ALASKA LEGISLATURE COMMITTEE FILES 2001-2002 8672
10552 SENATE HEALTH EDUCATION & SOCIAL SERVICES

SENATE BILL NO. 198

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-SECOND LEGISLATURE - FIRST SESSION

BY SENATORS HALFORD, Lincoln, Olson, Hoffman, Ward, Green, Ellis

Introduced: 4/20/01
Referred: Health, Education and Social Services, Finance

A BILL

FOR AN ACT ENTITLED

"An Act establishing the Statewide Suicide Prevention Council; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

*** Section 1.** AS 39.25.120(c) is amended to read:

(c) The following positions in the state service constitute the partially exempt service:

(1) deputy and assistant commissioners of the principal departments of the executive branch, including the assistant adjutant general of the Department of Military and Veterans' Affairs;

(2) the directors of the major divisions of the principal departments of the executive branch and the regional directors of the Department of Transportation and Public Facilities;

(3) attorney members of the staff of the Department of Law, of the public defender agency, and of the office of public advocacy in the Department of

Administration;

(4) one private secretary for each head of a principal department in the executive branch;

(5) employees of councils, boards, or commissions established by statute in the Office of the Governor or the office of the lieutenant governor, unless a different classification is provided by statute;

(6) not more than two special assistants to the commissioner of each of the principal departments of the executive branch, but the number may be increased if the partially exempt service is extended under AS 39.25.130 to include the additional special assistants;

(7) the principal executive officer of the following boards, councils, or commissions:

(A) Alaska Public Broadcasting Commission;

(B) Professional Teaching Practices Commission;

(C) Parole Board;

(D) Board of Nursing;

(E) Real Estate Commission;

(F) Alaska Royalty Oil and Gas Development Advisory Board;

(G) Alaska State Council on the Arts;

(H) Alaska Police Standards Council;

(I) Alaska Commission on Aging;

(J) Alaska Mental Health Board;

(K) State Medical Board;

(L) Governor's Council on Disabilities and Special Education;

(M) Advisory Board on Alcoholism and Drug Abuse;

(N) Statewide Suicide Prevention Council;

(8) Alaska Pioneers' Home managers;

(9) hearing examiners in the Department of Revenue;

(10) the comptroller in the division of treasury, Department of Revenue;

(11) airport managers in the Department of Transportation and Public

Facilities employed at the Anchorage and Fairbanks International Airports;

(12) the deputy director of the division of insurance in the Department of Community and Economic Development;

(13) the executive director and staff of the Alaska Public Offices Commission;

(14) the rehabilitation administrator of the Workers' Compensation Board;

(15) guards employed by the Department of Public Safety for emergencies;

(16) marine pilot coordinator of the Board of Marine Pilots;

(17) employees of the unit established under AS 44.37.050;

(18) guards employed by the Department of Corrections, other than in state correctional facilities, to carry out the responsibility of the commissioner of Corrections under AS 33.30.071(b);

(19) hearing officers and administrative law judges of the Regulatory Commission of Alaska.

* **Sec. 2.** AS 44.29 is amended by adding new sections to read:

Article 4. Statewide Suicide Prevention Council.

Sec. 44.29.300. Council established. There is established in the Department of Health and Social Services the Statewide Suicide Prevention Council, consisting of 15 ~~14~~ members, as follows: am #4

(1) two members of the senate, appointed by the president of the senate, one of whom shall be a member of the majority and one of whom shall be a member of the minority;

(2) two members of the house of representatives, appointed by the speaker of the house of representatives, one of whom shall be a member of the majority and one of whom shall be a member of the minority;

(3) 10 members appointed by the governor, as follows: am #4

(A) ~~two~~ persons who are employed in the executive branch of state government;

(B) one member of the Advisory Board on Alcoholism and

Drug Abuse;

(C) one member of the Alaska Mental Health Board;

(D) one person recommended by the Alaska Federation of Natives, Inc.;

(E) one person who is a counselor in a secondary school;

(F) one adult who is active in a statewide youth organization;

(G) one person who has experienced the death by suicide of a member of the person's family;

(H) one person who resides in a rural community in the state that is not connected by road or the Alaska marine highway to the main road system of the state; and

(I) one person who is under the age of 18.

minister, rabbi, youth pastor

(J) one person who is a member of the clergy am#4 pt. 2

Sec. 44.29.310. Term of office. (a) The governor shall appoint the members of the council under AS 44.29.300(3)(D) - (I) for staggered terms of four years.

(b) The governor shall fill a vacancy of a member on the council appointed under AS 44.29.300(3)(D) - (I) by appointment for the unexpired part of the vacated term.

(c) Members of the council serve at the pleasure of the governor. The governor shall replace a member who, by poor attendance or lack of contribution to the council's work, demonstrates ineffectiveness as a member. In this subsection, "poor attendance" means the failure to attend three or more consecutive meetings.

Sec. 44.29.320. Compensation, per diem, and expenses. The members of the council who are not state employees are not entitled to compensation for service on the council, but are entitled to per diem and travel expenses authorized for boards and commissions under AS 39.20.180.

Sec. 44.29.330. Officers staff and advisory panel **and staff.** (a) The council, by a majority of its membership, shall annually elect a presiding officer and other officers it considers necessary from among its membership.

(b) The council may employ a coordinator to assist the council. The coordinator is in the partially exempt service. The coordinator shall be directly responsible to the council in the performance of the coordinator's duties. The council shall annually review the performance of the coordinator.

am. #3

(c) advisory panel ~~shall~~ language w/o compensation, ~~be established~~ serves at pleasure of council, not entitled to travel OR per diem.

am 1

New Text Underlined [DELETED TEXT BRACKETED]

Sec. 44.29.340. Meetings. The council may meet, by teleconference or otherwise, as often as considered necessary by the presiding officer of the council.

Sec. 44.29.350. Duties. The council shall serve in an advisory capacity to the legislature and the governor with respect to what actions can and should be taken to

(1) improve health and wellness throughout the state by reducing suicide and its effect on individuals, families, and communities;

(2) broaden the public's awareness of suicide and the risk factors related to suicide;

(3) enhance suicide prevention services and programs throughout the state;

(4) develop healthy communities through comprehensive, collaborative, community-~~based~~ and faith-based approaches; am #2

(5) develop and implement a statewide suicide prevention plan;

(6) strengthen existing and build new partnerships between public and private entities that will advance suicide prevention efforts in the state.

Sec. 44.29.360. Annual report. The council shall annually report its findings and recommendations in a report to the governor, the president of the senate, and the speaker of the house of representatives by March 1 of each year.

Sec. 44.29.390. Definition. In AS 44.29.300 - 44.29.390, "council" means the Statewide Suicide Prevention Council established under AS 44.29.300.

*** Sec. 3.** The uncodified law of the State of Alaska is amended by adding a new section to read:

TRANSITIONAL PROVISION. The Statewide Suicide Prevention Council established under sec. 2 of this Act may begin its work June 1, 2001, or upon appointment of its full membership, whichever is earlier.

*** Sec. 4.** This Act takes effect immediately under AS 01.10.070(c).

amend #5
4-year sunset
ast(R)
review in finance

ALASKA STATE LEGISLATURE

Senator Rick Halford

President of the Senate

While in Session:
State Capitol
Juneau, AK 99801-1182
907-465-4958

While in Interim:
P.O. Box 670190
Chugiak, AK 99567
907-694-4958

Senate Bill 198
Statewide Suicide Prevention Council

"The greatest gift we can give is the gift of life."

Suicide is preventable.

It is devastating to lose someone to suicide at any age, but it is especially tragic to lose a young person who has so much to live for. Suicide is a final cry of despair, and we need to hear that cry.

In 1999, the United States Surgeon General issued "A Call to Action" to prevent suicide. The report made 15 recommendations categorized in the areas of awareness, intervention and methodology. Hearing the cries and responding, Senate Bill 198 is another step in answering both the states and the national call to action.

SB 198 will establish a statewide suicide prevention council made up of fourteen private and public members representing rural and urban Alaska. Two members from both the House and Senate would sit on the council. The governor would appoint ten members, including experts in substance abuse and mental health, as well as people who have been directly impacted by suicide, and who work with youth across the state.

Suicide is an on-going epidemic in many parts of the state --- especially rural Alaska and the Matanuska-Susitna Valley --- and the numbers are at an all-time high. This is heart breaking. We all must work together to reduce the toll suicide is having on the people of our state.

The council will focus on finding ways to reduce suicide rates, broaden public awareness of the suicide warning signs, and enhance suicide prevention services and programs throughout the state. Each March the council will submit a report to the Legislature and the governor with its findings and recommendations.

A prior effort to study suicide in Alaska was initiated over twelve years ago when Senator Willie Hensley brought the issue to the forefront. The lives of Alaskans are still at risk.

Establishing this suicide prevention council has bi-partisan support in the Senate. I sincerely urge all members of the committee to join me in supporting SB 198 by offering a hand of support and lifting them from despair.

"Hope – the major weapon against the suicide impulse." Karl Menninger

Received via email on 4/23/01

Dear Senator Halford:

I am writing to express my support for SB 198, creating a state suicide prevention council. I think I speak for many people in the Yukon-Koyukuk region when I express my gratitude for your attention to the issue of suicide. Since I became the Director of Yukon Koyukuk Mental Health here in Galena, I have seen how the suicide of one young person devastates hundreds of friends, associates, and loved ones. The people here want badly for the dying to stop. Supporting them with a council and a coordinator is a good idea.

I favor creating a suicide prevention council, but I believe it will be very important to ensure that the areas and people who are losing loved ones to suicide have the greatest say on the council. I worked in Anchorage for years and know first-hand that urban folks have a hard time understanding how things work in the Bush. Although suicide is not just a rural, Native problem, our people out here are disproportionately represented in the suicide statistics. They must be allowed to speak and plan for themselves. I also hope to see a statewide suicide prevention plan and a funded coordinator position to carry out those plans.

Again, I support your bill and hope to see our state move forward in addressing this difficult problem.

Sincerely,
Diana Weber, MS
Director, Yukon Koyukuk Mental Health Program

550 W. 7th Avenue, Suite 1820
Anchorage, AK 99501
Main line: (907) 269-7960
FAX: (907) 269-7966

The Trust

The Alaska Mental Health Trust Authority

April 17, 2001

Senator Rick Halford
State Capitol
Juneau. AK 99801-1182

Dear Senator Halford:

Subject: Support for Suicide Prevention Council

This letter is to acknowledge the Trust's appreciation for your efforts at addressing the problem of Alaska's high suicide rate by establishing a statewide Suicide Prevention Council, and to confirm the Trust's commitment regarding funds for this initiative.

For FY02, the Trust is willing to match $125,000 in MHTAAR with $125,000 GF/MH to establish the Council and facilitate its work.

Trustees look forward to working with the Council and appreciate your willingness to support this important effort.

Sincerely,

Jeff Jessee
Executive Director

ALASKA STATE LEGISLATURE

Senator Rick Halford

President of the Senate

While in Session:
State Capitol
Juneau, AK 99801-1182
907-465-4958

While in Interim:
P.O. Box 670190
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Again, I support your bill and hope to see our state move forward in addressing this difficult problem.

Sincerely,
Diana Weber, MS
Director, Yukon Koyukuk Mental Health Program

SB

230

Alaska State Legislature

Interim: (May - Dec.)
716 W. 4th Ave
Anchorage, AK 99501
Phone: (907) 2[illegible]-0144
Fax: (907) 269-0148

Session: (Jan. - May)
State Capitol, Suite 504
Juneau, AK 99801-1182
Phone: (907) 465-3822
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Toll free: (800) 770-3822

Senator_Bettye_Davis@legis.state.ak.us
http://www.akdemocrats.org

Senator Bettye Davis

Sectional Analysis
Senate Bill 230

Section 1. Requires school boards to adopt policies restricting school personnel from recommending that a student be given psychotropic drugs.

Section 2. Technical amendment to accommodate the addition of AS 47.10.019(b) in sec. 3 of this bill.

Section 2. Prohibits a child from being considered to be a child in need of aid simply based on the refusal of the child's custodian to give psychotropic drugs to the child.

FISCAL NOTE

STATE OF ALASKA
2002 LEGISLATIVE SESSION

Fiscal Note Number:
Bill Version: SB 230
( ) Publish Date:

Revision Date/Time (Note if correction): 1/16/2002 9:11 am
Dept. Affected: Health & Social Services
Title: PSYCHOTROPIC DRUGS FOR TREATMENT OF CHILDREN IN NEED OF AID
BRU: Purchased Services
Component: Foster Care Special Need
Sponsor: DAVIS
Requestor: SENATE (HES)
Component Number: 2238

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

OPERATING EXPENDITURES	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Personal Services						
Travel						
Contractual						
Supplies						
Equipment						
Land & Structures						
Grants & Claims						
Miscellaneous						
TOTAL OPERATING	0.0	0.0	0.0	0.0	0.0	0.0
CAPITAL EXPENDITURES						
CHANGE IN REVENUES (0)						

FUND SOURCE (Thousands of Dollars)						
1002 Federal Receipts						
1003 GF Match						
1004 GF						
1005 GF/Program Receipts						
1037 GF/Mental Health						
Other (Specify Type--do not abbreviate)						
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0

Estimate of any current year (FY2002) cost:

Check this box (X) if funding for this bill is included in the Governor's FY 2003 budget proposal: [ ]

POSITIONS

Full-time						
Part-time						
Temporary						

ANALYSIS: *(Attach a separate page if necessary)*

Section 1 of this bill does not impact this department. Sections 2 and 3 amend CINA statute AS 47.10.019. This statute places limits on the court's determinations in finding a minor to be a child in need of aid. This amendment adds a subsection which prohibits the court from finding a minor to be a child in need of aid and prohibits the department from taking custody of a child solely on the basis of an allegation or finding that the child's parent or legal custodian refuses to administer or consent to the administration of psychotropic medication.

Should this bill become law, the department does not anticipate any fiscal impact. The bill has impact on practice only.

Prepared by: Debbie Loveid
Phone
Division: Family & Youth Services
Date/Time
Approved by: Elmer A. Lindstrom, Deputy Commissioner
Date 01/24/2002
Agency: Department of Health & Social Services

For distribution information, call the Governor's Legislative Office

(Rev 2/7/2001 OMB)

FISCAL NOTE

22-LS1162\F
Lauterbach
3/8/02

Sen Davis
Attn Richard
+ memo

CS FOR SENATE BILL NO. 230( )

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-SECOND LEGISLATURE - SECOND SESSION

BY

Offered:
Referred:

Sponsor(s): SENATOR DAVIS

A BILL

FOR AN ACT ENTITLED

"An Act relating to recommending or refusing psychotropic drugs as a treatment for children; and relating to notification of parents and custodians about the children in their care."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA

*** Section 1.** AS 14.33.120(a) is amended to read:

(a) Each governing body shall adopt a written school disciplinary and safety program. The program required under this subsection must include written

(1) standards for student behavior and safety that reflect community standards and that include, at a minimum, basic requirements for respect and honesty; standards required under this paragraph must be developed and periodically reviewed with the collaboration of members of each school, parents, teachers, and other persons responsible for the students at a school; a governing body may require that standards developed under this paragraph be consistent for all schools in an attendance area or the district;

(2) standards relating to when a teacher is authorized to remove a student from the classroom for

(A) failure to follow student behavior and safety standards; or

(B) behavior described under AS 14.30.045(1) or (2);

(3) procedures for notifying teachers of dangerous students consistent with AS 47.12.310(b);

(4) standards relating to when a teacher, teacher's assistant, or other person responsible for students is authorized to use reasonable and appropriate force to maintain classroom safety and discipline as described under AS 11.81.430(a)(2);

(5) policies necessary to comply with provisions of state and federal law, including 20 U.S.C. 1400 - 1485 (Individuals with Disabilities Education Act);

(6) standards to address needs of students for whom mental health or substance abuse may be a contributing factor to noncompliance with the school disciplinary and safety program;

(7) policies for implementing a student conflict resolution strategy, including the nonviolent resolution or mediation of conflicts and procedures for reporting and resolving conflicts;

(8) procedures for periodic review and revision of the school disciplinary and safety program;

(9) policies that

(A) prohibit a teacher from making a psychological or medical diagnosis of a behavioral condition or disorder in a student or from recommending a psychotropic drug for a student; and

(B) subject to (A) of this paragraph, provide that, if school personnel perceive that a student may have a behavioral condition or psychological problem or if requested by a student's parent or legal guardian, school personnel may

(i) discuss the student's behavior with the student's parent or legal guardian;

(ii) if appropriate and with the consent of the student's parent or legal guardian, refer a student for an

educational evaluation by an appropriate educational evaluator who is a certified school psychologist, approved school social worker, approved or certified speech pathologist, school nurse, or school counselor;

(iii) if appropriate, recommend to the student's parent or legal guardian that the student be evaluated by a licensed physician or other mental health professional, as defined in AS 47.30.915;

(iv) refer the parent or legal guardian to an appropriate health professional affiliated with the school district for possible evaluation of the student; and

(v) if behavioral conditions or psychological problems appear to persist after taking appropriate steps described in (i) - (iv) of this subparagraph, follow local procedures to provide specialized educational services that are appropriate for the student.

* **Sec. 2.** AS 47.10.019 is amended to read:

Sec. 47.10.019. Limitations on determinations. (a) Notwithstanding other provisions of this chapter, the court may not find a minor to be a child in need of aid under this chapter solely on the basis that the child's family is poor, lacks adequate housing, or exhibits a lifestyle that is different from the generally accepted lifestyle standard of the community where the family lives. However, this **subsection** [SECTION] may not be construed to prevent a court from finding that a child is in need of aid if the child has been subjected to conduct or conditions described in AS 47.10.011 - 47.10.015.

* **Sec. 3.** AS 47.10.019 is amended by adding a new subsection to read:

(b) Notwithstanding other provisions of this chapter, a court may not find a minor to be a child in need of aid and the department may not take custody of a child, including emergency custody, solely based on an allegation or finding that the child's parent or other person having the care and custody of the child has refused to administer or consent to the administration of a psychotropic drug to the child.

Subject: S.B. 230
Date: Fri, 22 Mar 2002 08:14:26 -0500
From: "john breeding" <wildcolt@flash.net>
To: <Senator_Lyda_Green@legis.state.ak.us>

Dear Senator Green

I have just read the amended work draft of S.B. 230, relating to recommending or refusing psychotropic drugs. As I know from listening to you at the first hearing, you are very aware of the problem of coercion in the schools on the issue of psychiatric evaluation and drug treatment, and that you are serious about the dangers and immorality of such behavior. I deeply appreciate your consideration of these serious issues as chairperson of the committee hearing this bill.

With that in mind, I urge you to reconsider the revised wording of this bill which weakens and undermines any intention of protecting children and parents from coercion and the dangers of drug treatment. At the very minimum, it needs to be made very clear that any condition of testing and/or drug treatment tied to school inclusion is illegal. Also, please know that all school personnel should be included, not only teachers (counselors, nurses, administrators, etc.). It is not appropriate for any of them to be acting outside the scope of authentic educational practice. Section Bv really puts things backwards ---educational services are the domain of educators, not something to come in after looking for imagined mental illnesses.

Your leadership in challenging the very harmful practices of diagnosing and drugging our school children, and pointing educators back toward the business of education is too important to be sabotaged by wording that loses all real power to curtail coercion and abdication of educational responsibility.

Finally, I have seen Richard Warner's (CCHR) recommended wording of this legislation, and I strongly support it.

I also encourage you to contact your colleague in Utah, Representative Katherine Bryson, who just succeeded in shepherding through an excellent related bill in that state. I have copied her this email so you will have a contact if you so desire.

I am happy to respond to any questions or concerns you might have.

Sincerely,

John Breeding, PhD
Texans For Safe Education

Subject: CS for Senate Bill No. 230
Date: Thu, 21 Mar 2002 13:03:13 EST
From: WindWarner@aol.com
To: Senator_Lyda_Green@legis.state.ak.us

(NOTE: This may be a duplicate. I tried to send it last night but got a message that AOL was not responding.)

March 20, 2002

To: Senator Lyda Green
From: Richard Warner, President
Citizens Commission on Human Rights

Dear Ms. Green:

Richard Benavides sent us a copy of the CS for Senate Bill No. 230. We feel that unless certain changes are made, this current version of the bill will have the opposite effect of what we believe is intended. The drugging of children and stigmatizing them with psychiatric labels will increase, not decrease.

It must be realized that drugging and labeling children follows the behavioral/psychiatric/psychological evaluation. For a label is certain to follow the evaluation and drugging is certain to be the â€œtreatment.â€ Sections (9) (B) (ii â€" iv) set up the means by which school personnel would be encouraged to send children for psychological, psychiatric, or â€œeducationalâ€ evaluations â€" and parents would be encouraged to have their children evaluated â€" by individualâ€™s working directly for the school or affiliated with the school. This, in effect, sets up the â€œpipelineâ€ to get children drugged.

You may recall that an individual who testified at the March 4 hearing stated that in Fairbanks the school district had a relationship with a particular psychologist or psychiatrist who tended to put the kids on Ritalin.

There is no need for school personnel to â€œreferâ€ or â€œrecommendâ€ that students receive such evaluations unless the school needs to comply with federal laws to receive federal money for children in a particular disability category. One problem that was brought out in the March 4 hearing (and occurs nationally) is that a psychiatrist or psychologist will come to the school and â€œtrainâ€ teachers to view normal children as mentally ill. Or to view certain â€œsymptomsâ€ which may be the result of any one of hundreds of real physical â€" not mental â€" conditions â€" as psychiatric symptoms. The teachers are encouraged to see these kids as educationally or psychiatrically â€œdisabledâ€ and send them to be evaluated.

School personnel are not doctors or psychologists. They should not be suggesting to parents that the child has a â€œdiseaseâ€ or disorder. School personnel should only advise the parents of the behaviors which they have observed and discuss disciplinary or educational approaches to resolve those behaviors. If parents or guardians want more information school personnel can give them a list of resources (as they have done in the Utah bill) and leave it to the parents to choose or not choose to avail themselves of those resources.

In short, if we are truly to rein in the indiscriminate labeling and drugging of children, it must be the parent or guardian â€" not the school - who initiates any contact which might lead in the direction of a child being psychiatrically drugged.

Hereâ€™s our amended version of the bill.

* Section 1. AS 14.33.120 (a) is amended to read:

(a) Each governing body shall adopt a written school disciplinary and safety program. The program required under this subsection must include written

(9) policies that

(A) prohibit school personnel from

(i) making a psychiatric, psychological, or medical diagnosis of a student;
(ii) recommending or requiring that a child take or continue to take a psychotropic drug as a condition of attending school;
(iii) recommending that a parent or guardian seek or use a psychiatric, psychological treatment or evaluation for a child, or;
(iv) recommending a specific, licensed physician or health professional to a parent or guardian

(B) subject to (A) of this paragraph, provide that, school personnel are permitted to discuss the academic, behavioral or discipline problems of a child with a parent or guardian

(C) permit a licensed mental health professional employed by the school, acting for the sole purpose of complying with federal education laws, to

(i) recommend, but not require, a psychiatric, psychological, or behavioral treatment for a child
(ii) conduct a mental health evaluation of a child with the consent of the childâ€™s parent or guardian

(D) permit the school district to make available to the childâ€™s parent or guardian a list of community or school resources provided that the list conspicuously states the followingâ€

â€œThis list is provided as a resource to you. The school neither recommends nor requires that you use this list or any of the services provided in it. It is for you to decide what services, if any, to access and from whom you wish to obtain them.â€

* Section 3. AS 47.10..019 is amended to read:
(b) Notwithstanding other provisions of this chapter, a court may not find a minor to be a child in need of aid and the department may not take custody of a child, including emergency custody, sole based on an allegation or finding that the childâ€™s parent or other person having the care and custody of the child has refused to administer or consent to the administration of a psychotropic drug to the child, or has refused to consent to a psychiatric, psychological, or behavioral treatment or evaluation of a child.

Thank you for your leadership on this legislation. I will try to contact you Thursday morning to discuss this legislation. I will also be sending Senator Davis and Mr. Benavides our analysis and our suggested amendments to the CS.

ALASKA MENTAL HEALTH BOARD

TONY KNOWLES, GOVERNOR
STATE OF ALASKA

431 N. Franklin, Suite 200
Juneau, Alaska 99801
Office: (907) 465-3071
Fax: (907) 465-3079
www.amhb.org

March 4, 2002

Honorable Bettye Davis
Alaska State Senate
State Capital, Room 504
Juneau, Alaska 99811

Dear Senator Davis,

The Alaska Mental Health Board supports the intent of Senate Bill 230. The Board would like to point out a concern with the bill as currently written. Section 1 of the bill amends AS 14.33.120(a) to add a clause that requires school boards to adopt written policies "...prohibiting school personnel from recommending the use of psychotropic drugs for a student and requiring that, if school personnel perceive that a student may have a behavioral or psychological problem, a letter be sent to the parent or other person having care and custody of the child recommending that an appropriate medical or behavioral health evaluation be conducted by a licensed physician."

Depending upon the circumstances, recommending that such an evaluation be conducted is appropriate. However, please be aware that suggesting that a licensed physician conduct the evaluation could present problems in many school districts, particularly in rural Alaska, where qualified physicians may not be readily or regularly available. The Board suggests that you may want to consider revising SB 230 to indicate that these evaluations may be conducted by licensed physicians or licensed mental health professionals (as defined in SB 302).

Our apologies for not bringing this concern to your attention earlier in the process. The Board would be happy to work with you on the bill. Thank you for your consideration.

Sincerely,

Richard Rainery
Executive Director

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Recent Studies on Attention Deficit Hyperactivity Disorder and the Use of Ritalin

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SUMMARY

You asked us to provide information on Attention Deficit Hyperactivity Disorder (ADHD) and the success of treatment procedures involving the drug Ritalin. You also wanted to know if there are any statistical data on the use of Ritalin by children in the U.S. and Alaska.

There are very little data available on the precise number of children currently diagnosed with Attention Deficit Hyperactivity Disorder (ADHD). Recent estimates indicate that approximately 2 million school-age U.S. children are currently diagnosed with ADHD. Roughly one million of these children are being treated with Ritalin. According to state officials to whom we spoke, state agencies do not track the use of Ritalin by Alaska's schoolchildren.

ADHD is a behavioral disorder, the core symptoms include hyperactivity, impulsivity, and inattention. There is no known cause or test for ADHD; however, recent studies show a strong genetic link. The drug Ritalin has been used to treat ADHD since the 1960s. Ritalin has been successful in regulating and controlling ADHD patients' responses to external stimuli which allows them to focus on accomplishing tasks. The use of the drug increased in the 1990s, prompting concern in the general public that the drug is overprescribed. Recent studies reported in the Journal of the American Medical Association (*JAMA*), indicate, however, that the increase is largely due to a broader definition of ADHD and the fact that children are taking the drug for longer periods of time. Two recent national studies have concluded that there is a lack of information on whether Ritalin is helpful in alleviating ADHD symptoms in the long run.

STATISTICAL DATA ON ATTENTION DEFICIT HYPERACTIVITY DISORDER AND RITALIN

We spoke to officials with the State Departments of Education and Health and Social Services regarding statistics on the use of Ritalin in Alaska's schoolchildren. They indicated that to the best of their knowledge the state does not track that kind of information.[1]

National data are also difficult to find. The most frequently cited statistics on ADHD and Ritalin use are provided by the National Institute of Health (NIH). The NIH reports that roughly 2 million school-age children (3-5 percent of children in the U.S. population) are currently diagnosed with Attention Deficit Hyperactivity Disorder (ADHD). According to a 1995 study, roughly 1.5 million of these children (5 to 18 years) were using Ritalin.[2]

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[1] We contacted Harry Gamble, Public Information officer with the Department of Education and Pam Muth, Director of the Division of Maternal, Family, Child Health. In addition we spoke to Dr. Lynn Clark, an Anchorage pediatrician specializing in pediatric learning.

[2] D.J. Safer, J.M. Zito and E.M. Fine, "Increased Methylphenidate Usage for Attention Deficit Disorder in the 1990s," *Pediatrics*, Volume 98, Issue 6, pp. 1084-1088, December 1, 1996. Abstract available on the World Wide Web at *http://www.pediatrics.org/cgi/content/abstract/98/6/1084.*

ATTENTION DEFICIT HYPERACTIVITY DISORDER

The condition known as Attention Deficit Hyperactivity Disorder (ADHD) is one of the most commonly diagnosed behavioral disorders in children today. The core symptoms include impulsivity, hyperactivity, and disruptive behavior. These symptoms are often exhibited in an inability to sit still and pay attention in a classroom setting. Other characteristics, however, may include more subtle behaviors such as frequent distraction by innocuous stimuli. The American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)* diagnostic criteria for ADHD indicates that these types of behaviors must persist for at least six months and to such a degree that is inconsistent with the child's developmental level. These symptoms must also be present in at least two settings (such as at home and at school) and not just one or the other.[3]

Left untreated ADHD may lead to anti-social tendencies and alienation from peers. Children with this disorder often suffer academically and can exhibit at-risk behavior in adolescence such as teenage pregnancy and criminal activity.

> ADHD children are more likely to fail in school and to develop conduct disorders or antisocial personality disorders than are other children. Peers may perceive these children as immature and irritating and avoid or neglect them due to their low frustration tolerance and intrusive bossy behaviors. ADHD is not a benign disorder and may have a lifetime course. In fact, its diagnosis in adults is increasing.[4]

ADHD was first diagnosed in this country in the 1940s. Through the years the condition has had various names: *minimal brain dysfunction, brain-injured child syndrome, hyperkinetic reaction of childhood*, and most recently *attention deficit disorder*. It was once believed that ADHD was caused by brain injury perhaps from early infection or birth complications, or by the use of refined sugar and food additives. These theories have since been discounted, however, because only a small number of ADHD cases seemed to result from brain injury and a restricted diet only seemed to help about 5 percent of children suffering from ADHD.[5]

With the rapid advancement in brain research in the past decade, new theories have developed that ADHD may be connected to brain chemistry. Russell Barkley, a leading expert on ADHD, reports that recent twin studies conducted in this country and in Europe offer the most conclusive evidence that genetics can contribute to the disorder. He indicates that one of the largest studies ever conducted on genetics and ADHD, through the University of Oslo, concluded:

> ADHD has a hereditability approaching 80 percent, meaning that up to 80 percent of the differences in attention, hyperactivity and

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[3] Attachment A includes the detailed list of behaviors that must exist, and for how long, before a diagnosis for ADHD can be given.

[4] Ballard, Shirley, Bolan, Morna, et al., "Neurological Basis of Attention-Deficit/Hyperactivity Disorder," *Adolescence*, December 22, 1997.

[5] "Attention Deficit Hyperactivity Disorder: Decade of the Brain," National Institute of Health Publication, *http://www.nimh.nih.gov/publicat/adhd.html* (accessed December 31, 1998). A copy is included as Attachment B.

> impulsivity between people with ADHD and those without the disorder can be explained by genetic factors.[6]

Barkley contends that ADHD may be caused by the brain's inability to inhibit impulses. Part of the problem is that certain receptors in the brain which control the ability to focus attention on performing a specific task and curb impulsiveness do not respond to the brain's natural chemicals (specifically dopamine and noreepinephrine). This chemical "block" makes the ability to stick with a mundane task almost impossible.

This may account for the success of the use of psychostimulants such as Ritalin to treat behavioral problems in ADHD sufferers. Despite the progress in scientific research, however, there is still no known cause or test for ADHD.

THE EFFECT OF RITALIN IN TREATING ADHD

By far, the most common treatment of ADHD, currently, is the use of psychostimulants such as Methylphenidate, also known as Ritalin. The drug has proven to be very effective in controlling the most adverse behaviors of ADHD. A recent article published in *JAMA* states as follows:

> [m]edications have been unequivocally shown . . . to reduce core symptoms of hyperactivity, impulsivity, and inattentiveness. They improve classroom behavior and academic performance; diminish oppositional and aggressive behaviors; promote increased interaction with teachers, family, and others; and increase participation in leisure time activities.[7]

Ritalin, created in 1955, was approved by the Food and Drug Administration for use in treating children with behavioral problems in 1961. Use of the drug to treat children with symptoms of ADHD continued through the 1970s and increased dramatically in the 1980s and 1990s.

Basically, Ritalin helps patients concentrate on specific tasks. The drug balances brain chemicals so that individuals can respond more selectively to impulses. With the use of Ritalin, ADHD patients can neurologically filter the overload of external stimuli and concentrate on the task at hand.

According to the NIH, Ritalin has not proven to be addictive in children and there is no evidence that children will suffer harm if they stop taking the drug. Generally, children do not experience a "high" when taking it, nor does it make them sleepy. Possible side effects include weight loss, loss of appetite, and insomnia. The NIH recommends that individuals taking the drug be carefully monitored and receive ongoing follow-up treatment, especially if side effects occur. It is also

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[6] Russell Barkley, "Attention-Deficit Hyperactivity Disorder," *Scientific American*, September, 1998, *http://www.sciam.com/1998/0998issue/0998barkley.html* (accessed January 12, 1999). A copy is included as Attachment C.

[7] Larry Goldman, Myron Genel, Rebecca Besman and Priscilla Stanetz, "Diagnosis and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents," *JAMA*, April 8, 1998, Vol. 279, No. 14. A copy of this article is included as Attachment D.

recommended that patients stop taking the medication periodically to monitor core symptoms and to test if the medication is still needed.[8]

Overdiagnosis of ADHD and Overprescription of Ritalin

Concerns have arisen in recent years over the increase in production of Ritalin and the possibility that it is being overprescribed. There is also a general perception by the public that doctors are too quick to diagnose ADHD in children.

A recent study on this subject, conducted by researchers from Johns Hopkins University, indicates that there has been an increase in the prevalence of Ritalin treatment of ADHD in the 1990s, but, in their estimation, the increase does not suggest an overdiagnosis of ADHD and overprescription of Ritalin. The researchers surveyed Ritalin patients in five regions in the United States and concluded:

> [t]he findings from regional and national databases indicate that on average, there has been a 2.5-fold increase in the prevalence of methylphenidate treatment of youths with ADD between 1990 and 1995. In all, approximately 2.8% (or 1.5 million) of US youths aged 5 to 18 were receiving this medication in mid-1995. The increase in methylphenidate treatment for ADD appears largely related to an increased duration of treatment; more girls, adolescents, and inattentive youths on the medication; and a recently improved public image of this medication treatment. . . . [In conclusion] the database findings presented serve to correct exaggerated media claims of a 6-fold expansion of methylphenidate treatment . . .[9]

The perception in the media that the diagnosis of ADHD and Ritalin use is at increased proportions could also be a result of changes in the clinical approach to the disorder. The *JAMA* article indicates that there are several significant reasons for the increase in the number of individuals with ADHD and in Ritalin use. Among these are a more general awareness and acceptance that ADHD actually exists by the public and the medical community; a broader definition of core symptoms including inattentiveness which may not manifest itself in hyperactivity; more confidence by medical experts that the drug does not inhibit physical growth in children; and finally increased medical use of the drug by adults.

Nevertheless, an increase in the use of Ritalin is still a genuine concern to the general public and has prompted strong debate in the media and in the medical community. A recent book, *Running on Ritalin: A Physician Reflects on Children, Society and Performance in a Pill* by Dr. Lawrence Diller, examines some of the cultural changes and assumptions that have occurred in the 1990s and how these changes may correlate to the rise in Ritalin use. In his book, Dr. Diller, a behavioral pediatrician, does not dispute the fact that Ritalin is an effective treatment for ADHD.

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[8] "Attention Deficit Hyperactivity Disorder: Decade of the Brain," NIH Publication (see Attachment B). "Ritalin Stimulant Medication Information Page," prepared by Pediatric Neurological Associates, February 24, 1998, *http://www.pediatricneurology.com/ritalin.html* (accessed December 29, 1998). A copy is included as Attachment E.

[9] D.J. Safer, J.M. Zito, and E.M. Fine, "Increased Methylphenidate Usage for Attention Deficit Disorder in the 1990s," *Pediatrics*.

He does, however, feel that if doctors only prescribe Ritalin without examining the current lifestyle of families they do a disservice to ADHD patients. Dr. Diller elaborates in a recent interview on National Public Radio:

> The fact that Ritalin works per se has been known and known for 50 years. What it tells us is at the moment, we're tending to view our children's problems as a chemical imbalance. And I think that is a limited view. I think rather this should be viewed more as a living imbalance between what our children's brains can deliver and what's being expected from them and what the responses are from the environment. . . . Ritalin allows a person to address [a] living imbalance in a more – an easier fashion. But if I only prescribe Ritalin and I don't bring up to that family, or the large of society, the factors – economic, social, cultural – that are involved in this large living imbalance . . . I'm complicitous.[10]

POTENTIAL ILLICIT USE AND DISTRIBUTION OF RITALIN

Since Ritalin is generally prescribed to children and adolescents, there is concern that the drug is more vulnerable to potential illicit use. A 1998 survey conducted in Wisconsin found that some students who had prescriptions for Ritalin had been pressured to sell or give the drug to other non-Ritalin using classmates. The study, conducted by a Wisconsin-based clinic that treats ADHD patients, found that 16 percent of students had been approached to sell, give, or trade their medication. The survey also reported that not all schools had written policies regarding prescription drugs and that security for stored prescription drugs was sometimes lax. The report urged more strict monitoring of prescription drugs on school grounds.[11]

Recent studies, however, have concluded that although there is potential for the abuse of any stimulant drug by youths, the evidence does not point to a serious Ritalin abuse problem nationwide. It has been speculated that one reason for this may be that the actual effects of Ritalin take up to an hour to cause an affect in the brain. Ritalin is taken orally and is drawn to the brain slowly, up to 60 minutes. Generally, if a drug produces a strong reaction quickly it has more potential for abuse. This leads experts to the conclusion that the use of Ritalin rarely leads to addiction.[12] Some nonmedical use of Ritalin has been reported, however, usually through snorting or injecting the "cooked" tablets. The *JAMA* article explains:

> There is little disagreement that stimulants as a class have marked abuse potential, and their misuse can have severe adverse medical and social consequences. However, stimulants

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[10] Dr. Lawrence Diller as interviewed by Barbara Bogave, host of *Fresh Air*, a radio interview program produced by National Public Radio, September 10, 1998.

[11] "Researchers Find Potential for Ritalin Abuse in Schools," *Mental Health Net*, June 15, 1998. Available at *http://www.cmhc.com/articles/adhd3.htm* (accessed December 21, 1998). A copy is included as Attachment F.

[12] "New Research Helps Explain Ritalin's Low Abuse Potential When Taken as Prescribed," National Institute on Drug Abuse Advisory, September 29, 1998. Available at *http://www.nida.nih.gov/MedAdvIMA-929.html* (accessed January 26, 1998). A copy is included as Attachment G.

> differ in their ability to induce euphoria and thus liability to abuse. Almost all of the reports of abuse of methylphenidate itself have been of polysubstance-abusing adults who have tried to solubilize the tablets and inject them, . . . while nonmedical stimulant use may be somewhat more common among adolescents in recent years, little use is of methyphenidate itself, and the pattern of use for the vast majority appears to be experimental and not of the type (regular, heavy, injecting, etc.) likely to lead to serious adverse consequences.

Although it doesn't appear to be a widespread problem at this time, the National Institute of Drug Abuse is aware of the potential for abuse, and the U.S. Drug Enforcement Administration strictly controls the manufacture and distribution of Ritalin.[13]

RECENT NIMH AND NIH STUDIES ON ADHD

Two recent studies of ADHD and the use of Ritalin have recently been conducted by national health organizations. Both resulted in a call for more long term studies of the use of the drug and its effect on the disorder in the long run.

The National Institute of Mental Health (NIMH) has just completed one of the largest and longest clinical trials ever conducted on children and ADHD. The study lasted 14 months and involved 576 children in six cities. The subjects were divided into four groups: one group received just drugs; one received just therapy (such as parent training, teacher counseling, and intensive work on social skills); the third group received both drugs and therapy; and the fourth group, used as a control, received whatever treatment was available.

Although the results of the study have not been published, the NIMH's findings were presented at the annual meeting of the American Academy of Child and Adolescent Psychiatry in October 1998. The study concluded that, in the months these children were evaluated, *drugs and therapy* and *drugs alone* proved to be the most effective. The researchers warn, however, that this conclusion should not be interpreted to mean that ADHD can be successfully and completely treated with drugs

> The children getting nondrug therapy received intensive treatment for nine months, including eight weeks at a special summer camp, but then treatment leveled off. The children on drugs, by contrast, got their doses like clockwork for the full period of the study, three times a day, seven days a week. "There are few, if any, psychosocial researchers who would say that five months after you stop treatment, children would do as well as those children still taking drugs," says Dr. William Pelham, [leading researcher in the NIMH study], "Everybody

[13] "NIDA Infofax on Ritalin," National Institute on Drug Abuse, February 1998. This information is available at *http://www.nida.nih.gov/Infofax/ritalin.html* (accessed December 31, 1998). A copy is included as Attachment H.

knows that, in the short run, medication has a whopping effect."[14]

Clinical trials have proven that Ritalin works in the short run. But the need for long term trials on ADHD is evident in the NIMH study (researchers will continue to monitor the subjects in this recent study for the next six years).

This is also apparent in findings published by the NIH, which conducted a Consensus Development Conference in November 1998. This two-day public session brought together medical experts from all over the country to discuss and evaluate the diagnosis and treatment of ADHD.

The results of this conference were published in a consensus statement shortly after the conference ended. Among other things, the participants concluded as follows: further research is needed to develop a more precise, age and gender specific test for ADHD; a consensus is needed in the medical community about which patients should be treated with Ritalin; improved awareness in the health community and a consistent set of diagnostic procedures and practice guidelines are needed to appropriately assess and treat the disorder; and most importantly, long term studies on treatment of ADHD, especially among adolescents, must be undertaken.[15]

OTHER SOURCES OF INFORMATION ON ADHD AND RITALIN

Medical experts agree that children who may have ADHD should be evaluated thoroughly before they are prescribed a drug such as Ritalin. It is recommended that children undergo a complete diagnostic evaluation including psychological testing and laboratory tests. An ADHD expert takes into account the child's home and school environments, and parental involvement with the child's development. The child's teachers should also be consulted for observational information.

We have included with this report a helpful information pamphlet published by the NIMH. The pamphlet includes information on the steps involved in making a diagnosis for ADHD and the options available to parents for treatment. The pamphlet also lists a number of sources of information and support for ADHD patients. These include references to numerous books on the subject, some written for children and teens with ADHD, as well as a list of national support groups and organizations that deal with the disorder.[16]

I hope you find this information useful. Please do not hesitate to contact us if you have questions or need additional information.

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[14] Susan Brink, "Doing Ritalin Right," *U.S. News & World Report*, November 23, 1998, pp. 76-81. This article highlights the findings from the NIMH study. A copy is included as Attachment I.

[15] "Diagnosis and Treatment of Attention Deficit Hyperactivity Disorder—Draft Report," National Institute of Health Consensus Statement Online, November 16-18, 1998. This information is available at *http://www.odp.od.nih.gov/consensus/cons/110/110_statement.htm* (accessed January 26, 1999). A copy is included as Attachment J.

[16] "Attention Deficit Hyperactivity Disorder: Decade of the Brain," NIH Publication (see Attachment B).

List of Attachments

Attachment A – "Diagnostic Criteria for Attention-Deficit/Hyperactivity Disorder," *Diagnostic Statistical Manual of Mental Disorders, Fourth Edition*

Attachment B – "Attention Deficit Hyperactivity Disorder: Decade of the Brain," NIH Publication

Attachment C – Russell Barkley, "Attention-Deficit Hyperactivity Disorder," *Scientific American*, September, 1998

Attachment D – Larry Goldman, Myron Genel, Rebecca Besman, Priscilla Stanetz, "Diagnosis and Treatment of Attention- Deficit/Hyperactivity Disorder in Children and Adolescents," *JAMA*, April 8, 1998

Attachment E – "Ritalin Stimulant Medication Information Page," prepared by Pediatric Neurological Associates

Attachment F – "Researchers Find Potential for Ritalin Abuse in Schools," *Mental Health Net*, June 15, 1998

Attachment G – "New Research Helps Explain Ritalin's Low Abuse Potential When Taken as Prescribed," National Institute on Drug Abuse Advisory, September 29, 1998

Attachment H – "NIDA Infofax on Ritalin," National Institute on Drug Abuse, February 1998

Attachment I – Susan Brink, "Doing Ritalin Right," *U.S. News & World Report*, November 23, 1998

Attachment J - "Diagnosis and Treatment of Attention Deficit Hyperactivity Disorder—Draft Report," NIH Consensus Statement Online, November 16-18, 1998

Attachment A

"Diagnostic Criteria for Attention-Deficit/Hyperactivity Disorder,"
Diagnostic Statistical Manual of Mental Disorder, Fourth Edition

Table 1.—Diagnostic Criteria for Attention-Deficit/Hyperactivity Disorder*

A. Either (1) or (2):
   (1) inattention: 6 (or more) of the following symptoms of inattention have persisted for at least 6 mo to a degree that is maladaptive and inconsistent with developmental level:
      (a) often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities
      (b) often has difficulty sustaining attention in tasks or play activities
      (c) often does not seem to listen when spoken to directly
      (d) often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions)
      (e) often has difficulty organizing tasks and activities
      (f) often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework)
      (g) often loses things necessary for tasks or activities (eg, toys, school assignments, pencils, books, or tools)
      (h) is often easily distracted by extraneous stimuli
      (i) is often forgetful in daily activities
   (2) hyperactivity-impulsivity: 6 (or more) of the following symptoms of hyperactivity-impulsivity have persisted for at least 6 mo to a degree that is maladaptive and inconsistent with developmental level:
      (a) often fidgets with hands or feet or squirms in seat
      (b) often leaves seat in classroom or in other situations in which remaining seated is expected
      (c) often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness)
      (d) often has difficulty playing or engaging in leisure activities quietly
      (e) is often "on the go" or often acts as if "driven by a motor"
      (f) often talks excessively
      (g) often blurts out answers before questions have been completed
      (h) often has difficulty awaiting turn
      (i) often interrupts or intrudes on others (eg, butts into conversations or games)
B. Some hyperactive-impulsive or inattentive symptoms that caused impairment were present before age 7 y
C. Some impairment from the symptoms is present in 2 or more settings (eg, at school [or work] and at home)
D. There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning
E. The symptoms do not occur exclusively during the course of a pervasive developmental disorder, schizophrenia, or other psychotic disorder and are not better accounted for by another mental disorder (eg, mood disorder, anxiety disorder, dissociative disorder, or a personality disorder)

*_Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition_,[10] code based on type: 314.01 Attention-Deficit/Hyperactivity Disorder, Combined Type: if both criteria A(1) and A(2) are met for the past 6 months; 314.00 Attention-Deficit/Hyperactivity Disorder, Predominantly Inattentive Type: if criterion A(1) is met but criterion A(2) is not met for the past 6 months; 314.01 Attention-Deficit/Hyperactivity Disorder, Predominantly Hyperactive-Impulsive Type: if criterion A(2) is met but Criterion A(1) is not met for the past 6 months. Coding note: For individuals (especially adolescents and adults) who currently have symptoms that no longer meet full criteria, "In Partial Remission" should be specified.

Reprinted from "Diagnosis and Treatment of Attention-Deficit Hyperactivity Disorder in Children and Adolescents," JAMA, April 8, 1998, vol. 279, no. 14.

Attachment B

"Attention Deficit Hyperactivity Disorder: Decade of the Brain,"
NIH Publication

Attention Deficit Hyperactivity Disorder

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Attention Deficit Hyperactivity Disorder

Imagine living in a fast-moving kaleidoscope, where sounds, images, and thoughts are constantly shifting. Feeling easily bored, yet helpless to keep your mind on tasks you need to complete. Distracted by unimportant sights and sounds, your mind drives you from one thought or activity to the next. Perhaps you are so wrapped up in a collage of thoughts and images that you don't notice when someone speaks to you.

For many people, this is what it's like to have Attention Deficit Hyperactivity Disorder, or ADHD. They may be unable to sit still, plan ahead, finish tasks, or be fully aware of what's going on around them. To their family, classmates or coworkers, they seem to exist in a whirlwind of disorganized or frenzied activity. Unexpectedly--on some days and in some situations--they seem fine, often leading others to think the person with ADHD can actually control these behaviors. As a result, the disorder can mar the person's relationships with others in addition to disrupting their daily life, consuming energy, and diminishing self-esteem.

ADHD, once called hyperkinesis or minimal brain dysfunction, is one of the most common mental disorders among children. It affects 3 to 5 percent of all children, perhaps as many as 2 million American children. Two to three times more boys than girls are affected. On the average, at least one child in every classroom in the United States needs help for the disorder. ADHD often continues into adolescence and adulthood, and can cause a lifetime of frustrated dreams and emotional pain.

But there is help...and hope. In the last decade, scientists have learned much about the course of the disorder and are now able to identify and treat children, adolescents, and adults who have it. A variety of medications, behavior-changing therapies, and educational options are already available to help people with ADHD focus their attention, build self-esteem, and function in new ways.

In addition, new avenues of research promise to further improve diagnosis and treatment. With so many American children diagnosed as having attention disorder, research on ADHD has become a national priority. During the 1990s--which the President and Congress have declared the "Decade of the Brain"--it is possible that scientists will pinpoint the biological basis of ADHD and learn how to prevent or treat it even more effectively.

This booklet is provided by the National Institute of Mental Health (NIMH), the Federal agency that supports research nationwide on the brain, mental illnesses, and mental health. Scientists supported by NIMH are dedicated to understanding the workings and interrelationships of the various regions of the brain, and to developing preventive measures and new treatments to overcome brain disorders that handicap people in school, work, and play.

The booklet offers up-to-date information on attention deficit disorders and the role of NIMH-sponsored research in discovering underlying causes and effective treatments. It describes treatment options, strategies for coping, and sources of information and support. You'll find out what it's like to have ADHD from the stories of Mark, Lisa, and Henry. You'll see their early frustrations, their steps toward getting help, and their hopes for the future.

The individuals referred to in this brochure are not real, but their stories are representative of people who show symptoms of ADHD.

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UNDERSTANDING THE PROBLEM

Mark

Mark, age 14, has more energy than most boys his age. But then, he's always been overly active. Starting at age 3, he was a human tornado, dashing around and disrupting everything in his path. At home, he darted from one activity to the next, leaving a trail of toys behind him. At meals, he upset dishes and chattered nonstop. He was reckless and impulsive, running into the street with oncoming cars, no matter how many times his mother explained the danger or scolded him. On the playground, he seemed no wilder than the other kids. But his tendency to overreact--like socking playmates simply for bumping into him--had already gotten him into trouble several times. His parents didn't know what to do. Mark's doting grandparents reassured them, "Boys will be boys. Don't worry, he'll grow out of it." But he didn't.

Lisa

At age 17, Lisa still struggles to pay attention and act appropriately. But this has always been hard for her. She still gets embarrassed thinking about that night her parents took her to a restaurant to celebrate her 10th birthday. She had gotten so distracted by the waitress' bright red hair that her father called her name three times before she remembered to order. Then before she could stop herself, she blurted, "Your hair dye looks awful!"

In elementary and junior high school, Lisa was quiet and cooperative but often seemed to be daydreaming. She was smart, yet couldn't improve her grades no matter how hard she tried. Several times, she failed exams. Even though she knew most of the answers, she couldn't keep her mind on the test. Her parents responded to her low grades by taking away privileges and scolding, "You're just lazy. You could get better grades if you only tried." One day, after Lisa had failed yet another exam, the teacher found her sobbing, "What's wrong with me?"

Henry

Although he loves puttering around in his shop, for years Henry has had dozens of unfinished carpentry projects and ideas for new ones he knew he would never complete. His garage was piled so high with wood, he and his wife joked about holding a fire sale.

Every day Henry faced the real frustration of not being able to concentrate long enough to complete a task. He was fired from his job as stock clerk because he lost inventory and carelessly filled out forms. Over the years, afraid that he might be losing his mind, he had seen psychotherapists and tried several medications, but none ever helped him concentrate. He saw the same lack of focus in his young

son and worried. | Home | Public | Info on Spec Mntl Dis | Top of Pub |

What Are the Symptoms of ADHD?

The three people you've just met, Mark, Lisa, and Henry, all have a form of ADHD--Attention Deficit Hyperactivity Disorder. ADHD is not like a broken arm, or strep throat. Unlike these two disorders, ADHD does not have clear physical signs that can be seen in an x-ray or a lab test. ADHD can only be identified by looking for certain characteristic behaviors, and as with Mark, Lisa, and Henry, these behaviors vary from person to person. Scientists have not yet identified a single cause behind all the different patterns of behavior--and they may never find just one. Rather, someday scientists may find that ADHD is actually an umbrella term for several slightly different disorders.

At present, ADHD is a diagnosis applied to children and adults who consistently display certain characteristic behaviors over a period of time. The most common behaviors fall into three categories: inattention, hyperactivity, and impulsivity.

Inattention. People who are inattentive have a hard time keeping their mind on any one thing and may get bored with a task after only a few minutes. They may give effortless, automatic attention to activities and things they enjoy. But focusing deliberate, conscious attention to organizing and completing a task or learning something new is difficult.

For example, Lisa found it agonizing to do homework. Often, she forgot to plan ahead by writing down the assignment or bringing home the right books. And when trying to work, every few minutes she found her mind drifting to something else. As a result, she rarely finished and her work was full of errors.

Hyperactivity. People who are hyperactive always seem to be in motion. They can't sit still. Like Mark, they may dash around or talk incessantly. Sitting still through a lesson can be an impossible task. Hyperactive children squirm in their seat or roam around the room. Or they might wiggle their feet, touch everything, or noisily tap their pencil. Hyperactive teens and adults may feel intensely restless. They may be fidgety or, like Henry, they may try to do several things at once, bouncing around from one activity to the next.

Impulsivity. People who are overly impulsive seem unable to curb their immediate reactions or think before they act. As a result, like Lisa, they may blurt out inappropriate comments. Or like Mark, they may run into the street without looking. Their impulsivity may make it hard for them to wait for things they want or to take their turn in games. They may grab a toy from another child or hit when they're upset.

Not everyone who is overly hyperactive, inattentive, or impulsive has an attention disorder. Since most people sometimes blurt out things they didn't mean to say, bounce from one task to another, or become disorganized and forgetful, how can specialists tell if the problem is ADHD?

To assess whether a person has ADHD, specialists consider several critical questions: Are these behaviors excessive, long-term, and pervasive? That is, do they occur more often than in other people the same age? Are they a continuous problem, not just a response to a temporary situation? Do the behaviors occur in several settings or only in one specific place like the playground or the office? The person's pattern of behavior is compared against a set of criteria and characteristics of the disorder. These criteria appear in a diagnostic reference book called the DSM (short for the *Diagnostic and Statistical Manual of Mental Disorders*).

According to the diagnostic manual, there are three patterns of behavior that indicate ADHD. People with ADHD may show several signs of being consistently inattentive. They may have a pattern of being hyperactive and impulsive. Or they may show all three types of behavior.

According to the DSM, signs of **inattention** include:

- becoming easily distracted by irrelevant sights and sounds
- failing to pay attention to details and making careless mistakes
- rarely following instructions carefully and completely
- losing or forgetting things like toys, or pencils, books, and tools needed for a task

Some signs of **hyperactivity** and **impulsivity** are:

- feeling restless, often fidgeting with hands or feet, or squirming
- running, climbing, or leaving a seat, in situations where sitting or quiet behavior is expected
- blurting out answers before hearing the whole question
- having difficulty waiting in line or for a turn

Because everyone shows some of these behaviors at times, the DSM contains very specific guidelines for determining when they indicate ADHD. The behaviors must appear early in life, before age 7, and continue for at least 6 months. In children, they must be more frequent or severe than in others the same age. Above all, the behaviors must create a real handicap in at least two areas of a person's life, such as school, home, work, or social settings. So someone whose work or friendships are not impaired by these behaviors would not be diagnosed with ADHD. Nor would a child who seems overly active at school but functions well elsewhere.

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Can Any Other Conditions Produce These Symptoms?

The fact is, many things can produce these behaviors. Anything from chronic fear to mild seizures can make a child seem overactive, quarrelsome, impulsive, or inattentive. For example, a formerly cooperative child who becomes overactive and easily distracted after a parent's death is dealing with an emotional problem, not ADHD. A chronic middle ear infection can also make a child seem distracted and uncooperative. So can living with family members who are physically abusive or addicted to drugs or alcohol. Can you imagine a child trying to focus on a math lesson when his or her safety and well-being are in danger each day? Such children are showing the effects of other problems, not ADHD.

In other children, ADHD-like behaviors may be their response to a defeating classroom situation. Perhaps the child has a learning disability and is not developmentally ready to learn to read and write at the time these are taught. Or maybe the work is too hard or too easy, leaving the child frustrated or bored.

Tyrone and Mimi are two examples of how classroom conditions can elicit behaviors that look like ADHD. For months, Tyrone shouted answers out in class, then became disruptive when the teacher ignored him. He certainly seemed hyperactive and impulsive. Finally, after observing Tyrone in other situations, his teacher realized he just wanted approval for knowing the right answer. She began to seek opportunities to call on him and praise him. Gradually, Tyrone became calmer and more cooperative.

Mimi, a fourth grader, made loud noises during reading group that constantly disrupted the class. One day the teacher realized that the book was too hard for Mimi. Mimi's disruptions stopped when she was placed in a reading group where the books were easier and she could successfully participate in the lesson.

Like Tyrone and Mimi, some children's attention and class participation improve when the class structure and lessons are adjusted a bit to meet their emotional needs, instructional level, or learning style. Although such children need a little help to get on track at school, they probably don't have ADHD.

It's also important to realize that during certain stages of development, the majority of children that age tend to be inattentive, hyperactive, or impulsive--but do not have ADHD. Preschoolers have lots of energy and run everywhere they go, but this doesn't mean they are hyperactive. And many teenagers go through a phase when they are messy, disorganized, and reject authority. It doesn't mean they will have a

lifelong problem controlling their impulses.

ADHD is a serious diagnosis that may require long-term treatment with counseling and medication. So it's important that a doctor first look for and treat any other causes for these behaviors.

What Can Look Like ADHD?

- Underachievement at school due to a learning disability
- Attention lapses caused by petit mal seizures
- A middle ear infection that causes an intermittent hearing problem
- Disruptive or unresponsive behavior due to anxiety or depression

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Can Other Disorders Accompany ADHD?

One of the difficulties in diagnosing ADHD is that it is often accompanied by other problems. For example, many children with ADHD also have a specific learning disability (LD), which means they have trouble mastering language or certain academic skills, typically reading and math. ADHD is not in itself a specific learning disability. But because it can interfere with concentration and attention, ADHD can make it doubly hard for a child with LD to do well in school.

A very small proportion of people with ADHD have a rare disorder called Tourette's syndrome. People with Tourette's have tics and other movements like eye blinks or facial twitches that they cannot control. Others may grimace, shrug, sniff, or bark out words. Fortunately, these behaviors can be controlled with medication. Researchers at NIMH and elsewhere are involved in evaluating the safety and effectiveness of treatment for people who have both Tourette's syndrome and ADHD.

More serious, nearly half of all children with ADHD--mostly boys--tend to have another condition, called oppositional defiant disorder. Like Mark, who punched playmates for jostling him, these children may overreact or lash out when they feel bad about themselves. They may be stubborn, have outbursts of temper, or act belligerent or defiant. Sometimes this progresses to more serious conduct disorders. Children with this combination of problems are at risk of getting in trouble at school, and even with the police. They may take unsafe risks and break laws--they may steal, set fires, destroy property, and drive recklessly. It's important that children with these conditions receive help before the behaviors lead to more serious problems.

At some point, many children with ADHD--mostly younger children and boys--experience other emotional disorders. About one-fourth feel anxious. They feel tremendous worry, tension, or uneasiness, even when there's nothing to fear. Because the feelings are scarier, stronger, and more frequent than normal fears, they can affect the child's thinking and behavior. Others experience depression. Depression goes beyond ordinary sadness--people may feel so *"down"* that they feel hopeless and unable to deal with everyday tasks. Depression can disrupt sleep, appetite, and the ability to think.

Because emotional disorders and attention disorders so often go hand in hand, every child who has ADHD should be checked for accompanying anxiety and depression. Anxiety and depression can be treated, and helping children handle such strong, painful feelings will help them cope with and overcome the effects of ADHD.

(Graphic Omitted: Diagram showing the overlapping of other disorders with ADHD.)

Of course, not all children with ADHD have an additional disorder. Nor do all people with learning disabilities, Tourette's syndrome, oppositional defiant disorder, conduct disorder, anxiety, or depression have ADHD. But when they do occur together, the combination of problems can seriously complicate a person's life. For this reason, it's important to watch for other disorders in children who have ADHD.

What Causes ADHD?

Understandably, one of the first questions parents ask when they learn their child has an attention disorder is *"Why? What went wrong?"*

Health professionals stress that since no one knows what causes ADHD, it doesn't help parents to look backward to search for possible reasons. There are too many possibilities to pin down the cause with certainty. It is far more important for the family to move forward in finding ways to get the right help.

Scientists, however, do need to study causes in an effort to identify better ways to treat, and perhaps some day, prevent ADHD. They are finding more and more evidence that ADHD does not stem from home environment, but from biological causes. When you think about it, there is no clear relationship between home life and ADHD. Not all children from unstable or dysfunctional homes have ADHD. And not all children with ADHD come from dysfunctional families. Knowing this can remove a huge burden of guilt from parents who might blame themselves for their child's behavior.

Over the last decades, scientists have come up with possible theories about what causes ADHD. Some of these theories have led to dead ends, some to exciting new avenues of investigation.

One disappointing theory was that all attention disorders and learning disabilities were caused by minor head injuries or undetectable damage to the brain, perhaps from early infection or complications at birth. Based on this theory, for many years both disorders were called *"minimal brain damage"* or *"minimal brain dysfunction."* Although certain types of head injury can explain some cases of attention disorder, the theory was rejected because it could explain only a very small number of cases. Not everyone with ADHD or LD has a history of head trauma or birth complications.

Another theory was that refined sugar and food additives make children hyperactive and inattentive. As a result, parents were encouraged to stop serving children foods containing artificial flavorings, preservatives, and sugars. However, this theory, too, came under question. In 1982, the National Institutes of Health (NIH), the Federal agency responsible for biomedical research, held a major scientific conference to discuss the issue. After studying the data, the scientists concluded that the restricted diet only seemed to help about 5 percent of children with ADHD, mostly either young children or children with food allergies.

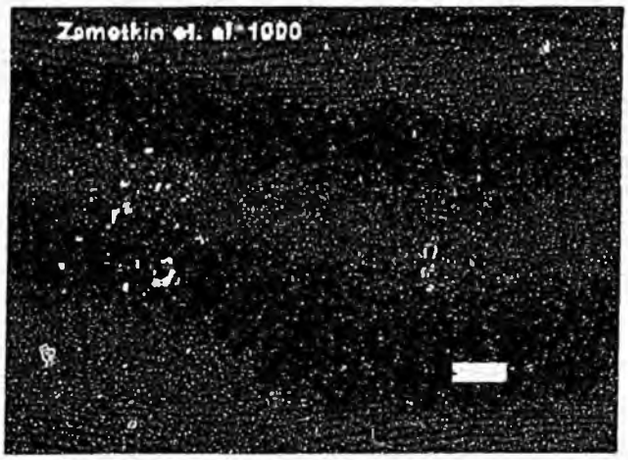
ADHD Is Not Usually Caused by:

- too much TV
- food allergies
- excess sugar
- poor home life
- poor schools

In recent years, as new tools and techniques for studying the brain have been developed, scientists have been able to test more theories about what causes ADHD.

Using one such technique, NIMH scientists demonstrated a link between a person's ability to pay continued attention and the level of activity in the brain. Adult subjects were asked to learn a list of words. As they did, scientists used a PET (positron emission tomography) scanner to observe the brain at work. The researchers measured the level of glucose used by the areas of the brain that inhibit impulses and control attention. Glucose is the brain's main source of energy, so measuring how much is used is a good indicator of the brain's activity level. The investigators found important differences between people who have ADHD and those who don't. In people with ADHD, the brain areas that control attention used

less glucose, indicating that they were less active. It appears from this research that a lower level of activity in some parts of the brain may cause inattention.



Brain scan images produced by positron emision tomography (PET) show differences between an adult with Attention deficit Hyperactivity Disorder (right) and an adult free of the disease (left).

The next step will be to research WHY there is less activity in these areas of the brain. Scientists at NIMH hope to compare the use of glucose and the activity level in mild and severe cases of ADHD. They will also try to discover why some medications used to treat ADHD work better than others, and if the more effective medications increase activity in certain parts of the brain.

Researchers are also searching for other differences between those who have and do not have ADHD. Research on how the brain normally develops in the fetus offers some clues about what may disrupt the process. Throughout pregnancy and continuing into the first year of life, the brain is constantly developing. It begins its growth from a few all-purpose cells and evolves into a complex organ made of billions of specialized, interconnected nerve cells. By studying brain development in animals and humans, scientists are gaining a better understanding of how the brain works when the nerve cells are connected correctly and incorrectly. Scientists at NIMH and other research institutions are tracking clues to determine what might prevent nerve cells from forming the proper connections. Some of the factors they are studying include drug use during pregnancy, toxins, and genetics.

Research shows that a mother's use of cigarettes, alcohol, or other drugs during pregnancy may have damaging effects on the unborn child. These substances may be dangerous to the fetus's developing brain. It appears that alcohol and the nicotine in cigarettes may distort developing nerve cells. For example, heavy alcohol use during pregnancy has been linked to fetal alcohol syndrome (FAS), a condition that can lead to low birth weight, intellectual impairment, and certain physical defects. Many children born with FAS show much the same hyperactivity, inattention, and impulsivity as children with ADHD.

Drugs such as cocaine--including the smokable form known as crack--seem to affect the normal development of brain receptors. These brain cell parts help to transmit incoming signals from our skin, eyes, and ears, and help control our responses to the environment. Current research suggests that drug abuse may harm these receptors. Some scientists believe that such damage may lead to ADHD.

Toxins in the environment may also disrupt brain development or brain processes, which may lead to ADHD. Lead is one such possible toxin. It is found in dust, soil, and flaking paint in areas where leaded gasoline and paint were once used. It is also present in some water pipes. Some animal studies suggest that children exposed to lead may develop symptoms associated with ADHD, but only a few cases have actually been found.

Other research shows that attention disorders tend to run in families, so there are likely to be genetic influences. Children who have ADHD usually have at least one close relative who also has ADHD. And at least one-third of all fathers who had ADHD in their youth bear children who have ADHD. Even more convincing: the majority of identical twins share the trait. At the National Institutes of Health, researchers are also on the trail of a gene that may be involved in transmitting ADHD in a small

number of families with a genetic thyroid disorder.

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GETTING HELP

Mark

In third grade, Mark's teacher threw up her hands and said, *"Enough!"* In one morning, Mark had jumped out of his seat to sharpen his pencil six times, each time accidentally charging into other children's desks and toppling books and papers. He was finally sent to the principal's office when he began kicking a desk he had overturned. In sheer frustration, his teacher called a meeting with his parents and the school psychologist.

But even after they developed a plan for managing Mark's behavior in class, Mark showed little improvement. Finally, after an extensive assessment, they found that Mark had an attention deficit that included hyperactivity. He was put on a medication called Ritalin to control the hyperactivity during school hours. Although Ritalin failed to help, another drug called Dexedrine did. With a psychologist's help, his parents learned to reward desirable behaviors, and to have Mark take "time out" when he became too disruptive. Soon Mark was able to sit still and focus on learning.

Lisa

Because Lisa wasn't disruptive in class, it took a long time for teachers to notice her problem. Lisa was first referred to the school evaluation team when her teacher realized that she was a bright girl with failing grades. The team ruled out a learning disability but determined that she had an attention deficit, ADHD without hyperactivity. The school psychologist recognized that Lisa was also dealing with depression.

Lisa's teachers and the school psychologist developed a treatment plan that included participation in a program to increase her attention span and develop her social skills. They also recommended that Lisa receive counseling to help her recognize her strengths and overcome her depression.

Henry

When Henry's son entered kindergarten, it was clear that he was going to have problems sitting quietly and concentrating. After several disruptive incidents, the school called and suggested that his son be evaluated for ADHD. As the boy was assessed, Henry realized that he had grown up with the same symptoms that specialists were now finding in his son. Fortunately, the psychologist knew that ADHD can persist in adults. She suggested that Henry be evaluated by a professional who worked with adults. For the first time, Henry was correctly diagnosed and given Ritalin to aid his concentration. What a relief! All the years that he had been unable to concentrate were due to a disorder that could be identified, and above all, treated.

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How Is ADHD Identified and Diagnosed?

Many parents see signs of an attention deficit in toddlers long before the child enters school. For example, as a 3-year-old, Henry's son already displayed some signs of hyperactivity. He seemed to lose interest and dart off even during his favorite TV shows or while playing games. Once, during a game of "catch," he left the game before the ball even reached him!

Like Henry's son, a child may be unable to focus long enough to play a simple game. Or, like Mark,

the child may be tearing around out of control. But because children mature at different rates, and are very different in personality, temperament, and energy level, it's useful to get an expert's opinion of whether the behaviors are appropriate for the child's age. Parents can ask their pediatrician, or a child psychologist or psychiatrist to assess whether their toddler has an attention disorder or is just immature, has hyperactivity or is just exuberant.

Seeing a child as "a chip off the old block" or "just like his dad" can blind parents to the need for help. Parents may find it hard to see their child's behavior as a problem when it so closely resembles their own. In fact, like Henry, many parents first recognize their own disorder only when their children are diagnosed.

In many cases, the teacher is the first to recognize that a child is hyperactive or inattentive and may consult with the school psychologist. Because teachers work with many children, they come to know how "average" children behave in learning situations that require attention and self control. However, teachers sometimes fail to notice the needs of children like Lisa who are quiet and cooperative.

Types of Professionals Who Make the Diagnosis

School-age and preschool children are often evaluated by a school psychologist or a team made up of the school psychologist and other specialists. But if the school doesn't believe the student has a problem, or if the family wants another opinion, a family may need to see a specialist in private practice. In such cases, who can the family turn to? What kinds of specialists do they need?

Speciality	Can diagnose ADHD	Can prescribe medications, if needed	Provides counseling or training
Psychiatrists	yes	yes	yes
Psychologists	yes	no	yes
Pediatricians or family physicians	yes	yes	???
Neurologists	yes	yes	no

The family can start by talking with the child's pediatrician or their family doctor. Some pediatricians may do the assessment themselves, but more often they refer the family to an appropriate specialist they know and trust. In addition, state and local agencies that serve families and children, as well as some of the volunteer organizations listed in the back of this booklet, can help identify an appropriate specialist.

Knowing the differences in qualifications and services can help the family choose someone who can best meet their needs. Besides school psychologists, there are several types of specialists qualified to diagnose and treat ADHD. Child psychiatrists are doctors who specialize in diagnosing and treating childhood mental and behavioral disorders. A psychiatrist can provide therapy and prescribe any needed medications. Child psychologists are also qualified to diagnose and treat ADHD. They can provide therapy for the child and help the family develop ways to deal with the disorder. But psychologists are not medical doctors and must rely on the child's physician to do medical exams and prescribe medication. Neurologists, doctors who work with disorders of the brain and nervous system, can also diagnose ADHD and prescribe medicines. But unlike psychiatrists and psychologists, neurologists usually do not provide therapy for the emotional aspects of the disorder. Adults who think they may have ADHD can also seek a psychologist, psychiatrist, or neurologist. But at present, not all specialists are skilled in identifying or treating ADHD in adults.

Within each specialty, individual doctors and mental health professionals differ in their experience with ADHD. So in selecting a specialist, it's important to find someone with specific training and experience in diagnosing and treating the disorder.

Steps In Making a Diagnosis

Whatever the specialist's expertise, his or her first task is to gather information that will rule out other possible reasons for the child's behavior. In ruling out other causes, the specialist checks the child's school and medical records. The specialist tries to sense whether the home and classroom environments are stressful or chaotic, and how the child's parents and teachers deal with the child. They may have a doctor look for such problems as emotional disorders, undetectable (petit mal) seizures, and poor vision or hearing. Most schools automatically screen for vision and hearing, so this information is often already on record. A doctor may also look for allergies or nutrition problems like chronic "caffeine highs" that might make the child seem overly active.

Next the specialist gathers information on the child's ongoing behavior in order to compare these behaviors to the symptoms and diagnostic criteria listed in the DSM *(Diagnostic and Statistical Manual of Mental Disorders)*. This involves talking with the child and if possible, observing the child in class and in other settings.

The child's teachers, past and present, are asked to rate their observations of the child's behavior on standardized evaluation forms to compare the childps behaviors to those of other children the same age. Of course, rating scales are subjective--they only capture the teacher's personal perception of the child. Even so, because teachers get to know so many children, their judgment of how a child compares to others is usually accurate.

The specialist interviews the child's teachers, parents, and other people who know the child well, such as school staff and baby-sitters. Parents are asked to describe their child's behavior in a variety of situations. They may also fill out a rating scale to indicate how severe and frequent the behaviors seem to be.

In some cases, the child may be checked for social adjustment and mental health. Tests of intelligence and learning achievement may be given to see if the child has a learning disability and whether the disabilities are in all or only certain parts of the school curriculum.

In looking at the data, the specialist pays special attention to the child's behavior during noisy or unstructured situations, like parties, or during tasks that require sustained attention, like reading, working math problems, or playing a board game. Behavior during free play or while getting individual attention is given less importance in the evaluation. In such situations, most children with ADHD are able to control their behavior and perform well.

The specialist then pieces together a profile of the child's behavior. Which ADHD-like behaviors listed in the DSM does the child show? How often? In what situations? How long has the child been doing them? How old was the child when the problem started? Are the behaviors seriously interfering with the child's friendships, school activities, or home life? Does the child have any other related problems? The answers to these questions help identify whether the child's hyperactivity, impulsivity, and inattention are significant and long-standing. If so, the child may be diagnosed with ADHD.

Adults are diagnosed for ADHD based on their performance at home and at work. When possible, their parents are asked to rate the person's behavior as a child. A spouse or roommate can help rate and evaluate current behaviors. But for the most part, adults are asked to describe their own experiences. One symptom is a sense of frustration. Since people with ADHD are often bright and creative, they often report feeling frustrated that they're not living up to their potential. Many also feel restless and are easily bored. Some say they need to seek novelty and excitement to help channel the whirlwind in their minds. Although it may be impossible to document when these behaviors first started, most adults with ADHD can give examples of being inattentive, impulsive, overly active, impatient, and disorganized most of their lives.

Until recent years, adults were not thought to have ADHD, so many adults with ongoing symptoms have never been diagnosed. People like Henry go for decades knowing that something is wrong, but not knowing what it is. Psychotherapy and medication for anxiety, depression, or manic-depression fail to help much, simply because the ADHD itself is not being addressed. Yet half the children with ADHD continue to have symptoms through adulthood. The recent awareness of adult ADHD means that many people can finally be correctly diagnosed and treated.

A correct diagnosis lets people move forward in their lives. Once the disorder is known, they can begin to receive whatever combination of educational, medical, and emotional help they need.

An effective treatment plan helps people with ADHD and their families at many levels. For adults with ADHD, the treatment plan may include medication, along with practical and emotional support. For children and adolescents, it may include providing an appropriate classroom setting, the right medication, and helping parents to manage their child's behavior.

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What Are the Educational Options?

Children with ADHD have a variety of needs. Some children are too hyperactive or inattentive to function in a regular classroom, even with medication and a behavior management plan. Such children may be placed in a special education class for all or part of the day. In some schools, the special education teacher teams with the classroom teacher to meet each child's unique needs. However, most children are able to stay in the regular classroom. Whenever possible, educators prefer to not to segregate children, but to let them learn along with their peers.

Children with ADHD often need some special accommodations to help them learn. For example, the teacher may seat the child in an area with few distractions, provide an area where the child can move around and release excess energy, or establish a clearly posted system of rules and reward appropriate behavior. Sometimes just keeping a card or a picture on the desk can serve as a visual reminder to use the right school behavior, like raising a hand instead of shouting out, or staying in a seat instead of wandering around the room. Giving a child like Lisa extra time on tests can make the difference between passing and failing, and gives her a fairer chance to show what she's learned. Reviewing instructions or writing assignments on the board, and even listing the books and materials they will need for the task, may make it possible for disorganized, inattentive children to complete the work.

Many of the strategies of special education are simply good teaching methods. Telling students in advance what they will learn, providing visual aids, and giving written as well as oral instructions are all ways to help students focus and remember the key parts of the lesson.

Students with ADHD often need to learn techniques for monitoring and controlling their own attention and behavior. For example, Mark's teacher taught him several alternatives for when he loses track of what he's supposed to do. He can look for instructions on the blackboard, raise his hand, wait to see if he remembers, or quietly ask another child. The process of finding alternatives to interrupting the teacher has made him more self-sufficient and cooperative. And because he now interrupts less, he is beginning to get more praise than reprimands.

In Lisa's class, the teacher frequently stops to ask students to notice whether they are paying attention to the lesson or if they are thinking about something else. The students record their answer on a chart. As students become more consciously aware of their attention, they begin to see progress and feel good about staying better focused. The process helped make Lisa aware of when she was drifting off, so she could return her attention to the lesson faster. As a result, she became more productive and the quality of her work improved.

Because schools demand that children sit still, wait for a turn, pay attention, and stick with a task,

it's no surprise that many children with ADHD have problems in class. Their minds are fully capable of learning, but their hyperactivity and inattention make learning difficult. As a result, many students with ADHD repeat a grade or drop out of school early. Fortunately, with the right combination of appropriate educational practices, medication, and counseling, these outcomes can be avoided.

Right to a Free Public Education

Although parents have the option of taking their child to a private practitioner for evaluation and educational services, most children with ADHD qualify for free services within the public schools. Steps are taken to ensure that each child with ADHD receives an education that meets his or her unique needs. For example, the special education teacher, working with parents, the school psychologist, school administrators, and the classroom teacher, must assess the child's strengths and weaknesses and design an Individualized Educational Program (IEP). The IEP outlines the specific skills the child needs to develop as well as appropriate learning activities that build on the child's strengths. Parents play an important role in the process. They must be included in meetings and given an opportunity to review and approve their child's IEP.

Many children with ADHD or other disabilities are able to receive such special education services under the Individuals with Disabilities Education Act (IDEA). The Act guarantees appropriate services and a public education to children with disabilities from ages 3 to 21. Children who do not qualify for services under IDEA can receive help under an earlier law, the National Rehabilitation Act, Section 504, which defines disabilities more broadly. Qualifying for services under the National Rehabilitation Act is often called "504 eligibility."

Because ADHD is a disability that affects children's ability to learn and interact with others, it can certainly be a disabling condition. Under one law or another, most children can receive the services they need.

Some Coping Strategies for Teens and Adults with ADHD

When necessary, ask the teacher or boss to repeat instructions, rather than guess.

Break large assignments or job tasks into small, simple tasks. Set a deadline for each task and reward yourself as you complete each one.

Each day, make a list of what you need to do. Plan the best order for doing each task. Then make a schedule for doing them. Use a calendar or daily planner to keep yourself on track.

Work in a quiet area. Do one thing at a time. Give yourself short breaks.

Write things you need to remember in a notebook with dividers. Write different kinds of information--like assignments, appointments, and phone numbers--in different sections. Keep the book with you all of the time.

Post notes to yourself to help remind yourself of things you need to

What Treatments Are Available?

For decades, medications have been used to treat the symptoms of ADHD. Three medications in the class of drugs known as stimulants seem to be the most effective in both children and adults. These are methylphenidate (Ritalin), dextroamphetamine (Dexedrine or Dextrostat), and pemoline (Cylert). For many people, these medicines dramatically reduce their hyperactivity and improve their ability to focus, work, and learn. The medications may also improve physical coordination, such as handwriting and ability in sports. Recent research by NIMH suggests that these medicines may also help children with an accompanying conduct disorder to control their impulsive, destructive behaviors.

Ritalin helped Henry focus on and complete tasks for the first time. Dexedrine helped Mark to sit quietly, focus his attention, and participate in class so he could learn. He also became less impulsive and aggressive. Along with these changes in his behavior, Mark began to make and keep friends.

Unfortunately, when people see such immediate improvement, they often think medication is all that's needed. But these medicines don't cure the disorder, they only temporarily control the symptoms. Although the drugs help people pay better attention and complete their work, they can't increase knowledge or improve academic skills. The drugs alone can't help people feel better about themselves or cope with problems. These require other kinds of treatment and support.

For lasting improvement, numerous clinicians recommend that medications should be used along with treatments that aid in these other areas. There are no quick cures. Many experts believe that the most significant, long-lasting gains appear when medication is combined with behavioral therapy, emotional counseling, and practical support. Some studies suggest that the combination of medicine and therapy may be more effective than drugs alone. NIMH is conducting a large study to check this.

Use of Stimulant Drugs

Stimulant drugs, such as Ritalin, Cylert, and Dexedrine, when used with medical supervision, are usually considered quite safe. Although they can be addictive to teenagers and adults if misused, these medications are not addictive in children. They seldom make children *"high"* or jittery. Nor do they sedate the child. Rather, the stimulants help children control their hyperactivity, inattention, and other

behaviors.

Different doctors use the medications in slightly different ways. Cylert is available in one form, which naturally lasts 5 to 10 hours. Ritalin and Dexedrine come in short-term tablets that last about 3 hours, as well as longer-term preparations that last through the school day. The short-term dose is often more practical for children who need medication only during the school day or for special situations, like attending church or a prom, or studying for an important exam. The sustained-release dosage frees the child from the inconvenience or embarrassment of going to the office or school nurse every day for a pill. The doctor can help decide which preparation to use, and whether a child needs to take the medicine during school hours only or in the evenings and on weekends, too.

Nine out of 10 children improve on one of the three stimulant drugs. So if one doesn't help, the others should be tried. Usually a medication should be tried for a week to see if it helps. If necessary, however, the doctor will also try adjusting the dosage before switching to a different drug.

Other types of medication may be used if stimulants don't work or if the ADHD occurs with another disorder. Antidepressants and other medications may be used to help control accompanying depression or anxiety. In some cases, antihistamines may be tried. Clonidine, a drug normally used to treat hypertension, may be helpful in people with both ADHD and Tourette's syndrome. Although stimulants tend to be more effective, clonidine may be tried when stimulants don't work or can't be used. Clonidine can be administered either by pill or by skin patch and has different side effects than stimulants. The doctor works closely with each patient to find the most appropriate medication.

Sometimes, a child's ADHD symptoms seem to worsen, leading parents to wonder why. They can be assured that a drug that helps rarely stops working. However, they should work with the doctor to check that the child is getting the right dosage. Parents should also make sure that the child is actually getting the prescribed daily dosage at home or at school--it's easy to forget. They also need to know that new or exaggerated behaviors may also crop up when a child is under stress. The challenges that all children face, like changing schools or entering puberty, may be even more stressful for a child with ADHD.

Some doctors recommend that children be taken off a medication now and then to see if the child still needs it. They recommend temporarily stopping the drug during school breaks and summer vacations, when focused attention and calm behavior are usually not as crucial. These "drug holidays" work well if the child can still participate at camp or other activities without medication.

Children on medications should have regular checkups. Parents should also talk regularly with the child's teachers and doctor about how the child is doing. This is especially important when a medication is first started, re-started, or when the dosage is changed.

The Medication Debate

As useful as these drugs are, Ritalin and the other stimulants have sparked a great deal of controversy. Most doctors feel the potential side effects should be carefully weighed against the benefits before prescribing the drugs. While on these medications, some children may lose weight, have less appetite, and temporarily grow more slowly. Others may have problems falling asleep. Some doctors believe that stimulants may also make the symptoms of Tourette's syndrome worse, although recent research suggests this may not be true. Other doctors say if they carefully watch the child's height, weight, and overall development, the benefits of medication far outweigh the potential side effects. Side effects that do occur can often be handled by reducing the dosage.

It's natural for parents to be concerned about whether taking a medicine is in their child's best interests. Parents need to be clear about the benefits and potential risks of using these drugs. The child's pediatrician or psychiatrist can provide advice and answer questions.

Another debate is whether Ritalin and other stimulant drugs are prescribed unnecessarily for too many children. Remember that many things, including anxiety, depression, allergies, seizures, or problems with the home or school environment can make children seem overactive, impulsive, or

inattentive. Critics argue that many children who do not have a true attention disorder are medicated as a way to control their disruptive behaviors.

Medication and Self-Esteem

When a child's schoolwork and behavior improve soon after starting medication, the child, parents, and teachers tend to applaud the drug for causing the sudden change. But these changes are actually the child's own strengths and natural abilities coming out from behind a cloud. Giving credit to the medication can make the child feel incompetent. The medication only makes these changes possible. The child must supply the effort and ability. To help children feel good about themselves, parents and teachers need to praise the child, not the drug.

It's also important to help children and teenagers feel comfortable about a medication they must take every day. They may feel that because they take medicine they are different from their classmates or that there's something seriously wrong with them. CH.A.D.D. (which stands for Children and Adults with Attention Deficit Disorders), a leading organization for people with attention disorders, suggests several ways that parents and teachers can help children view the medication in a positive way:

- Compare the pills to eyeglasses, braces, and allergy medications used by other children in their class. Explain that their medicine is simply a tool to help them focus and pay attention.
- Point out that they're lucky their problem can be helped. Encourage them to identify ways the medicine makes it easier to do things that are important to them, like make friends, succeed at school, and play.

Myths About Stimulant Medication

- **Myth:**

  Stimulants can lead to drug addiction later in life.

- **Fact:**

  Stimulants help many children focus and be more successful at school, home, and play. Avoiding negative experiences now may actually help prevent addictions and other emotional problems later.

- **Myth:**

  Responding well to a stimulant drug proves a person has ADHD.

- **Fact:**

  Stimulants allow many people to focus and pay better attention, whether or not they have ADHD. The improvement is just more noticeable in people with ADHD.

- **Myth:**

  Medication should be stopped when the child reaches adolescence.

- **Fact:**

  Not so! About 80 percent of those who needed medication as children still need it as teenagers. Fifty percent need medication as adults.

Treatments To Help People With ADHD and Their Families Learn To Cope

Life can be hard for children with ADHD. They're the ones who are so often in trouble at school, can't

finish a game, and lose friends. They may spend agonizing hours each night struggling to keep their mind on their homework, then forget to bring it to school.

It's not easy coping with these frustrations day after day. Some children release their frustration by acting contrary, starting fights, or destroying property. Some turn the frustration into body ailments, like the child who gets a stomachache each day before school. Others hold their needs and fears inside, so that no one sees how badly they feel.

It's also difficult having a sister, brother, or classmate who gets angry, grabs your toys, and loses your things. Children who live with or share a classroom with a child who has ADHD get frustrated, too. They may feel neglected as their parents or teachers try to cope with the hyperactive child. They may resent their brother or sister never finishing chores, or being pushed around by a classmate. They want to love their sibling and get along with their classmate, but sometimes it's so hard!

It's especially hard being the parent of a child who is full of uncontrolled activity, leaves messes, throws tantrums, and doesn't listen or follow instructions. Parents often feel powerless and at a loss. The usual methods of discipline, like reasoning and scolding, don't work with this child, because the child doesn't really choose to act in these ways. It's just that their self-control comes and goes. Out of sheer frustration, parents sometimes find themselves spanking, ridiculing, or screaming at the child, even though they know it's not appropriate. Their response leaves everyone more upset than before. Then they blame themselves for not being better parents. Once children are diagnosed and receiving treatment, some of the emotional upset within the family may fade.

Medication can help to control some of the behavior problems that may have lead to family turmoil. But more often, there are other aspects of the problem that medication can't touch. Even though ADHD primarily affects a person's behavior, having the disorder has broad emotional repercussions. For some children, being scolded is the only attention they ever get. They have few experiences that build their sense of worth and competence. If they're hyperactive, they're often told they're bad and punished for being disruptive. If they are too disorganized and unfocused to complete tasks, others may call them lazy. If they impulsively grab toys, butt in, or shove classmates, they may lose friends. And if they have a related conduct disorder, they may get in trouble at school or with the law. Facing the daily frustrations that can come with having ADHD can make people fear that they are strange, abnormal, or stupid.

Often, the cycle of frustration, blame, and anger has gone on so long that it will take some time to undo. Both parents and their children may need special help to develop techniques for managing the patterns of behavior. In such cases, mental health professionals can counsel the child and the family, helping them to develop new skills, attitudes, and ways of relating to each other. In individual counseling, the therapist helps children or adults with ADHD learn to feel better about themselves. They learn to recognize that having a disability does not reflect who they are as a person. The therapist can also help people with ADHD identify and build on their strengths, cope with daily problems, and control their attention and aggression. In group counseling, people learn that they are not alone in their frustration and that others want to help. Sometimes only the individual with ADHD needs counseling support. But in many cases, because the problem affects the family as well as the person with ADHD, the entire family may need help. The therapist assists the family in finding better ways to handle the disruptive behaviors and promote change. If the child is young, most of the therapist's work is with the parents, teaching them techniques for coping with and improving their child's behavior.

Several intervention approaches are available and different therapists tend to prefer one approach or another. Knowing something about the various types of interventions makes it easier for families to choose a therapist that is right for their needs.

Psychotherapy works to help people with ADHD to like and accept themselves despite their disorder. In psychotherapy, patients talk with the therapist about upsetting thoughts and feelings, explore self-defeating patterns of behavior, and learn alternative ways to handle their emotions. As they talk, the therapist tries to help them understand how they can change. However, people dealing with ADHD usually want to gain control of their symptomatic behaviors more directly. If so, more direct kinds of intervention are needed.

Cognitive-behavioral therapy helps people work on immediate issues. Rather than helping people understand their feelings and actions, it supports them directly in changing their behavior. The support might be practical assistance, like helping Henry learn to think through tasks and organize his work. Or the support might be to encourage new behaviors by giving praise or rewards each time the person acts in the desired way. A cognitive-behavioral therapist might use such techniques to help a belligerent child like Mark learn to control his fighting, or an impulsive teenager like Lisa to think before she speaks.

Social skills training can also help children learn new behaviors. In social skills training, the therapist discusses and models appropriate behaviors like waiting for a turn, sharing toys, asking for help, or responding to teasing, then gives children a chance to practice. For example, a child might learn to "read" other people's facial expression and tone of voice, in order to respond more appropriately. Social skills training helped Lisa learn to join in group activities, make appropriate comments, and ask for help. A child like Mark might learn to see how his behavior affects others and develop new ways to respond when angry or pushed.

Support groups connect people who have common concerns. Many adults with ADHD and parents of children with ADHD find it useful to join a local or national support group. Many groups deal with issues of children's disorders, and even ADHD specifically. The national associations listed at the back of this booklet can explain how to contact a local chapter. Members of support groups share frustrations and successes, referrals to qualified specialists, and information about what works, as well as their hopes for themselves and their children. There is strength in numbers--and sharing experiences with others who have similar problems helps people know that they aren't alone.

Parenting skills training, >offered by therapists or in special classes, gives parents tools and techniques for managing their child's behavior. One such technique is the use of "time out" when the child becomes too unruly or out of control. During time outs, the child is removed from the agitating situation and sits alone quietly for a short time to calm down. Parents may also be taught to give the child "quality time" each day, in which they share a pleasurable or relaxed activity. During this time together, the parent looks for opportunities to notice and point out what the child does well, and praise his or her strengths and abilities.

An effective way to modify a child's behavior is through a system of rewards and penalties. The parents (or teacher) identify a few desirable behaviors that they want to encourage in the child--such as asking for a toy instead of grabbing it, or completing a simple task. The child is told exactly what is expected in order to earn the reward. The child receives the reward when he performs the desired behavior and a mild penalty when he doesn't. A reward can be small, perhaps a token that can be exchanged for special privileges, but it should be something the child wants and is eager to earn. The penalty might be removal of a token or a brief "time out." The goal, over time, is to help children learn to control their own behavior and to choose the more desired behavior. The technique works well with all children, although children with ADHD may need more frequent rewards.

In addition, parents may learn to structure situations in ways that will allow their child to succeed. This may include allowing only one or two playmates at a time, so that their child doesn't get overstimulated. Or if their child has trouble completing tasks, they may learn to help the child divide a large task into small steps, then praise the child as each step is completed.

Parents may also learn to use stress management methods, such as meditation, relaxation techniques, and exercise to increase their own tolerance for frustration, so that they can respond more calmly to their child's behavior.

Controversial Treatments

Understandably, parents who are eager to help their children want to explore every possible option. Many newly touted treatments sound reasonable. Many even come with glowing reports. A few are pure quackery. Some are even developed by reputable doctors or specialists--but when tested scientifically, cannot be proven to help.

Here are a few types of treatment that have not been scientifically shown to be effective in treating

the majority of children or adults with ADHD:

- biofeedback
- restricted diets
- allergy treatments
- medicines to correct problems in the inner ear
- megavitamins
- chiropractic adjustment and bone re-alignment
- treatment for yeast infection
- eye training
- special colored glasses

A few success stories can't substitute for scientific evidence. Until sound, scientific testing shows a treatment to be effective, families risk spending time, money, and hope on fads and false promises.

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SUSTAINING HOPE

Mark

Today, at age 14, Mark is doing much better in school. He channels his energy into sports and is a star player on the intramural football team. Although he still gets into fights now and then, a child psychologist is helping him learn to control his tantrums and frustration, and he is able to make and keep friends. His grandparents point to him with pride and say, "We knew he'd turn out just fine!"

Lisa

Lisa is about to graduate from high school. She's better able to focus her attention and concentrate on her work, so that now her grades are quite good. Overcoming her depression and learning to like herself have also given her more confidence to develop friendships and try new things.

Lately, she has been working with the school guidance counselor to identify the right kind of job to look for after graduation. She hopes to find a career that will bypass her attention problems and make the best use of her assets and skills. She is more alert and focused and is considering trying college in a year or two. Her counselor reminds her that she's certainly smart enough.

Henry

These days, Henry is successful and happy in his job as a shoe salesman. The work allows him to move around throughout the day, and the appearance of new customers provides the variety he needs to help him stay focused. He recently completed a course in time management, and now keeps lists, organizes his work, and schedules his day. Now that he has harnessed his energy, his ability to think about several things at once allows him to be creative and productive.

He is proud that he and his wife have developed important parenting skills for working with their son, so that he, too, is doing better at home and at school. Henry is also pleased with his new ability to follow through on projects. In fact, he just finished making his son a beautiful wooden toy chest for his birthday.

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Can ADHD Be Outgrown or Cured?

Even though most people don't outgrow ADHD, people do learn to adapt and live fulfilling lives. Mark, Lisa, and Henry are making good lives for themselves--not by being cured, but by developing their personal strengths. With effective combinations of medicine, new skills, and emotional support, people with ADHD can develop ways to control their attention and minimize their disruptive behaviors. Like Henry, they may find that by structuring tasks and controlling their environment, they can achieve personal goals. Like Mark, they may learn to channel their excess energy into sports and other high energy activities. And like Lisa, they can identify career options that build on their strengths and abilities.

As they grow up, with appropriate help from parents and clinicians, children with ADHD become better able to suppress their hyperactivity and to channel it into more socially acceptable behaviors, like physical exercise or fidgeting. And although we know that half of all children with ADHD will still show signs of the problem into adulthood, we also know that the medications and therapy that help children also work for adults.

All people with ADHD have natural talents and abilities that they can draw on to create fine lives and careers for themselves. In fact, many people with ADHD even feel that their patterns of behavior give them unique, often unrecognized, advantages. People with ADHD tend to be outgoing and ready for action. Because of their drive for excitement and stimulation, many become successful in business, sports, construction, and public speaking. Because of their ability to think about many things at once, many have won acclaim as artists and inventors. Many choose work that gives them freedom to move around and release excess energy. But some find ways to be effective in quieter, more sedentary careers. Sally, a computer programmer, found that she thinks best when she wears headphones to reduce distracting noises. Like Henry, some people strive to increase their organizational skills. Others who own their own business find it useful to hire support staff to provide day-to-day management.

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What Hope Does Research Offer?

Although no immediate cure is in sight, a new understanding of ADHD may be just over the horizon. Using a variety of research tools and methods, scientists are beginning to uncover new information on the role of the brain in ADHD and effective treatments for the disorder Such research will ultimately result in improving the personal fulfillment and productivity of people with ADHD.

For example, the use of new techniques like brain imaging to observe how the brain actually works is already providing new insights into the causes of ADHD. Other research is seeking to identify conditions of pregnancy and early childhood that may cause or contribute to these differences in the brain. As the body of knowledge grows, scientists may someday learn how to prevent these differences or at least how to treat them.

NIMH and the U.S. Department of Education are cosponsoring a large national study--the first of its kind--to see which combinations of ADHD treatment work best for different types of children. During this 5-year study, scientists at research clinics across the country will work together in gathering data to answer such questions as: Is combining stimulant medication with behavior modification more effective than either alone? Do boys and girls respond differently to treatment? How do family stresses, income, and environment affect the severity of ADHD and long-term outcomes? How does needing medicine affect children's sense of competence, self-control, and self-esteem? As a result of such research, doctors and mental health specialists may someday know who benefits most from different types of treatment and be able to intervene more effectively.

NIMH grantees are also trying to determine if there are different varieties of attention deficit. With further study, researchers may find that ADHD actually covers a number of different disorders, each with its own cluster of symptoms and treatment requirements. For example, scientists are exploring whether there are any critical differences between children with ADHD who also have anxiety, depression, or

conduct disorders and those who do not. Other researchers are studying slight physical differences that might distinguish one type of ADHD from another. If clusters of differences can be found, scientists can begin to distinguish the treatment each type needs.

Other NIMH-sponsored research is examining the long-term outcome of ADHD. How do children with ADHD turn out, compared to brothers and sisters without the disorder? As adults, how do they handle their own children? Still other studies seek to better understand ADHD in adults. Such studies give insights into what types of treatment or services make a difference in helping an ADHD child grow into a caring parent and a well-functioning adult.

Animal studies are also adding to our knowledge of ADHD in humans. Animal subjects make it possible to study some of the possible causes of ADHD in ways that can't be studied in people. In addition, animal research allows the safety and effectiveness of experimental new drugs to be tested long before they can be given to humans. One NIH-sponsored team of scientists is studying dogs to learn how new stimulant drugs that are similar to Ritalin act on the brain.

Piece by piece, through studies of humans and animals, scientists are beginning to understand the biological nature of attention disorders. New research is allowing us to better understand the inner workings of the brain as we continue to develop new medications and assess new forms of treatment.

As we learn more about what actually happens inside the brain, we approach a future where we can prevent certain brain and mental disorders, make valid diagnoses, and treat each effectively. This is the hope, mission, and vision of the National Institute of Mental Health.

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What Are Sources of Information and Support?

Several publications, organizations, and support groups exist to help individuals, teachers, and families to understand and cope with attention disorders. The following resources provide a good starting point for gaining insight, practical solutions, and support. Other resources are outpatient clinics of children's hospitals, university medical centers, and community mental health centers. Additional printed information can be found at libraries and book stores.

Books for Children and Teens:

Galvin, M. *Otto Learns about his Medication.* New York: Magination Press, 1988. (for young children)

Gehret, J. *Learning Disabilities and the Don't Give Up Kid.* Fairport, New York: Verbal Images Press, 1990. (for classmates and children with learning disabilities and attention difficulties, ages 7-12)

Gordon, M. *Jumpin' Johnny, Get Back to Work! A Child's Guide to ADHD/Hyperactivity.* DeWitt, New York: GSI Publications, 1991. (for ages 7-12)

Meyer, D.; Vadasy, P.; and Fewell, R. *Living with a Brother or Sister with Special Needs: A Book for Sibs.* Seattle: University of Washington Press, 1985.

Moss, D. *Shelly the Hyperactive Turtle.* Rockville, MD: Woodbine House, 1989. (for young children)

Nadeau, K., and Dixon, E. *Learning to Slow Down and Pay Attention.* Annandale, VA: Chesapeake Psychological Publications, 1993.

Parker, R. *Making the Grade: An Adolescent's Struggle with ADD.* Plantation, FL: Impact Publications, 1992.

Quinn, P., and Stern, J. *Putting on the Brakes: Young People's Guide to Understanding Attention Deficit Hyperactivity Disorder.* New York: Magination Press, 1991. (for ages 8-12)

Thompson, M. *My Brother Matthew.* Rockville, MD: Woodbine House, 1992.

Books for Adults With Attention Disorders:

Adelman, P., and Wren, C. *Learning Disabilities, Graduate School, and Careers: The Student's Perspective.* Lake Forest, IL: Learning Opportunities Program, Barat College, 1990.

Hallowell, E., and Ratey, J. *Driven to Distraction.* New York: Pantheon Books, 1994.

Hartmann, T. *Attention Deficit Disorder: A New Perception.* Lancaster, PA: Underwood-Miller, 1993.

Kelly, K., and Ramundo, P. *You Mean I'm Not Lazy, Stupid, or Crazy?!* Cincinnati, OH: Tyrell and Jeremy Press, 1993.

Weiss, G., and Hechtman, L. (eds). *Hyperactive Children Grown Up.* 2d ed. New York: Guilford Press, 1992.

Weiss, L. *Attention Deficit Disorder in Adults.* Dallas, TX: Taylor Pub. Co., 1992.

Wender, P. *The Hyperactive Child, Adolescence, and Adult: Attention Deficit Disorder Through the Lifespan.* New York: Oxford University Press, 1987.

Books for Parents:

Anderson, W.; Chitwood, S.; and Hayden, D. *Negotiating the Special Education Maze: A Guide for Parents and Teachers.* 2d ed. Rockville, MD: Woodbine House, 1990.

Bain, L. *A Parent's Guide to Attention Deficit Disorders.* New York: Dell Publishing, 1991.

Barkley, R. *Defiant Children.* New York: Guilford Press, 1987.

Child Psychopharmacy Center, University of Wisconsin. *Stimulants and Hyperactive Children.* Madison: 1990. (Order by calling (608) 263-6171.)

Copeland, E., and Love, V. *Attention, Please!: A Comprehensive Guide for Successfully Parenting Children with Attention Disorders and Hyperactivity.* Atlanta, GA: SPI Press, 1991.

Fowler, M. *Maybe You Know My Kid: A Parent's Guide to Identifying, Understanding, and Helping your Child with ADHD.* New York: Birch Lane Press, 1990.

Goldstein, S., and Goldstein, M. *Hyperactivity: Why Won't My Child Pay Attention?* New York: J. Wiley, 1992.

Greenberg, G.; Horn, S.; and Wade F. *Attention Deficit Hyperactivity Disorder: Questions & Answers for Parents.* Champaign, IL: Research Press, 1991.

Ingersoll, B., and Goldstein, S. *Attention Deficit Disorder and Learning Disabilities: Realities, Myths, and Controversial Treatments.* New York: Doubleday, 1993.

Kennedy, P.; Terdal, L.; and Fusetti, L. *The Hyperactive Child Book.* New York: St. Martrin's Press, 1993.

Moss, R., and Dunlap, H. *Why Johnny Can't Concentrate: Coping with Attention Deficit Problems.* New York: Bantam Books, 1990.

Silver, L. *Dr. Silver's Advice to Parents on Attention-Deficit Hyperactivity Disorder.* Washington, DC: American Psychiatric Press, 1993.

Vail, P. *Smart Kids with School Problems.* New York: EP Dutton, 1987.

Wilson, N. *Optimizing Special Education: How Parents Can Make a Difference.* New York: Insight Books, 1992.

Windell, J. *Discipline: A Sourcebook of 50 Failsafe Techniques for Parents.* New York: Collier Books, 1991.

Other Resources:

For individuals with a computer and modem, there are on-line bulletin boards where parents, adults with ADHD, and medical professionals share experiences, offer emotional support, and ask and respond to questions.

Two such on-line services include CompuServe [(800) 848-8990] and America Online [(800) 827-6364]. You may also wish to check with other national and local on-line communications companies to see if they offer similar services.

Resources for Teachers and Specialists:

Barkley, R. *Attention Deficit Hyperactivity Disorder* (four 40-minute videocassettes in VHS format). New York: Guilford Publications, 1990.

Copeland, E., and Love, V. *Attention Without Tension: A Teacher's Handbook on Attention Disorders.* Atlanta, GA: 3 C's of Childhood, 1992.

Harris, K., and Graham, S. *Helping Young Writers Master the Craft.* Cambridge, MA: Brookline Books, 1992.

Johnson, D. *I Can't Sit Still-Educating and Affirming Inattentive and Hyperactive Children: Suggestions for Parents, Teachers, and Other Care Providers of Children to Age 10.* Santa Cruz, CA: ETR Associates, 1992.

Parker, H. *The ADD Hyperactivity Handbook for Schools.* Plantation, FL: Impact Publications, 1992.

Related Materials Available from NIH:

Attention Deficit Disorder Information Packet and "Know Your Brain Fact Sheet." Both are available from NIH Neurological Institute, P.O. Box 5801; Bethesda, MD 20824 (800) 352-9424. *Learning Disabilities* (NIH Pub. No. 93-3611) and "Plain Talk about Depression' (NIH Pub. No. 93-3561). These are available by contacting: NIMH, Room 7C-02, 5600 Fishers Lane, Rockville, MD 20857.

Support Groups and Organizations

Attention Deficit Information Network (Ad-IN)
475 Hillside Avenue
Needham, MA 02194
(781) 455-9895

Provides up-to-date information on current research, regional meetings. Offers aid in finding solutions to practical problems faced by adults and children with an attention disorder.

ADD Warehouse
300 NW 70th Avenue
Plantation, FL 33317

(800) 233-9273

Distributes books, tapes, videos, assessment on attention deficit hyperactivity disorders. A central location for ordering many of the books listed above. Call for catalog.

Center for Mental Health Services
Office of Consumer, Family, and Public Information
5600 Fishers Lane, Room 15-105
Rockville, MD 20857
(301) 443-2792

This national center, a component of the U.S. Public Health Service, provides a range of information on mental health, treatment, and support services.

Children and Adults with Attention Deficit Disorders
(CH.A.D.D.)
499 NW 70th Avenue, Suite 101
Plantation, FL 33317
(800) 233-4050

A major advocate and key information source for people dealing with attention disorders. Sponsors support groups and publishes two newsletters concerning attention disorders for parents and professionals.

Council for Exceptional Children
11920 Association Drive
Reston, VA 22091
(703) 620-3660

Provides publications for educators. Can also provide referral to ERIC (Educational Resource Information Center) Clearinghouse for Handicapped and Gifted Children.

Federation of Families for Children's Mental Health
1021 Prince Street
Alexandria, VA 22314
(703) 684-7710

Provides information, support, and referrals through federation chapters throughout the country. This national parent-run organization focuses on the needs of children with broad mental health problems.

HEATH Resource Center
American Council on Education
1 Dupont Circle, Suite 800
Washington, DC 20036
(800) 544-3284

A national clearinghouse on post-high school education for people with disabilities.

Learning Disabilities Association of America
4156 Library Road
Pittsburgh, PA 15234
(412) 341-8077

Provides information and referral to state chapters, parent resources, and local support groups. Publishes news briefs and a professional journal.

National Association of Private Schools
for Exceptional Children

1522 K Street, NW, Suite 1032
Washington, DC 20005
(202) 408-3338

Provides referrals to private special education programs.

National Center for Learning Disabilities
99 Park Avenue, 6th Floor
New York, NY 10016
(212) 687-7211

Provides referrals and resources. Publishes Their World magazine describing true stories on ways children and adults cope with LD.

National Clearinghouse for Alcohol and Drug Information
P.O. Box 2345
Rockville, MD 20847
(800) 729-6686

Provides information on the risks of alcohol during pregnancy, and fetal alcohol syndrome.

National Information Center for Children
and Youth with Disabilities (NICHCY)
P.O. Box 1492
Washington, DC 20013
(800) 695-0285

Publishes free, fact-filled newsletters. Arranges workshops. Advises parents on the laws entitling children with disabilities to special education and other services.

Sibling Information Network
A.J. Pappanikou Center
1776 Ellington Road
South Windsor, CT 06074
(203) 648-1205

Publishes a newsletter for and about siblings of children with special needs.

Tourette Syndrome Association
42-40 Bell Boulevard
Bayside, NY 11361
(718) 224-2999

State and local chapters provide national information, advocacy, research, and support.

MESSAGE FROM THE NATIONAL INSTITUTE OF MENTAL HEALTH

Research conducted and supported by the National Institute of Mental Health brings hope to millions of people who suffer from mental illness and to their families and friends. In many years of work with animal as well as human subjects, researchers have advanced our understanding of the brain and vastly expanded the capability of mental health professionals to diagnose, treat, and prevent mental and brain disorders.

Now, in the 1990s, which the President and Congress have declared the "Decade of the Brain," we stand at the threshold of a new era in brain and behavioral sciences. Through research, we will learn even more about mental and brain disorders such as depression, bipolar disorder, schizophrenia, panic disorder, obsessive-compulsive disorder, and attention deficit hyperactivity disorder. And we will be able to use this knowledge to develop new therapies that can help more people overcome mental illness.

The National Institute of Mental Health is part of the National Institutes of Health (NIH), the Federal Government's primary agency for biomedical and behavioral research. NIH is a component of the U.S. Department of Health and Human Services.

Credits

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Attachment C

Russell Barkley, "Attention-Deficit Hyperactivity Disorder,"
***Scientific American*, September, 1998**

Attention-Deficit Hyperactivity Disorder

Image: Yan Nascimbene

A new theory suggests the disorder results from a failure in self-control. ADHD may arise when key brain circuits do not develop properly, perhaps because of an altered gene or genes

by Russell A. Barkley

As I watched five-year-old Keith in the waiting room of my office, I could see

why his parents said he was having such a tough time in kindergarten. He hopped from chair to chair, swinging his arms and legs restlessly, and then began to fiddle with the light switches, turning the lights on and off again to everyone's annoyance--all the while talking nonstop. When his mother encouraged him to join a group of other children busy in the playroom, Keith butted into a game that was already in progress and took over, causing the other children to complain of his bossiness and drift away to other activities. Even when Keith had the toys to himself, he fidgeted aimlessly with them and seemed unable to entertain himself quietly. Once I examined him more fully, my initial suspicions were confirmed: Keith had attention-deficit hyperactivity disorder (ADHD).

Since the 1940s, psychiatrists have applied various labels to children who are hyperactive and inordinately inattentive and impulsive. Such youngsters have been considered to have "minimal brain dysfunction," "brain-injured child syndrome," "hyperkinetic reaction of childhood," "hyperactive child syndrome" and, most recently, "attention-deficit disorder." The frequent name changes reflect how uncertain researchers have been about the underlying causes of, and even the precise diagnostic criteria for, the disorder.

Within the past several years, however, those of us who study ADHD have begun to clarify its symptoms and causes and have found that it may have a genetic underpinning. Today's view of the basis of the condition is strikingly different from that of just a few years ago. We are finding that ADHD is not a disorder of attention per se, as had long been assumed. Rather it arises as a developmental failure in the brain circuitry that underlies inhibition and self-control. This loss of self-control in turn impairs other important brain functions crucial for maintaining attention, including the ability to defer immediate rewards for later, greater gain.

ADHD involves two sets of symptoms: inattention and a combination of hyperactive and impulsive behaviors. Most children are more active, distractible and impulsive than adults. And they are more inconsistent, affected by momentary events and dominated by objects in their immediate environment. The younger the children, the less able they are to be aware of time or to give priority to future events over more immediate wants. Such behaviors are signs of a problem, however, when children display them significantly more than their peers do.

Boys are at least three times as likely as girls to develop the disorder; indeed, some studies have found that boys with ADHD outnumber girls with the condition by nine to one, possibly because boys are genetically more prone to disorders of the nervous system. The behavior patterns that typify ADHD usually arise between the ages of three and five. Even so, the age of onset can vary widely: some children do not develop symptoms until late childhood or even early adolescence. Why their symptoms are delayed remains unclear.

Huge numbers of people are affected. Many studies estimate that between 2 and 9.5 percent of all school-age children worldwide have ADHD; researchers have identified it in every nation and culture they have studied. What is more, the condition, which was once thought to ease with age, can persist into adulthood. For example, roughly two thirds of 158 children with ADHD my colleagues and I evaluated in the 1970s still had the disorder in their twenties. And many of those who no longer fit the clinical description of ADHD were still having significant adjustment problems at work, in school or in other social settings.

To help children (and adults) with ADHD, psychiatrists and psychologists must

better understand the causes of the disorder. Because researchers have traditionally viewed ADHD as a problem in the realm of attention, some have suggested that it stems from an inability of the brain to filter competing sensory inputs, such as sights and sounds. But recently scientists led by Joseph A. Sergeant of the University of Amsterdam have shown that children with ADHD do not have difficulty in that area; instead they cannot inhibit their impulsive motor responses to such input. Other researchers have found that children with ADHD are less capable of preparing motor responses in anticipation of events and are insensitive to feedback about errors made in those responses. For example, in a commonly used test of reaction time, children with ADHD are less able than other children to ready themselves to press one of several keys when they see a warning light. They also do not slow down after making mistakes in such tests in order to improve their accuracy.

The Search for a Cause

No one knows the direct and immediate causes of the difficulties experienced by children with ADHD, although advances in neurological imaging techniques and genetics promise to clarify this issue over the next five years. Already they have yielded clues, albeit ones that do not yet fit together into a coherent picture.

Imaging studies over the past decade have indicated which brain regions might malfunction in patients with ADHD and thus account for the symptoms of the condition. That work suggests the involvement of the prefrontal cortex, part of the cerebellum, and at least two of the clusters of nerve cells deep in the brain that are collectively known as the basal ganglia. In a 1996 study F. Xavier Castellanos, Judith L. Rapoport and their colleagues at the National Institute of Mental Health found that the right prefrontal cortex and two basal ganglia called the caudate nucleus and the globus pallidus are significantly smaller than normal in children with ADHD. Earlier this year Castellanos's group found that the vermis region of the cerebellum is also smaller in ADHD children.

The imaging findings make sense because the brain areas that are reduced in size in children with ADHD are the very ones that regulate attention. The right prefrontal cortex, for example, is involved in "editing" one's behavior, resisting distractions and developing an awareness of self and time. The caudate nucleus and the globus pallidus help to switch off automatic responses to allow more careful deliberation by the cortex and to coordinate neurological input among various regions of the cortex. The exact role of the vermis region is unclear, but early studies suggest it may play a role in regulating motivation.

What causes these structures to shrink in the brains of those with ADHD? No one knows, but many studies have suggested that mutations in several genes that are normally very active in the prefrontal cortex and basal ganglia might play a role. Most researchers now believe that ADHD is a polygenic disorder--that is, that more than one gene contributes to it.

Early tips that faulty genetics underlie ADHD came from studies of the relatives of children with the disorder. For instance, the siblings of children with ADHD are between five and seven times more likely to develop the syndrome than children from unaffected families. And the children of a parent who has ADHD have up to a 50 percent chance of experiencing the same difficulties.

The most conclusive evidence that genetics can contribute to ADHD, however, comes from studies of twins. Jacquelyn J. Gillis, then at the University of Colorado, and her colleagues reported in 1992 that the ADHD risk of a child whose identical twin has the disorder is between 11 and 18 times greater than

that of a nontwin sibling of a child with ADHD; between 55 and 92 percent of the identical twins of children with ADHD eventually develop the condition.

One of the largest twin studies of ADHD was conducted by Helene Gjone and Jon M. Sundet of the University of Oslo with Jim Stevenson of the University of Southampton in England. It involved 526 identical twins, who inherit exactly the same genes, and 389 fraternal twins, who are no more alike genetically than siblings born years apart. The team found that ADHD has a heritability approaching 80 percent, meaning that up to 80 percent of the differences in attention, hyperactivity and impulsivity between people with ADHD and those without the disorder can be explained by genetic factors.

Nongenetic factors that have been linked to ADHD include premature birth, maternal alcohol and tobacco use, exposure to high levels of lead in early childhood and brain injuries--especially those that involve the prefrontal cortex. But even together, these factors can account for only between 20 and 30 percent of ADHD cases among boys; among girls, they account for an even smaller percentage. (Contrary to popular belief, neither dietary factors, such as the amount of sugar a child consumes, nor poor child-rearing methods have been consistently shown to contribute to ADHD.)

Which genes are defective? Perhaps those that dictate the way in which the brain dopamine, one of the chemicals known as neurotransmitters that convey messages from one nerve cell, or neuron, to another. Dopamine is secreted by neurons in specific parts of the brain to inhibit or modulate the activity of other neurons, particularly those involved in emotion and movement. The movement disorders of Parkinson's disease, for example, are caused by the death of dopamine-secreting neurons in a region of the brain underneath the basal ganglia called the substantia nigra.

Some impressive studies specifically implicate genes that encode, or serve as the blueprint for, dopamine receptors and transporters; these genes are very active in the prefrontal cortex and basal ganglia. Dopamine receptors sit on the surface of certain neurons. Dopamine delivers its message to those neurons by binding to the receptors. Dopamine transporters protrude from neurons that secrete the neurotransmitter; they take up unused dopamine so that it can be used again. Mutations in the dopamine receptor gene can render receptors less sensitive to dopamine. Conversely, mutations in the dopamine transporter gene can yield overly effective transporters that scavenge secreted dopamine before it has a chance to bind to dopamine receptors on a neighboring neuron.

In 1995 Edwin H. Cook and his colleagues at the University of Chicago reported that children with ADHD were more likely than others to have a particular variation in the dopamine transporter gene DAT1. Similarly, in 1996 Gerald J. LaHoste of the University of California at Irvine and his co-workers found that a variant of the dopamine receptor gene D4 is more common among children with ADHD. But each of these studies involved 40 or 50 children--a relatively small number--so their findings are now being confirmed in larger studies.

From Genes to Behavior

How do the brain-structure and genetic defects observed in children with ADHD lead to the characteristic behaviors of the disorder? Ultimately, they might be found to underlie impaired behavioral inhibition and self-control, which I have concluded are the central deficits in ADHD.

BRAIN STRUCTURES

Self-control--or the capacity to inhibit or delay one's initial motor (and perhaps emotional) responses to an event--is a critical foundation for the performance of any task. As most children grow up, they gain the ability to engage in mental activities, known as executive functions, that help them deflect distractions, recall goals and take the steps needed to reach them. To achieve a goal in work or play, for instance, people need to be able to remember their aim (use hindsight), prompt themselves about what they need to do to reach that goal (use forethought), keep their emotions reined in and motivate themselves. Unless a person can inhibit interfering thoughts and impulses, none of these functions can be carried out successfully.

In the early years, the executive functions are performed externally: children might talk out loud to themselves while remembering a task or puzzling out a problem. As children mature, they internalize, or make private, such executive functions, which prevents others from knowing their thoughts. Children with ADHD, in contrast, seem to lack the restraint needed to inhibit the public performance of these executive functions.

The executive functions can be grouped into four mental activities. One is the operation of working memory--holding information in the mind while working on a task, even if the original stimulus that provided the information is gone. Such remembering is crucial to timeliness and goal-directed behavior: it provides the means for hindsight, forethought, preparation and the ability to imitate the complex, novel behavior of others--all of which are impaired in people with ADHD.

The internalization of self-directed speech is another executive function. Before the age of six, most children speak out loud to themselves frequently, reminding themselves how to perform a particular task or trying to cope with a problem, for example. ("Where did I put that book? Oh, I left it under the desk.") In elementary school, such private speech evolves into inaudible muttering; it usually disappears by age 10 [see "Why Children Talk to Themselves," by Laura E. Berk; Scientific American, November 1994]. Internalized, self-directed speech allows one to reflect to oneself, to follow rules and instructions, to use self-questioning as a form of problem solving and to construct "meta-rules," the basis for understanding the rules for using rules--all quickly and without tipping one's hand to others. Laura E. Berk and her colleagues at Illinois State University reported in 1991 that the internalization of self-directed speech is delayed in boys with ADHD.

A third executive mental function consists of controlling emotions, motivation and state of arousal. Such control helps individuals achieve goals by enabling them to delay or alter potentially distracting emotional reactions to a particular event and to generate private emotions and motivation. Those who rein in their immediate passions can also behave in more socially acceptable ways.

The final executive function, reconstitution, actually encompasses two separate processes: breaking down observed behaviors and combining the parts into new actions not previously learned from experience. The capacity for reconstitution gives humans a great degree of fluency, flexibility and creativity; it allows individuals to propel themselves toward a goal without having to learn all the needed steps by rote. It permits children as they mature to direct their behavior across increasingly longer intervals by combining behaviors into ever longer chains to attain a goal. Initial studies imply that children with ADHD are less

capable of reconstitution than are other children.

I suggest that like self-directed speech, the other three executive functions become internalized during typical neural development in early childhood. Such privatization is essential for creating visual imagery and verbal thought. As children grow up, they develop the capacity to behave covertly, to mask some of their behaviors or feelings from others. Perhaps because of faulty genetics or embryonic development, children with ADHD have not attained this ability and therefore display too much public behavior and speech. It is my assertion that the inattention, hyperactivity and impulsivity of children with ADHD are caused by their failure to be guided by internal instructions and by their inability to curb their own inappropriate behaviors.

Prescribing Self-Control

If, as I have outlined, ADHD is a failure of behavioral inhibition that delays the ability to privatize and execute the four executive mental functions I have described, the finding supports the theory that children with ADHD might be helped by a more structured environment. Greater structure can be an important complement to any drug therapy the children might receive. Currently children (and adults) with ADHD often receive drugs such as Ritalin that boost their capacity to inhibit and regulate impulsive behaviors. These drugs act by inhibiting the dopamine transporter, increasing the time that dopamine has to bind to its receptors on other neurons.

Such compounds (which, despite their inhibitory effects, are known as psychostimulants) have been found to improve the behavior of between 70 and 90 percent of children with ADHD older than five years. Children with ADHD who take such medication not only are less impulsive, restless and distractible but are also better able to hold important information in mind, to be more productive academically, and to have more internalized speech and better self-control. As a result, they tend to be liked better by other children and to experience less punishment for their actions, which improves their self-image.

My model suggests that in addition to psychostimulants--and perhaps antidepressants, for some children--treatment for ADHD should include training parents and teachers in specific and more effective methods for managing the behavioral problems of children with the disorder. Such methods involve making the consequences of a child's actions more frequent and immediate and increasing the external use of prompts and cues about rules and time intervals. Parents and teachers must aid children with ADHD by anticipating events for them, breaking future tasks down into smaller and more immediate steps, and using artificial immediate rewards. All these steps serve to externalize time, rules and consequences as a replacement for the weak internal forms of information, rules and motivation of children with ADHD.

In some instances, the problems of ADHD children may be severe enough to warrant their placement in special education programs. Although such programs are not intended as a cure for the child's difficulties, they typically do provide a smaller, less competitive and more supportive environment in which the child can receive individual instruction. The hope is that once children learn techniques to overcome their deficits in self-control, they will be able to function outside such programs.

There is no cure for ADHD, but much more is now known about effectively coping with and managing this persistent and troubling developmental disorder. The day is not far off when genetic testing for ADHD may become available and

more specialized medications may be designed to counter the specific genetic deficits of the children who suffer from it.

Related Links

Online Diagnostic Evaluation Information from the National Institutes for Mental Health Ask the Experts

Paying Attention, *Scientific American*, August 1996

Controversy over ADHD diagnosis

Personal Stories

Attention!, a quarterly magazine from Children and Adults with Attention Defecit Disorder

Information just for kids with ADHD

Interrupt-Driven, an article on ADD from *Wired* magazine

ADHD Links

Further Reading

THE EPIDEMIOLOGY OF ATTENTION-DEFICIT HYPERACTIVITY DISORDER. Peter Szatmari in *Child and Adolescent Psychiatric Clinics of North America*, Vol. 1. Edited by G. Weiss. W. B. Saunders, 1992.

HYPERACTIVE CHILDREN GROWN UP. Gabrielle Weiss and Lily Trokenberg Hechtman. Guilford Press, 1993.

TAKING CHARGE OF ADHD: THE COMPLETE, AUTHORITATIVE GUIDE FOR PARENTS. R. A. Barkley. Guilford Press, 1995.

DOPAMINE D4 RECEPTOR GENE POLYMORPHISM IS ASSOCIATED WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER. G. J. LaHoste et al. in *Molecular Psychiatry*, Vol. 1, No. 2, pages 121-124; May 1996.

The Author

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Attachment D

Larry Goldman, Myron Genel, Rebecca Besman, Priscilia Stanetz, "Diagnosis and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents," *JAMA,* April 8, 1998

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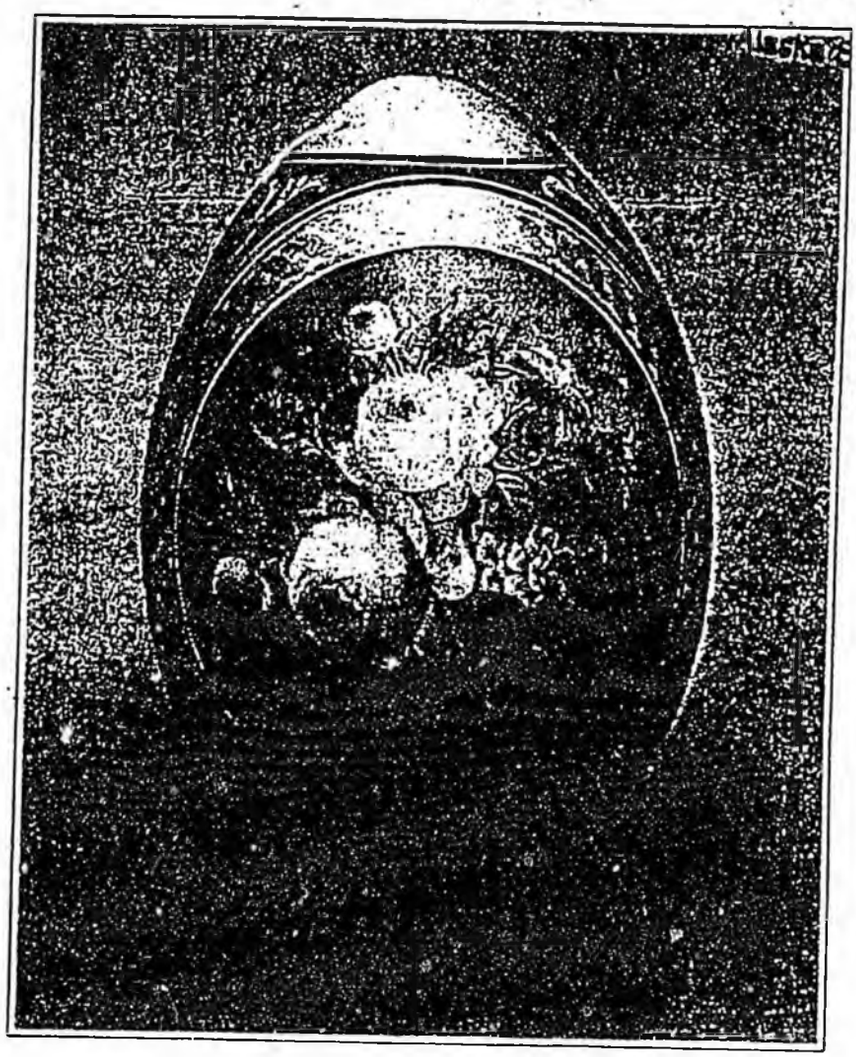

Council Report

Diagnosis and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents

Larry S. Goldman, MD; Myron Genel, MD; Rebecca J. Bezman, MD; Priscilla J. Slanetz, MD, MPH; for the Council on Scientific Affairs, American Medical Association

Objective.—To deal with public and professional concern regarding possible overprescription of attention-deficit/hyperactivity disorder (ADHD) medications, particularly methylphenidate, by reviewing issues related to the diagnosis, optimal treatment, and actual care of ADHD patients and of evidence of patient misuse of ADHD medications.

Data Sources.—Literature review using a National Library of Medicine database search for 1975 through March 1997 on the terms *attention deficit disorder with hyperactivity, methylphenidate, stimulants,* and *stimulant abuse and dependence.* Relevant documents from the Drug Enforcement Administration were also reviewed.

Study Selection.—All English-language studies dealing with children of elementary school through high school age were included.

Data Extraction.—All searched articles were selected and were made available to coauthors for review. Additional articles known to coauthors were added to the initial list, and a consensus was developed among the coauthors regarding the articles most pertinent to the issues requested in the resolution calling for this report. Relevant information from these articles was included in the report.

Data Synthesis.—Diagnostic criteria for ADHD are based on extensive empirical research and, if applied appropriately, lead to the diagnosis of a syndrome with high interrater reliability, good face validity, and high predictability of course and medication responsiveness. The criteria of what constitutes ADHD in children have broadened, and there is a growing appreciation of the persistence of ADHD into adolescence and adulthood. As a result, more children (especially girls), adolescents, and adults are being diagnosed and treated with stimulant medication, and children are being treated for longer periods of time. Epidemiologic studies using standardized diagnostic criteria suggest that 3% to 6% of the school-aged population (elementary through high school) may suffer from ADHD, although the percentage of US youth being treated for ADHD is at most at the lower end of this prevalence range. Pharmacotherapy, particularly use of stimulants, has been extensively studied and generally provides significant short-term symptomatic and academic improvement. There is little evidence that stimulant abuse or diversion is currently a major problem, particularly among those with ADHD, although recent trends suggest that this could increase with the expanding production and use of stimulants.

Conclusions.—Although some children are being diagnosed as having ADHD with insufficient evaluation and in some cases stimulant medication is prescribed when treatment alternatives exist, there is little evidence of widespread overdiagnosis or misdiagnosis of ADHD or of widespread overprescription of methylphenidate by physicians.

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ATTENTION-DEFICIT/hyperactivity disorder (ADHD) is a common neuropsychiatric syndrome with onset in childhood, most commonly becoming apparent (and thus coming to medical attention) during the first few years of grade school. ADHD may be associated with a number of comorbid psychiatric conditions as well as with impaired academic performance and with both patient and family emotional distress. While it was previously thought that the disorder remitted before or during adolescence, it has become well established that many patients will have an illness course that persists well into adulthood. Pharmacological treatment, particularly with stimulant medication, is the most-studied aspect of management, although other forms of treatment (eg, behavior therapy, parent training) are important parts of good clinical care.

Despite an enormous body of research into this disorder, various aspects of ADHD have generated controversy over the years. Three features of ADHD in particular seem to have contributed to the controversy: (1) like most mental disorders, its diagnostic criteria involve patient history and behavioral assessment without the availability of laboratory or radiologic confirmation; (2) like many chronic illnesses of childhood, it has an early onset and extended course, thus requiring at times treatment of children and adolescents over many years; and (3) its treatment often includes stimulant medications that have abuse or diversion potential.

From the Council on Scientific Affairs, American Medical Association, Chicago, Ill.

This report was presented at the 1997 House of Delegates Annual Meeting as Report 5 of the Council on Scientific Affairs. The recommendations were adopted, and the remainder of the report was filed.

This report is not intended to be construed or to serve as a standard of medical care. Standards of medical care are determined on the basis of all the facts and circumstances involved in an individual case and are subject to change as scientific knowledge and technology advance and patterns of practice evolve. This report reflects the scientific literature as of March 1997.

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Debate has centered on the appropriate assessment and "labeling" of children: there have been allegations that the diagnosis is merely applied to control children who exhibit unwanted behaviors in the classroom or elsewhere and that medication is simply used to control such behavior. Along similar lines, concerns have been expressed about whether thorough enough evaluations are being performed by physicians prior to prescribing medication. Apart from diagnostic issues, concerns have been raised about young children taking medications for lengthy periods of time. In addition, some critics have complained that overemphasis on psychopharmacological treatment has led to neglect of other treatment modalities or served as a distraction from family problems or school shortcomings. It should be stressed that these issues have been raised polemically or theoretically, rather than on the basis of particular scientific findings.

Another concern has been raised by the dramatic increase in methylphenidate (Ritalin) hydrochloride production and use in the United States in the past decade. This has raised questions about whether there has been a true increase in the prevalence of ADHD in this time period; a change in diagnostic criteria affecting practice; improved physician recognition of the disorder; a broadened spectrum of indications for use of stimulants; and an increase in stimulant abuse, diversion, and prescription for profit.

Debate over ADHD within the research and medical communities has been mild and mostly concerned with nuances in the diagnostic and treatment paradigms.[1] By contrast, highly inflammatory public relations campaigns and pitched legal battles have been waged (particularly by groups such as the Church of Scientology) that seek to label the whole idea of ADHD as an illness a "myth" and to brand the use of stimulants in children as a form of "mind control."[2,3] These efforts, which have been widely reported in the news media, have created a climate of fear among physicians, parents, and educators and have sown anxiety and confusion among the general public.[4,5] It is thus most important to separate legitimate concerns raised by scientific studies from abstract, distorted, or mendacious information from other sources.

There are 6 main questions that underlie this professional and public concern and that this report will address by reviewing the pertinent research:

1. Is there an agreed-on set of diagnostic criteria for ADHD that reflects sufficient reliability and validity so as to delineate a clinically meaningful syndrome?
2. What is the epidemiology of ADHD, and how can the apparent disparities in prevalence in different populations be explained?
3. What is the course of the illness, and what are the adverse consequences of the illness that would justify treatment?
4. What constitutes optimal treatment for ADHD, and how do stimulants fit into it?
5. What are the adverse consequences of using stimulants, and in particular, what is known about the risks of abuse and diversion?
6. Are children being appropriately assessed and treated in clinical settings to ensure that diagnostic criteria are being used appropriately; ie, is there evidence of underdiagnosis, overdiagnosis, or misdiagnosis?

METHODS

The National Library of Medicine database was searched for 1975 through March 1997 for English-language articles covering school-aged children. Search terms were *attention deficit disorder with hyperactivity*, *methylphenidate*, *stimulants*, and *stimulant abuse and dependence*. Articles concerned with diagnostic and outcomes issues were used. Drug Enforcement Administration (DEA) data also were incorporated.

DIAGNOSIS OF ADHD

Hyperactivity in children was first described clinically in 1902, and the first report of stimulant use to treat hyperactivity in that condition was in 1937.[6] The high frequency of "soft" neurologic findings led to designating the condition "minimal brain dysfunction," with the expectation that a consistent neurologic lesion or set of lesions would eventually be found.[7]

The first empirically based official set of diagnostic criteria for what is now referred to as ADHD was delineated in the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-III*) in 1980.[8] Early focus on the centrality of hyperactivity shifted toward giving weight to attentional problems and impulsivity as well, which was later reflected in the 1987 revision (*Diagnostic and Statistical Manual of Mental Disorders, Revised Third Edition [DSM-III-R]*).[9] The current classification (*Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition [DSM-IV]*) of the disorder now allows subtyping as predominantly inattentive type, predominantly hyperactive type, or combined type.[10] These successive changes in diagnostic criteria reflect a combination of empirical research findings and expert committee consensus. The complete *DSM-IV* criteria can be found in Table 1.

The *DSM-IV* criteria emphasize several factors:

The symptoms specified in the criteria must be present for at least 6 months, ensuring that persistent rather than transient symptoms will be included.

The symptoms must be "maladaptive and inconsistent with developmental level." This ensures that the symptoms are of sufficient severity to cause problems and that the child's age and neurodevelopment are considered in evaluating symptoms.

The symptoms must be present across 2 or more settings, ie, school problems alone do not meet criteria for the diagnosis.

The symptoms are not better explained by another disorder, such as mood disorder, psychosis, or pervasive developmental disorder (autism).

Taken as a whole, these criteria require an illness pattern that is enduring and has led to impairment. To make this diagnosis appropriately, the clinician must be familiar with normal development and behavior, gather information from several sources to evaluate the child's symptoms in different settings, and construct an appropriate differential diagnosis for the presenting complaints. This helps, for example, to distinguish children with ADHD from unaffected children whose parents or teachers are mislabeling normal behavior as pathological. The diagnostic criteria as used by appropriate examiners demonstrate high interrater reliability of individual items and of overall diagnosis.[11]

A number of other psychiatric, medical, and neurologic disorders (eg, traumatic brain injury, epilepsy, depression) can lead to disturbances in attention and/or activity level.[12] Thus, the diagnosis of "primary" ADHD is made when there is no evidence from the history, physical examination, or laboratory findings of another condition producing the clinical picture.

The goals of the actual examination of the child are to determine whether he or she meets diagnostic criteria and to look for conditions other than ADHD that might simulate it. Too much focus on a child's behavior in the physician's office or the child's own observations may lead to a missed diagnosis, while overreliance on parental reports of abnormal behavior alone may lead to overdiagnosis.[13]

A number of rating scales and psychological testing instruments may be used in the assessment of suspected ADHD, but none of these should be used in isolation to make or refute the diagnosis. Scales such as the Conners, SNAP-IV,

Table 1.—Diagnostic Criteria for Attention-Deficit/Hyperactivity Disorder*

A. Either (1) or (2):
  (1) Inattention: 6 (or more) of the following symptoms of inattention have persisted for at least 6 mo to a degree that is maladaptive and inconsistent with developmental level:
    (a) often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities
    (b) often has difficulty sustaining attention in tasks or play activities
    (c) often does not seem to listen when spoken to directly
    (d) often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions)
    (e) often has difficulty organizing tasks and activities
    (f) often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework)
    (g) often loses things necessary for tasks or activities (eg, toys, school assignments, pencils, books, or tools)
    (h) is often easily distracted by extraneous stimuli
    (i) is often forgetful in daily activities
  (2) hyperactivity-impulsivity: 6 (or more) of the following symptoms of hyperactivity-impulsivity have persisted for at least 6 mo to a degree that is maladaptive and inconsistent with developmental level:
    (a) often fidgets with hands or feet or squirms in seat
    (b) often leaves seat in classroom or in other situations in which remaining seated is expected
    (c) often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness)
    (d) often has difficulty playing or engaging in leisure activities quietly
    (e) is often "on the go" or often acts as if "driven by a motor"
    (f) often talks excessively
    (g) often blurts out answers before questions have been completed
    (h) often has difficulty awaiting turn
    (i) often interrupts or intrudes on others (eg, butts into conversations or games)
B. Some hyperactive-impulsive or inattentive symptoms that caused impairment were present before age 7 y
C. Some impairment from the symptoms is present in 2 or more settings (eg, at school [or work] and at home)
D. There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning
E. The symptoms do not occur exclusively during the course of a pervasive developmental disorder, schizophrenia, or other psychotic disorder and are not better accounted for by another mental disorder (eg, mood disorder, anxiety disorder, dissociative disorder, or a personality disorder)

*Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition,[16] code based on type: 314.01 Attention-Deficit/Hyperactivity Disorder, Combined Type: if both criteria A(1) and A(2) are met for the past 6 months; 314.00 Attention-Deficit/Hyperactivity Disorder, Predominantly Inattentive Type: if criterion A(1) is met but criterion A(2) is not met for the past 6 months; 314.01 Attention-Deficit/Hyperactivity Disorder, Predominantly Hyperactive-Impulsive Type: if criterion A(2) is met but Criterion A(1) is not met for the past 6 months. Coding note: For individuals (especially adolescents and adults) who currently have symptoms that no longer meet full criteria, "In Partial Remission" should be specified.

and Disruptive Behavior Disorder Scale are more helpful in assessing and monitoring response to treatment than in making a diagnosis. Neuropsychological tests that focus on sustained attention such as the Continuous Performance Task, the Wisconsin Card-Sorting Test, Test of Variables of Attention, the Matching Familiar Figures Test, and the Wechsler Intelligence Scale for Children-Revised are similarly not diagnostic.[1]

Thus, the overall approach to diagnosis may involve (1) a comprehensive interview with the child's adult caregivers; (2) a mental status examination of the child; (3) a medical evaluation for general health and neurologic status; (4) a cognitive assessment of ability and achievement; (5) use of ADHD-focused parent and teacher rating scales; and (6) school reports and other adjunctive evaluations if necessary (speech, language assessment, etc) depending on clinical findings.[1,14,15] An evaluation can be performed by a clinician with the skills and knowledge to carry out those components.

Attempts to clarify the pathophysiology of ADHD have been made on several fronts. Genetic studies have revealed up to 92% concordance in monozygotic twins and 33% in dizygotics.[16-18] Abnormalities have been noted in magnetic resonance imaging studies of the brains of those with ADHD,[19] single photon emission computed tomography,[20,21] and neurophysiological studies (heart rate deceleration, electroencephalogram amplitude of response to stimulation, habituation on evoked responses).[1] These findings and others, when taken together, provide increasing support for the concept of ADHD as a neuropsychiatric condition or set of conditions.

Even with the use of carefully applied diagnostic criteria, there remains the issue of the validity of ADHD as a discrete condition.[22] With regard to unitary etiology, many medical conditions (eg, heart failure, seizures) are syndromes representing a final common presentation of a number of pathophysiological disturbances. Thus, the absence of a single cause would be a weak argument against the validity of ADHD as a discrete syndrome. The familial, genetic, neuroanatomical, and neurophysiological studies are mounting evidence to date for postdictive validity. Findings with regard to concurrent validity are mixed: there is clearly a great deal of overlap between ADHD and a number of learning conditions and conduct disorder, among other conditions. The strongest evidence of validity has been for course prediction and treatment response. Overall, ADHD is one of the best-researched disorders in medicine, and the overall data on its validity are far more compelling than for many medical conditions.[15,23,24]

EPIDEMIOLOGY OF ADHD

A number of studies have examined the prevalence of ADHD in various populations. The patient sample used is critical because of variations in different settings: at least 10% of behavior problems seen in general pediatrics settings are due to ADHD, while children with ADHD make up to 50% of some child psychiatric populations.[15] In general, most ADHD patients in the United States are cared for by pediatricians and family practitioners, while child psychiatrists, neurologists, and behavioral pediatricians tend to see refractory patients and those with significant comorbidity. Community studies have yielded prevalences between 1.7% and 16%, depending on the population and the diagnostic methods. These studies are summarized in Table 2.

These results suggest that across fairly diverse populations (geographically, racially, socioeconomically) there exists a sizable percentage of school-aged children with ADHD. The evolution of criteria from *DSM-III* to *DSM-IV*, although based on a progressively larger empirical base,[25] has broadened the case definition, so that more children appear to be affected. This is largely a function of the increased emphasis on attentional problems as opposed to a more narrow focus on hyperactivity in earlier diagnostic sets. As a result, girls have been diagnosed as having ADHD more frequently than they were in the past.[27]

ILLNESS COURSE AND COMORBIDITY OF ADHD

Longer-term follow-up studies of children with ADHD as well as "lookback" studies of symptomatic adults who can be retrospectively diagnosed as having had childhood ADHD show that there is symptomatic persistence into adulthood in many cases. On average, symptoms diminish by about 50% every 5 years between the ages of 10 and 25 years. Hyperactivity itself declines more quickly than impulsivity or inattentiveness.[28,29]

A number of psychiatric conditions co-occur with ADHD. Between 10% and 20% of children with ADHD in both community and clinical samples have mood disorders, 20% have conduct disorders, and up to 40% may have oppositional defiant disorder.[40] Bipolar disorder is being increasingly recognized.[41] Only about 7% of those with ADHD have tics or Tourette syndrome, but 60% of those with Tourette syndrome have ADHD,

raising questions about common etiologic mechanisms. Learning disorders (especially reading disorder) and subnormal intelligence also are increased in the total population of those with ADHD and vice versa.[42,43] Overall, perhaps as many as 65% of children with ADHD will have 1 or more comorbid conditions, although their presence will not be recognized without appropriate questioning and evaluation.[44] In general, when ADHD is untreated there is a gradual accumulation of adverse processes and events that increase the risk of serious psychopathology later in life.[45] Whether this can be reversed by long-term treatment remains unknown.

The relationship between substance use disorders and ADHD is complex. Children with ADHD who do not have comorbid conditions have a risk of substance use disorders that is no different from children without ADHD up to the age of about 14 years. The risk of developing substance use disorders in those with ADHD is increased in adolescents, and the risk ratio increases further in adulthood, regardless of whether there is comorbidity. Persistence of ADHD symptoms and family history of both ADHD and substance use disorders are risk factors for their development. Highly potent risk factors are the presence of comorbid conduct disorder or bipolar disorder. There is debate about whether long-term treatment of ADHD may decrease the risk of subsequent development of substance use disorders.[46]

One prospective study, which followed an ADHD cohort over an average of 16 years along with a matched control group, found an 11-fold increase in ongoing ADHD symptoms (11% vs 1%), a 9-fold increase in antisocial personality disorder (18% vs 2%), and a 4-fold higher rate of drug use disorder (16% vs 4%).[47] The strongest predictors of persistence of psychopathology are psychiatric comorbidity and family history of ADHD.[48]

TREATMENT OF ADHD

Methylphenidate, created in 1955, now accounts for more than 90% of the stimulant use in ADHD in the United States. A racemic mixture of amphetamines (Adderall), dextroamphetamine sulfate (Dexedrine and others), and pemoline (Cylert) are also used. Methylphenidate is strongly favored by US physicians, perhaps because the overuse of amphetamines for treatment of obesity and their misuse in the 1960s gave that class of drugs a reputation as more problematic than methylphenidate.

There have been more than 170 studies involving more than 6000 school-aged children using stimulant medication for ADHD. The response rate for any single stimulant drug in ADHD is approximately 70%, and up to 90% of children will respond to at least 1 stimulant without major adverse events if drug titration is done carefully. A "response" in this context means a statistically or clinically significant reduction in hyperactivity or increase in attention as rated by parents, teachers, and/or research raters. There have been only about a half-dozen studies in adolescents.[49,50]

Table 2.—Prevalence Studies of Attention-Deficit/Hyperactivity Disorder

Site	Source, y	Criteria*	Prevalence, %
New Zealand	Anderson et al,[39] 1987	*DSM-III*	6.7
New York, NY	Cohen,[40] 1988	*DSM-III*	3-6
Ontario	Szatmari et al,[37] 1989	*DSM-III*	6.3
Puerto Rico	Bird et al,[38] 1988	*DSM-III*	9.5-16.1
US inner city	Newcorn et al,[36] 1989	*DSM-III*†	12.9
Pittsburgh, Pa	Costello et al,[35] 1988	*DSM-III-R*	2.6
Iowa	Lindgren et al,[31] 1990	*DSM-III*‡	2.8
Germany	Baumgaertel et al,[33] 1995	*DSM-III*§	9.6
London, England	Esser et al,[34] 1990	*DSM-III-R*	1.7
Mannheim, Germany	Esser et al,[34] 1990	*DSM-III-R*	4.2
United States	Pelham et al,[34] 1992	*DSM-III-R*	2.5-4.0
Tennessee	Wolraich et al,[32] 1996	*DSM-III-R*‖	7.3
United States	Shaffer et al,[11] 1996	*DSM-III-R*	4.1

*DSM-III indicates *Diagnostic and Statistical Manual of Mental Disorders, Third Edition*; *DSM-III-R*, *Diagnostic and Statistical Manual of Mental Disorders, Revised Third Edition*; and *DSM-IV*, *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*.[16]

†Prevalence of 16.9% using *DSM-III-R*.

‡Prevalence of 6.1% using *DSM-III-R*.

§Prevalence of 9.0% primarily inattentive, 3.5% primarily hyperactive, 4.6% combined (17.6% total) using *DSM-IV*, 10.9% using *DSM-III-R*.

‖Prevalence of 5.4% primarily inattentive, 2.4% primarily hyperactive, 3.6% combined (total 11.4%) using *DSM-IV*.

Medications have been unequivocally shown (ie, by double-blind, placebo-controlled studies) to reduce core symptoms of hyperactivity, impulsivity, and inattentiveness. They improve classroom behavior and academic performance; diminish oppositional and aggressive behaviors; promote increased interaction with teachers, family, and others; and increase participation in leisure time activities. Finally, stimulants have demonstrated improvement in irritability, anxiety, and nail biting.[51] A recent meta-analysis found that the effect of stimulants on behavior and cognition may be severalfold greater than the effects on academic achievement.[52]

Contrary to earlier assertions, the response to stimulant medications in those with ADHD is not "paradoxical": the direction of changes in behavioral measures in those with ADHD, those with conditions other than ADHD (eg, learning disabilities, depression), and normal controls is the same. Thus, a favorable response to stimulants does not confirm a diagnosis of ADHD (nor, of course, does a nonresponse refute the diagnosis). A nonspecific performance-enhancing effect may mask other problems and delay use of other interventions.[53,54]

In addition to their value in childhood and adult ADHD, methylphenidate and other stimulants may play a role in the treatment of other medical conditions, including narcolepsy, as a short-term treatment for depression in the medically ill, as potentiating agents with conventional antidepressants for major depressive disorder, as potentiating agents with opiates for pain control, and to reduce apathy in dementia and some other brain diseases.[55-57] The number of patients receiving these drugs for these indications probably represents no more than a small percentage of all stimulant use in the United States.

For patients with ADHD who are intolerant of or unresponsive to stimulants, a number of other drugs have proven useful in clinical practice, including tricyclic antidepressants[50] and bupropion hydrochloride, a newer antidepressant that blocks the reuptake of norepinephrine and dopamine.[58] Serotonin-specific reuptake inhibitors have not been effective to date.[50] Centrally acting α-blocking drugs (clonidine, guanfacine hydrochloride) have been helpful in some children, but data are still limited.[59,60] Subsets of children seem to have some response to lithium carbonate.[61] Neuroleptic medication is occasionally effective, but the risk of tardive dyskinesia makes this a problematic long-term approach.[14] By contrast, some 20 studies have refuted the efficacy of dietary manipulations (eg, the Feingold diet) in ADHD.[62]

It is important to emphasize that pharmacotherapy alone, while highly effective for short-term symptomatic improvement, has not yet been shown to improve the long-term outcome for any domain of functioning (classroom behavior, learning, impulsivity, etc). This may be a function of several factors: most studies have been carried out only for a short term, there may have been inadequate dosage titration to maximize the number of responders, and dose-re-

sponse relationships may be different for different domains.[63-65]

Swanson[62] published a careful review of all review studies of stimulant use in children in 1993. He found overwhelming evidence for temporary improvement of core symptoms (hyperactivity, inattention, and impulsivity) as well as the associated features of defiance, aggression, and negative social skills. On the other hand, changes that point toward longer-term improvement (eg, in academic outcome, antisocial behavior, or arrest rate) were not found, and only small effects were observed on learning and achievement.

Children should be reevaluated periodically while not taking medications to see if the medications are still appropriate and necessary.

Multimodal therapy, ie, integrating pharmacotherapy with a number of environmental, educational, psychotherapeutic, and school-based approaches, is a tailored approach that seems intuitively powerful, matching the child's particular problems to selections from a menu of focused treatment interventions. In a few studies, multimodal therapy has affected long-term results, although how applicable these findings are beyond research settings remains unclear.[65,66] While three quarters of treatment review articles assert that multimodal therapy is superior to medication or psychosocial interventions separately, there is in fact little empirical evidence to support such a conclusion.[62]

Nonmedication approaches include parent education; parent management training (contingency management in individual or group setting; this technique decreases disruptive behavior, increases parents' self-confidence, and decreases family stress); classroom environmental manipulations (special class, seating in class, etc); contingency management and daily report cards by teacher; individual psychotherapy for depression, anxiety, and low self-esteem; impulse and social skills control training; support groups such as Children and Adults With Attention Deficit Disorder and Attention Deficit Disorder Association for families; and summer treatment programs.[15,67]

Some experts feel that stimulants alone may be adequate for cases of ADHD without comorbidity, but that additional treatments are necessary where there are co-occurring conditions. Behavioral therapy has not proved effective alone, although it has been when combined with pharmacotherapy.[1] Since psychosocial treatments may be labor intensive and expensive, it is important to establish when and which treatments are indicated. A large multisite study is currently being carried out by the National Institute of Mental Health to clarify the role of multimodal treatment: carefully evaluated children will be randomized to receive standard community care, medication alone, psychosocial treatments alone, or multimodal therapy (medication and psychosocial treatments together).[65,68]

A number of textbooks[1,14] and many review articles[50,69,70] are available to practitioners. The Academy of Child and Adolescent Psychiatry's practice parameters[71] have recently been released. A recent American Academy of Pediatrics position paper emphasizes the need for careful evaluation and monitoring of children with ADHD, and it stresses that drugs be used as part of an overall care plan.[72]

ADVERSE EFFECTS OF STIMULANTS

Adverse effects from stimulants are generally mild, short lived, and responsive to dosing or timing adjustments. The most common effects are insomnia, decreased appetite, stomach ache, headache, and jitteriness. Some children will exhibit motor tics while on stimulants: whether this reflects a true drug effect or an "unmasking" of a latent tic disorder is unknown. A small percentage of children experience cognitive impairment that responds to dosage reduction or drug cessation. Rare cases of psychosis have occurred. Pemoline has been infrequently associated with hepatic toxic effects, so periodic monitoring of liver enzymes is necessary.[14,49]

Concerns had been raised about the effects of chronic stimulant ingestion on growth and development. It is unclear whether children's heights are affected by long-term use of these medications.[73-75]

A great deal of concern has been raised by the DEA and others about the potential for abuse or diversion of stimulant medication: production (and use) of methylphenidate in the United States has risen from less than 2000 kg in 1986 to 9000 kg in 1995, with a tripling between 1990 and 1995 alone. By contrast, amphetamine production rose from 400 to 1000 kg in the same period. More than 90% of US-produced methylphenidate is used in the United States.

The reasoning for the concern about possible overproduction of methylphenidate has been expressed as follows: Stimulants at times are abused by adolescents and adults; those with ADHD are at increased risk of developing a substance use disorder; methylphenidate and other stimulants may either become the drug abused by those with ADHD, or they may serve as a "gateway" to other drug use; and even if they do not abuse their medication themselves, children and adolescents with access to stimulants will be under pressure to divert their medication to those who will.

There is little disagreement that stimulants as a class have marked abuse potential, and their misuse can have severe adverse medical and social consequences. However, stimulants differ in their ability to induce euphoria and thus liability to abuse. Almost all of the reports of abuse of methylphenidate itself have been of polysubstance-abusing adults who have tried to solubilize the tablets and inject them (with disastrous results from talc granulomatosis in some cases).[70] This last problem in particular led Sweden to withdraw methylphenidate from the market in that country entirely in 1968.[76]

It is clear that there is a fair amount of use of stimulants by adolescents. The annual school survey of drug use conducted by the University of Michigan has shown an increase from 6.2% to 9.9% of eighth-graders reporting nonmedical stimulant use in the preceding year between 1991 and 1994. However, lifetime nonmedical methylphenidate use has remained essentially constant around 1% during the same period. Sixty percent of students who used any stimulants reported using them fewer than 6 times in their lifetime, and 80%, fewer than 20 times. Only 4% reported any injection use of stimulants.[77] Thus, while nonmedical stimulant use may be somewhat more common among adolescents in recent years, little use is of methylphenidate itself, and the pattern of use for the vast majority appears to be experimental and not of the type (regular, heavy, injecting, etc) likely to lead to serious adverse consequences.

Drug Abuse Warning Network data on emergency department visit monitoring show a 6-fold increase between 1990 and 1995 in mentions of methylphenidate. A "mention" simply indicates that the patient listed the drug as one taken: it is not necessarily the drug leading to the emergency department visit, nor is there any medical confirmation. The rate of cocaine mentions, by contrast, is 40 to 50 times higher. The methylphenidate cases are overwhelmingly young women, not the population (ie, male adolescents) felt to be at highest risk for abusing prescription methylphenidate. The DEA has had reports of thefts of methylphenidate, street sales, drug rings, illegal importation from outside the United States, and illegal sales by health professionals. There have also been reports of theft of school supplies of methylphenidate.[77]

On the other hand, abuse of methylphenidate by patients with ADHD or

their family members has been reported rarely. Only 2 cases of methylphenidate abuse by adolescents with ADHD have been described,[78,79] and only 2 cases of methylphenidate abuse by parents of children taking it for ADHD have been reported.[80] While there is no way to know how many cases may have been unrecognized or unreported, such a minimal published experience is quite remarkable in light of the population exposed.

Under Section 306(a) of the Controlled Substances Act, production limitations of methylphenidate, a Schedule II drug, are established by the attorney general (using information developed by the DEA). The attorney general also receives input from the secretary of health and human services (using information provided by the Food and Drug Administration [FDA]). In 1988 a DEA administrative law judge ruled that the method used by the DEA in 1986 to calculate methylphenidate production quotas failed to provide for legitimate medical need, leading to several policy changes. In 1993 there were some methylphenidate shortages because of a delay in publishing proposed quotas in the *Federal Register*, leading to a streamlining of the procedures for final quota notice approval.[77] American Medical Association (AMA) policy was adopted at the 1993 Interim Meeting (100.975, AMA *Policy Compendium*) calling on the AMA to work with the DEA and the FDA to ensure adequate supplies of methylphenidate and other Schedule II drugs.[81]

CURRENT PRACTICE

It is clear from the discussion of diagnostic assessment that ADHD simply cannot be diagnosed in a typical 15-minute primary care office visit. Taking the necessary multiple histories, performing a careful examination, and obtaining appropriate testing will require several visits and may require a multidisciplinary team approach, specialty consultation, or both in some cases. Nonetheless, there have been descriptions of such assessments in typical pediatric settings.[12,82] Few data exist on actual practice habits in terms of what diagnostic criteria (if any) are used by clinicians, how they are applied, or exactly what a minimally satisfactory level of investigation entails.

A national survey of physicians[83] found that 5.3% of elementary school children in pediatrics practices were diagnosed as having ADHD, and 4.2% were diagnosed by family practitioners. When explicit *DSM-III-R* criteria were used, however, only 72% of those assigned a diagnosis of ADHD by their physicians would have received the diagnosis based on a structured interview. Only 53% of the physician diagnoses included teachers' reports. Eighty-eight percent of the physician-diagnosed children were prescribed methylphenidate, and 85% of the parents reported that the medication was helpful. Only 22% of the parents reported treatment with behavioral modification, and in 70% of those cases that modality was recommended by someone other than the treating physician. Eleven percent received counseling from the physician, and no parents queried judged it effective. The authors of this survey drew attention to the mismatch between physician diagnosis from a single source, often an unreliable one, and the use of stimulant medication. They also stressed the low rates of use of nonpharmacological treatment by their physician sample.

Safer and Krager[84] conducted regular surveys of school nurses in Baltimore County, Maryland, to look for methylphenidate prescribing. They found that 6% of the school-aged children received this treatment and that methylphenidate accounted for over 90% of the pharmacological treatment provided for ADHD.

There is evidence to suggest that stimulants in ADHD populations are simply being used more broadly, for longer periods, and without interruptions in recent years than was done previously. Overall, there has been a 2.5-fold increase in the prevalence of child and adolescent methylphenidate treatment from 1990 to 1995, so that some 2.8% of US youth between the ages of 6 and 18 years were taking this medication in mid 1995. A recent national study found no evidence of overdiagnosis of ADHD or overprescription of methylphenidate.[85]

Several of the community studies cited in Table 2 also looked at which children diagnosed as having ADHD by researchers had been so diagnosed by clinicians or were receiving treatment. In the New Zealand sample, 43% of the children found to have ADHD by the researchers had been referred for medical care for this problem.[25] In the Tennessee study, only 15% to 40% of the children diagnosed by researchers with ADHD had been so diagnosed clinically, and only 21% to 32% were receiving pharmacotherapy.[35]

Swanson et al[86] addressed the increase in US methylphenidate usage by showing that from 1990 to 1993 the number of patients diagnosed as having ADHD increased from 900 000 to 2 million, and the number of outpatient visits for the condition rose from 1.7 million to 4.2 million. The percentage of patients given methylphenidate remained around 70%. Thus, the amount of methylphenidate produced per 1 million patients increased from 1.98 g to 2.53 g, a 27% increase.

There are several important clinical reasons for the increased diagnosis and stimulant treatment of ADHD. These include increased public and physician awareness and acceptance of the condition; acceptance of a broader case definition as appropriate; greater knowledge of the illness course, justifying lengthier treatment (eg, of adolescents); fewer interruptions in treatment because of diminished concerns about growth retardation; and increased treatment of adults.

Finally, with regard to cross-national data, there is some consensus that most non-US clinicians are more likely to rely on older, more stringent diagnostic criteria, reserve the diagnosis for only the most obvious or severe cases, or even be reluctant to diagnose ADHD at all. Physicians from countries with strong psychoanalytic traditions may be particularly reluctant to use discrete diagnostic criteria at all. Physicians in the United Kingdom, for example, tend to use a *DSM-II* approach, so they place more emphasis on hyperactivity and therefore diagnose ADHD far less frequently than their US counterparts. When physicians in the United Kingdom are instructed in applying US criteria, however, they diagnose ADHD as often as their US counterparts do in US children. Thus, the apparent discrepancy is more a matter of case recognition than actual prevalence. Canadian physicians, who tend to use later *DSM* criteria, diagnose and treat children at rates similar to those seen in the United States.[40]

CONCLUSIONS

1. ADHD is a childhood neuropsychiatric syndrome that has been studied thoroughly over the past 40 years. Available diagnostic criteria for ADHD are based on extensive empirical research and, if applied appropriately, lead to the diagnosis of a syndrome with high interrater reliability, good face validity, and high predictability of course and medication responsiveness. ADHD is one of the best-researched disorders in medicine, and the overall data on its validity are far more compelling than for most mental disorders and even for many medical conditions. Nonetheless, the pathophysiology of ADHD remains unknown, although a number of neurophysiological theories are under investigation. ADHD demonstrates a very high heritability.

2. The diagnostic criteria for ADHD are designed to be used by a clinician familiar with childhood development and behavioral disorders. Application of

the diagnostic criteria requires time and effort to obtain a careful history from parents, teachers, and the child. As with almost all mental disorders, there is as yet no confirmatory genetic, radiologic, biochemical, neurophysiological, or neuropsychological test for ADHD, but such examinations may be helpful at times in evaluating presenting complaints suggestive of ADHD.

3. ADHD is associated with significant potential comorbidity and functional impairment, and its presence at any age increases the risk of behavioral and emotional problems at subsequent stages of life. It is thus a chronic illness with persistence common into adolescence and beyond.

4. Epidemiologic studies using standardized diagnostic criteria suggest that 3% to 6% of the school-aged population may have ADHD. A few studies have suggested a somewhat lower prevalence, but others, particularly those using newer, broader criteria, yield prevalences well above 6%. These studies have been conducted in a number of different countries and encompass a range of racial and socioeconomic backgrounds in the populations examined.

5. The percentage of US youth being treated for ADHD is at most at the lower end of this prevalence range. More cases of ADHD are being recognized and treated, and the duration of treatment is increasing. However, ADHD is also diagnosed inappropriately at times because of failure to do a thorough enough evaluation or to use established diagnostic criteria.

6. Pharmacotherapy, particularly stimulants, has been extensively studied. Medication alone generally provides significant short-term symptomatic and academic improvement, but response to stimulant medication is not specific to ADHD, and it is currently unknown whether long-term outcomes will be altered. The risk-benefit ratio of stimulant treatment in ADHD must be evaluated and monitored on an ongoing basis in each case, but in general is highly favorable.

7. Optimal treatment of ADHD involves an individualized plan based on any comorbidity as well as child and family preferences. This treatment generally will include pharmacotherapy (usually with stimulant medication) along with adjunctive psychoeducation, behavioral therapy, environmental changes, and, at times, supportive psychotherapy of the child, the family, or both. Nonpharmacological treatment modalities are well accepted by parents and probably significantly underused in primary care settings.

8. There should be documentation in the medical record showing evidence that appropriate diagnostic criteria for ADHD have been met, that common comorbid conditions have been assessed, that there is a clear treatment plan, and that there is appropriate follow-up, including medication monitoring for efficacy, adverse effects, and ongoing need.

9. There is little evidence to suggest that stimulant abuse or diversion is currently a major problem, particularly among those with ADHD, although recent trends suggest that this could increase with the expanding production and use of stimulants. Clinicians need to be mindful of the risk of abuse and diversion: in addition to keeping careful records of medication prescribed, they may consider alternatives to stimulant use in patients at high risk (eg, patient or family members with substance use disorders or bipolar or conduct disorder co-occurrent in the patient).

RECOMMENDATIONS

The following statements, recommended by the Council on Scientific Affairs, were adopted as AMA policy at the 1997 Annual AMA Meeting.

1. The AMA encourages physicians to use standardized diagnostic criteria in making the diagnosis of ADHD, such as the American Psychiatric Association's *DSM-IV*, as part of a comprehensive evaluation of children and adolescents presenting with attentional or hyperactivity complaints.

2. The AMA encourages the creation and dissemination of practice guidelines for ADHD by appropriate specialty societies and their use by practicing physicians and will assist in making physicians aware of their availability.

3. The AMA encourages efforts by medical schools, residency programs, medical societies, and continuing medical education programs to increase physician knowledge about ADHD and its treatment.

4. The AMA encourages the use of individualized therapeutic approaches for children diagnosed as having ADHD, which may include pharmacotherapy, psychoeducation, behavioral therapy, school-based and other environmental interventions, and psychotherapy as indicated by clinical circumstances and family preferences.

5. The AMA encourages physicians and medical groups to work with schools to improve teachers' abilities to recognize ADHD and appropriately recommend that parents seek medical evaluation of potentially affected children.

6. The AMA reaffirms Policy 100.975, to work with the FDA and the DEA to help ensure that appropriate amounts of methylphenidate and other Schedule II drugs are available for clinically warranted patient use.

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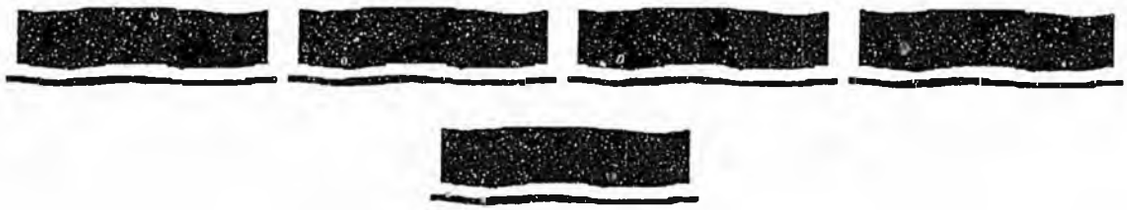
Attachment E

"Ritalin Stimulant Medication Information Page," prepared by Pediatric Neurological Associates



Ritalin and Related Stimulant Medications

[Back to ADHD page.]

Prepared by Pediatric Neurological Associates. [Click here for our home page.]

What are stimulant medications?

Ritalin (methylphenidate), Dexedrine (dextroamphetamine), and Cylert (pemoline) are sometimes called "stimulants". When prescribed for people who have Attention Deficit Hyperactivity Disorder (ADHD), they stimulate parts of the brain which are not filtering out distractions as well as they should. They are not tranquilizers or sedatives. The children appear "calmer" because they are more focused, not because they are sedated.

How can these medicines help?

They can improve attention span, decrease distractibility, increase ability to finish tasks, improve ability to follow directions, decrease hyperactivity, and improve ability to think before acting (decrease impulsivity).

Legibility of handwriting and completion of school work and homework can improve. Aggression and stubbornness may decrease in youngsters with ADHD.

Stimulant medication is not the only answer for ADHD! The medicine often works best when used together with special help in school and behavior modification procedures at home and school. Some youngsters and families also benefit from individual, family, or group psychotherapy. If stimulant medications do not help, or cause side effects that are a problem, you can discuss other medications with the doctor.

How long does the medicine last?

Ritalin and Dexedrine last 3 - 4 hours. Sustained-release Ritalin (SR), Dexedrine Spansules, and Cylert may last at least 6 - 8 hours.

How will the doctor monitor this medicine?

From time to time, the physician (or nurse) will check height, weight, pulse, and blood pressure. When Cylert is used, blood is taken to check on the liver function and blood count -- usually before starting the medicine, and occasionally afterward. The doctor will ask for regular reports from your child's teacher(s) to check on learning and behavior.

What side effects can this medicine have?

Any medication may have side effects, including allergy to the medication. Because each patient is different, your doctor will work with you to get the most positive effects and the fewest negative effects from the medication. The list below may not include rare or unusual side effects. It is important to note that except for a fraction of the children who experience mild appetite or sleep problems, *the vast majority of people have no significant side effects from Ritalin.*

- Lack of appetite (Handle by encouraging a good breakfast, and afternoon and eve snacks; give medicine after meals, rather than before Problem usually resolves.)
- Trouble falling asleep, which usually improves over several weeks.
- Headaches
- Stomachaches
- Irritability, crankiness, crying, or emotional sensitivity.
- Rapid pulse or increased blood pressure.
- Rarely, as the medicine wears off, hyperactivity or bad moods get worse than beto medicine was started. This is called "rebound". The doctor can make dosage adjustments to help this problem.
- A few children may not grow quite as fast as usual. This is why the height and we are checked regularly. Growth catches up if the medicine is stopped.
- Occasionally, nervous habits (like picking at skin) or stuttering may appear.
- Muscle tics or twitches, jerking movements.
- Sadness which lasts more than a few days.
- Any behavior which is very unusual for your child.

Please talk to the doctor if you suspect the medicine is causing a problem.

What could happen if this medicine is stopped suddenly?

There are no medical problems in doing this. A few youths may experience irritability, trouble sleeping, or increased hyperactivity for a day or two, if they have been on daily medication for a long time, especially at above average doses. Occasionally, it is better to stop the medication gradually, over a week or so.

How long will this medicine be needed?

There is no way to know how long a person will need to take the medicine. The parent, the doctor, and the school will work together to find out what is right for each young person.

Sometimes the medicine is needed for only a few years, but some people may need help from medicine even as adults.

What else should I know about this medicine?

Many people have incorrect information about this medicine. If you hear anything that worries you, please check with the doctor.

This medicine does not cause illegal drug use or addiction.

This medicine does not stop working at puberty.

Some young people take the medicine three or four times a day, every day. Others only need to take it twice a day or once a day on school days. Your doctor and you will work out what is best.

If a dose is missed, just pick up with the regular dose at the next scheduled time. Do not double up the next dose.

It is important not to chew Ritalin Sustained Release tablets or Dexedrine Spansules, because this releases too much medicine all at once.

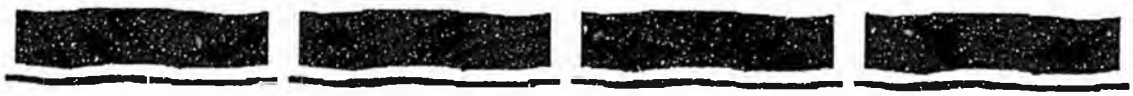
If the medicine seems to stop working, it may be because it is not being given regularly (especially at school), because your child has gained weight and needs a higher dose, or because something at school or at home, or in the neighborhood, is upsetting your child. Please discuss your concerns with the doctor.

See also our page on Attention Deficit/Hyperactivity and Other Rx for ADD

Selected Web site

Internet Mental Health has an excellent pharmacy section

[Back to ADHD page.]



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[Tics & Tourettte's] [Autism & Asperger's] [Develop. Resources] [Seizure Disorders]
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Welcome to the Home Page
of
Pediatric Neurological Associates!

This Web site is designed to help parents and their children learn about:

- Our staff.
- Preparing for a visit with us and directions.
- Preparing for further testing such as EEG or MRI.
- How to use the Web (a one minute crash course on the very basics).
- **Medical information (including treatments, readings, & related Web links)** including:
  - **seizures, epilepsy, and anticonvulsants**
  - **headaches**
  - **Attention Deficit Disorder/Hyperactivity (ADDH or ADHD)**
  - **learning disabilities**
  - **tic disorders and Tourette's syndrome**
  - **Best Bet Web Sites**
  - **other child neurology topics.**

Disclaimer: This Web site is presented as a resource to patients. It does not constitute medical advice; nor is it a substitute for discussion between patients and their doctors. The views of cited references do not necessarily represent the views of our staff.

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Martin L. Kutscher, M.D.
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Locations:

Pediatric Neurological Associates (PNA) was founded in 1979
and presently covers three states with offices in:

New York