PRB 00-17E

Library of Parliament Bibliothèque du Parlement

ATTENTION DEFICIT DISORDER

Sonya Norris
Science and Technology Division

Revised 23 June 2005

PARLIAMENTARY INFORMATION AND RESEARCH SERVICE
SERVICE D'INFORMATION ET DE RECHERCHE PARLEMENTAIRES

TABLE OF CONTENTS

Page

CANADA
LIBRARY OF PARLIAMENT
BIBLIOTHÈQUE DU PARLEMENT

ATTENTION DEFICIT DISORDER

INTRODUCTION

Attention Deficit Disorder (ADD) has become well known as a childhood behavioural disorder in recent years. The increase in notoriety has been due to an explosion, beginning in the early 1990s, in the number of diagnoses of this disorder. This paper will explore:

- the nature of ADD and its treatment; and
- national and international responses to the increase.

ADD AND TREATMENT

A. The Evolution of ADD as a Recognized Disorder

Attention Deficit Disorder (ADD) and Attention Deficit/Hyperactivity Disorder (ADHD) often appear to be used interchangeably in the medical literature. In fact, they stem from an evolution of the disease's definition.

In the United States, the focus in childhood behaviour problems switched from hyperactivity in the 1960s to "attention deficits" in the 1970s. In 1980, the American Psychiatric Association listed ADD as a disorder and it was added to the third edition of the Diagnostic and Statistical Manual of Mental Disorder (DSM-III). At this time, hyperactivity was an essential component of the disorder. The revised DSM-III (DSM-III-R) of 1987 placed more emphasis on hyperactivity by listing the disorder as ADHD; however, hyperactivity ceased to be an absolute requirement in identifying the disorder. In 1994, the DSM-IV maintained the name ADHD but it broadened the definition and allowed for multiple types within this classification, indicating that different behaviours could predominate. Thus, the current DSM-IV lists ADHD as the disorder

in which hyperactivity may or may not be a component. ADD is sometimes used synonymously with ADHD; at other times, it is used to distinguish a diagnosis without the hyperactivity component.

Most western countries adopt the World Health Organization's (WHO) International Statistical Classification of Diseases and Related Health Problems – tenth revision (ICD-10). This list recognizes ADD and requires hyperactivity to be a component. Canadian physicians appear to favour the U.S. diagnostic criteria over the ICD-10. They also indicate that they tend to interpret these criteria liberally.(1) Due to these variations in ADD definitions, ADD is the most frequently diagnosed behaviour disorder in North America (3% to 5% of school-aged children), but is not diagnosed as often in other countries. According to the International Narcotics Control Board, the consumption rate of methylphenidate – the drug most frequently prescribed for the disorder – was significantly higher in the United States and Canada than in other countries until 2001. Since that time, however, Iceland has surpassed the United States and Canada. The United Kingdom, Switzerland and Norway have also increased their consumption significantly.(2)

B. Behavioural Features of ADD

There is no definitive medical test upon which to base a diagnosis of ADD, i.e., the disorder has no known biological markers. Physicians base their diagnosis on the individual's behavioural features in four core areas: inattentiveness; distractibility; impulsivity; and hyperactivity. ADD is also strongly associated with poor school performance; poor relations with family, peers and teachers; and low self-esteem.(3) Impairment may exist in only some of the categories, with the degree of impairment being undefined. The DSM-IV further specifies that these impairments must be apparent in more than one setting (school, home, etc.), have lasted longer than six months, and that at least some of the impairments were apparent under the age of seven.(4) However, respondents to the Canadian ADHD survey did not indicate a requirement for these additional criteria.

---

(1) Health Canada, *Survey of Attention Deficit Hyperactivity Disorder (ADHD) Diagnosis and Treatment with Methylphenidate among Canadian Physicians*, August 1999.

(2) International Narcotics Control Board, *Psychotropic Substances: Statistics for 2003 – Assessments of Annual Medical and Scientific Requirements for Substances in Schedules II, III and IV*, United Nations, 2005.

(3) Canadian Coordinating Office for Health Technology Assessment, *A Review of Therapies for Attention Deficit/Hyperactivity Disorder*, December 1998.

(4) National Institute of Mental Health, Internet site: http://www.nimh.nih.gov/publicat/adhd.cfm.

Some indications of inattentiveness and distractibility can include not paying attention to details, making careless mistakes, not following instructions carefully or completely, and losing or forgetting school work or toys. Indications of impulsivity and hyperactivity include fidgeting and squirming, running around disruptively when required to sit, having trouble waiting in line, and blurting out answers. Clearly, these are only a few examples of the behavioural traits that may be associated with ADD.

Because many of these behaviour problems may be attributable to other causes, they must first be ruled out before making a diagnosis of ADD. In fact, although many critics of the disorder merely feel that it is being overdiagnosed, others maintain that the disorder does not even exist and that the impaired behaviour is attributable to other causes. The multitude of medical conditions that can manifest themselves with some of the same symptoms as ADD include: sleep disturbances, high carbon monoxide levels in the blood, diabetes, lead toxicity, heart defects, parasitic infections, chronic streptococcal infections, solvent exposure, seizure disorders, anemia and Fetal Alcohol Syndrome. Some physicians have noted that children suffering from other psychological disorders (including depression, anxiety and trauma from abuse) were quickly labelled with ADD.(5)

C. Treatment of ADD

Therapy for the management of ADD consists of: medications to reduce the problematic behaviours; training and education, for the parents and teachers of the child, that optimize expectations and environment to the child's condition; and psychological therapy for the child to teach him/her self-control and self-monitoring skills. Ideally, a combination of these approaches is used in the treatment of ADD; however, medication is frequently the only treatment pursued.(6)

1. Medications

The stimulant class of medications is the most widely used form of medical management for ADD. Stimulants are the amphetamines and amphetamine-like drugs that are known to be addictive and frequently abused. Stimulants – drugs that excite or speed up the

(5) Kathy Koch, "Rethinking Ritalin," *CQ Researcher*, Vol. 9, No. 40, October 1999.

(6) Canadian Coordinating Office for Health Technology Assessment (1998).

central nervous system – are generally used for their ability to: increase alertness and endurance; keep users awake for a long period of time; decrease appetite; and produce feelings of well-being and euphoria.(7)

The stimulants prescribed for the treatment of ADD are methylphenidate, dextroamphetamine sulphate and magnesium pemoline. By far the most common among these is methylphenidate, known commonly by the brand name Ritalin. Between 80% and 90% of children diagnosed with ADD have been prescribed methylphenidate, although dextroamphetamine and pemoline are just as effective.(8) These stimulant drugs act in the brain by increasing levels of catecholamines, one of which is dopamine, the substance currently believed by some to be deficient in sufferers of ADD.

2. Training and Education of Parents and Teachers

Standard modes of intervention include such things as: private tutoring; alternative approaches for parents and teachers to deal with the ADD child; and parental, family and marital therapy. Many children have been able to improve their academic performance when classroom time is supplemented with private tutoring which has fewer distractions, giving the child a better chance of learning how to focus. Parents and teachers can also be taught reward/discipline approaches that provide incentives. In addition, some physicians and psychologists have found that marriage/parental counselling and family therapy have been beneficial to ADD children. Some claim that these therapy methods help to create a more constructive and nurturing environment that can help to reduce the behaviour problems of children diagnosed with ADD.

3. Psychological Therapy

Psychological therapy is helpful in enabling patients first to accept the diagnosis and then to accept themselves despite their disorder. In this type of therapy, the ADD sufferers discover their destructive or self-defeating patterns of behaviour and are able to learn alternative ways to handle their emotions and cope better in day-to-day activities. Social skills therapy – another frequently used approach – helps children to learn appropriate behaviours such as sharing a toy, waiting in line, asking for help, and acting or speaking appropriately.

---

(7) Stimulant definition from Health Canada, *Straight Facts About Drugs & Drug Abuse*, 2000, p. 15; available at: http://www.hc-sc.gc.ca/hecs-sesc/cds/pdf/straight_facts.pdf.

(8) Canadian Coordinating Office for Health Technology Assessment (1998).

DIAGNOSING ADD AND THE USE OF METHYLPHENIDATE

A. Rise in Methylphenidate Use

As mentioned above, methylphenidate is the drug of choice for the treatment of ADD. An overall increase in methylphenidate consumption in Canada began around 1993-1994, and is largely due to increased consumption by children aged 5 to 14 years.(9) Since that time Canada has had one of the highest consumption rates worldwide.

This escalation came on the heels of the increase observed in the United States, where use of methylphenidate has continued to rise since 1991(10),(11) when ADD was included under the *Individuals with Disabilities Education Act*. This inclusion allowed schools to receive additional funds for students diagnosed with ADD. In addition, the widening range of symptoms attributed to ADD – which has undergone more than two dozen name changes in the United States over the past century, as well as numerous revisions of its definition and diagnostic criteria in the past two decades – has had the effect of encompassing more and more of the population, allowing for an explosion in the number of diagnoses. This trend was noted in 1997 by the International Narcotics Control Board, which forecast in its annual report that the removal of hyperactivity as an essential component of the disorder would result in ten times more children satisfying the definition of ADD.(12)

Many critics of ADD and methylphenidate-use also claim that parental and school pressure to medicate children with only borderline behaviour abnormalities has contributed to the rise. "The drug continues to make children do what their parents and teachers either will not or cannot get them to do without it: Sit down, shut up, keep still, pay attention,"(13) i.e., be compliant.

These factors combined in the early 1990s to create a surge in ADD diagnoses in the United States, and therefore a rise in consumption of methylphenidate. The resulting increased public awareness produced a similar trend in Canada soon after. According to the

---

(9) *Ibid.*

(10) International Narcotics Control Board (2005).

(11) Koch (1999).

(12) International Narcotics Control Board, 1997 Annual Report.

(13) Mary Eberstadt, "Why Ritalin Rules," *Policy Review*, No. 94, April 1999.

Office of Controlled Substances of the Healthy Environments and Consumer Safety Branch at Health Canada, the consumption of methylphenidate rose sharply from a steady-state level of about 150 kg per year between 1983 and 1993 to almost 800 kg per year in 1999. According to the INCB, this level was well above 1,000 kg in 2003. Canada does not produce any of its own methylphenidate. It is largely imported from Switzerland and to a lesser extent from the United States, United Kingdom, Spain, Germany and Ireland. It is important to note that there is no record of the number of ADD diagnoses in Canada. However, the pattern of methylphenidate consumption implies a significant increase in ADD diagnoses, because methylphenidate is mainly prescribed for this disorder. Although it is also used to treat narcolepsy, this accounts for only a small proportion of the methylphenidate consumed.

B. An International Perspective

The International Narcotics Control Board (INCB) was established in 1968 as an independent and quasi-judicial control body for the implementation of the United Nations drug control treaties. Although the United Nations finances the Board's work, the INCB functions independently of the UN. The Board endeavours to ensure that adequate supplies of drugs are available for medical and scientific uses, and that leakages from licit sources to illicit traffic are minimized. At the same time, it seeks to identify weaknesses in national and international control of drugs.

INCB annual reports over the past several years have repeatedly stressed concern over the increased use of methylphenidate. Once unique to the United States and Canada, it has now spread to European countries. While methylphenidate use in other countries rose only slightly between 1990 and 2000, use in the United States and Canada increased dramatically. In its 2003 report, the INCB noted increased consumption in Iceland as well as several European countries. It reiterated its concern about the increasing consumption of methylphenidate.

In its 1997 annual report, the INCB had described the confusion surrounding the definition of the disorder and suggested that the use of different diagnostic definitions and criteria in different countries "probably" accounted for significantly different prevalence rates of ADD. Also in this report, the INCB stated that "[the] WHO can only evaluate the prevalence of ADD and diagnostic criteria for that disorder if several studies on different diagnostic definitions for ADD and their prevalence rates are undertaken. The Board therefore requests the Governments concerned to undertake such studies and to provide WHO and the Board with their results." The report went on to reiterate its request to all governments to exercise vigilance in

order to minimize overdiagnosing of ADD and reduce overmedication of children with stimulants such as methylphenidate.

Subsequent INCB annual reports have repeated the Board's concern over the continued rise in methylphenidate consumption. As of the most recent INCB annual report (2003), Canada remains a main consumer of the drug, behind the United States and Iceland. The INCB acknowledges that the increased consumption of methylphenidate first identified in the 1990s in Canada and the United States is now occurring in other parts of the world.

C. National/Federal Surveillance and Studies

In December 1998, the Canadian Coordinating Office for Health Technology Assessment (CCOHTA) released a national study entitled *A Review of Therapies for Attention Deficit/Hyperactivity Disorder*. This study was conducted due to the "increased utilization of methylphenidate in both children and adults and the potential for abuse or illicit use of this drug." The study suggests that almost 20% of patients treated for ADD (primarily children) may be prescribed methylphenidate inappropriately.

In August 1999, the Therapeutic Products Programme of Health Canada released the *Survey of Attention Deficit Hyperactivity Disorder (ADHD) Diagnosis and Treatment with Methylphenidate among Canadian Physicians.* The objective of the survey was to determine how Canadian physicians diagnose and treat ADHD, the conditions under which they prescribe methylphenidate, and to what extent they are subjected to external pressures to prescribe the drug. The data reported in the survey are calculated on a response rate of 19.2% (636 responses from a random physician pool of 3,320).

The survey suggested that physicians feel they are not sufficiently informed about ADHD, its diagnosis or treatment. It indicated a general perception that problems exist in the diagnosis of ADHD and the use of methylphenidate, and that the number of qualified professionals in this area is inadequate. Survey respondents also indicated that they frequently felt pressure from parents and teachers to prescribe the drug. These results mirror some conclusions drawn from a 1998 consensus conference of the U.S. National Institutes of Health, which concluded that inconsistent treatment, diagnosis and follow-up for ADD children was a significant health problem.(14)

---

(14) *Diagnosis and Treatment of Attention Deficit Hyperactivity Disorder (ADHD),* NIH Consensus Statement, Vol. 16, No. 2, 16-18 November 1998; available at: http://consensus.nih.gov/cons/110/110_statement.pdf.

CONCLUSION

Attention Deficit Disorder has risen from near-obscurity in the early 1990s to the point where as many as 5% of Canadian children are diagnosed with it today. Methylphenidate consumption has risen drastically during this time. These increases are similar to patterns that have been observed in the United States, and that appear to be starting in some other countries. The statistics have been sufficiently alarming for the International Narcotics Control Board to voice concern and prompt Canada and the United States to look into the situation. Both countries have now produced studies suggesting that there is some confusion over the definition criteria and the diagnostic process. However, Canada and the United States continue to use the DSM-IV definition of ADD, which states that hyperactivity may or may not be a component – a point on which it differs from the definition issued by the World Health Organization (ICD-10) and adopted by most western countries.