADHD was first suggested by a teacher or other school employee in about one half of those children so diagnosed. Physicians estimated that the diagnosis was first suggested by a parent in about one third of cases.

Are teachers and parents more likely to consider that diagnosis now than they were 10 years ago? If so, why? Sax<sup>8</sup> has documented a shift in the kindergarten and early elementary curriculum during the past 10 to

20 years, from a play-based curriculum to a more academically oriented curriculum, with the major emphasis today being the early acquisition of literacy skills. Sax suggests that this shift to a more academic curriculum in early elementary education may be partly responsible for the increased propensity of teachers to suggest the diagnosis of ADHD, as well as the increased willingness of parents to consider stimulant medication for their children.<sup>8</sup> An academically oriented kindergarten, in which 5-year-old children are expected to sit at a desk and do paper-and-pencil exercises, poses a major challenge for some children. A child who is fidgety and inattentive in such a classroom might well be labeled "ADHD" by the teacher, when in fact that child may have no underlying psychopathology but merely needs a more developmentally appropriate curriculum. If Sax's hypothesis is correct, then we should find that teachers in an academically oriented kindergarten are more likely to suggest the diagnosis of ADHD than are teachers in a play-based curriculum. This hypothesis remains to be tested.

### Limitations

Three major limitations may affect the generalizability of these results. First, we do not know the accuracy of the estimates made by the physicians. Second, we do not know to what extent the greater Washington, DC, area is representative of the nation as a whole in this regard. Maryland and Virginia rank among the top 10 states nationwide in per capita consumption of prescription methylphenidate and prescription amphetamines.<sup>1</sup> A larger follow-up study, surveying physicians nationwide, would be helpful. Third, our survey did not achieve a high response rate (45% overall). However, the variance in the responses was remarkably small; within specialties, responses were unexpectedly similar. The CIs for the means were correspondingly narrow. For that reason, we doubt that a higher response rate would have markedly altered the results.

### Clinical Implications

If it is indeed the case that teachers are often the first to suggest the diagnosis of ADHD, further investigation is appropriate to determine teachers' accuracy in suggesting that diagnosis. In one recent study<sup>9</sup> of teachers in urban and rural settings, teachers collectively identified 23% of boys in their classrooms as having ADHD. In discussing this unexpectedly high prevalence, the authors of the study speculated that "teachers may have confused ADHD behaviors with other problems, eg, low IQ, anxiety, [and] psychosocial stressors."<sup>9</sup> Teachers in this study also were about 3 times as likely to diagnose black elementary school children with ADHD as they were to diagnose white

children with the disorder. Most other studies of the prevalence of ADHD have found either no racial disparity, or have found ADHD to be more prevalent among white children.<sup>10</sup>

Further research would help to determine how often teachers are first to suggest the diagnosis of ADHD. It is possible that regional variations in the prescribing of medication for ADHD may be due at least in part to variations in the likelihood of a teacher suggesting the diagnosis of ADHD.

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**Key words:** Attention-deficit hyperactivity disorder; teachers; parents; stimulant medication; behavioral/psychosocial

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