DSM-IV APA 2000

- ATTENTION-DEFICIT HYPERACTIVITY DISORDER (ADHD) IS A DISRUPTIVE BEHAVIOUR DISORDER CHARACTERIZED BY ONGOING INATTENTION AND/OR HYPERACTIVITY-IMPULSIVITY OCCURRING IN SEVERAL SETTINGS AND MORE FREQUENTLY AND SEVERELY THAN IS TYPICAL FOR PERSONS IN THE SAME STAGE OF DEVELOPMENT.

ADHD HALLMARKS

- ACADEMIC IMPAIRMENTS
- SOCIAL DYSFUNCTION
- POOR SELF-ESTEEM
- CO-MORBID DIAGNOSIS

ETIOLOGY

- ALTHOUGH A SIGNIFICANT AMOUNT OF PROGRESS HAS BEEN MADE INVESTIGATING THE NEUROBIOLOGY OF THIS DISORDER, ITS PRECISE ETIOLOGY REMAINS UNCLEAR.
- CONVERGING EVIDENCE FROM THE STUDIES OF THE NEUROPHARMACOLOGY, GENETICS, NEUROPSYCHOLOGY AND NEUROIMAGING OF ADHD IMPLY THE INVOLVEMENT OF THE FRONTO-STRIATIAL CIRCUITRY IN ADHD.
- POOR INHIBITORY CONTROL OF THE FRONTO-STRIATIAL CIRCUITRY SEEMS TO BE KEY.

NEUROTRANSMITTERS

- DOPAMINE
- NOREPINEPHRINE

DSM-IV CRITERIA

EITHER A OR B

A. SIX OR MORE OF THE SYMPTOMS OF INATTENTION HAVE BEEN PRESENT FOR AT LEAST SIX MONTHS TO A POINT THAT IS DISRUPTIVE AND INAPPROPRIATE FOR DEVELOPMENTAL LEVEL

B. SIX OR MORE OF THE SYMPTOMS OF HYPERACTIVITY-IMPULSIVITY HAVE BEEN PRESENT FOR AT LEAST SIX MONTHS TO AN EXTENT THAT IS DISRUPTIVE AND INAPPROPRIATE FOR DEVELOPMENTAL LEVEL

SOME SYMPTOMS THAT CAUSE IMPAIRMENT WERE PRESENT BEFORE AGE 7 YEARS

IMPAIRMENT FROM THE SYMPTOMS IS PRESENT IN 2 OR MORE SETTINGS (e.g., AT SCHOOL/WORK AND AT HOME)

THERE MUST BE CLEAR EVIDENCE OF SIGNIFICANT IMPAIRMENT IN SOCIAL, SCHOOL, OR WORK FUNCTIONING.

THE SYMPTOMS DO NOT HAPPEN ONLY DURING THE COURSE OF PDD, SCHIZOPHRENIA, OR OTHER PSYCHOTIC DISORDER. THE SYMPTOMS ARE NOT BETTER ACCOUNTED FOR BY ANOTHER MENTAL DISORDER

INATTENTION

- OFTEN DOES NOT GIVE CLOSE ATTENTION TO DETAILS OR MAKES CARELESS MISTAKES IN SCHOOLWORK, WORK OR OTHER ACTIVITIES.
- OFTEN HAS TROUBLE KEEPING ATTENTION ON TASKS OR PLAY ACTIVITIES
- OFTEN DOES NOT SEEM TO LISTEN WHEN SPOKEN TO DIRECTLY
- OFTEN DOES NOT FOLLOW INSTRUCTIONS AND FAILS TO FINISH SCHOOLWORK, CHORES, OR DUTIES IN THE WORKPLACE (NOT DUE TO OPPOSTITIONAL BEHAVIOR OR FAILURE TO UNDERSTAND INSTRUCTIONS).
- OFTEN HAS TROUBLE ORGANIZING ACTIVITIES.
- OFTEN AVOIDS, DISLIKES, OR DOESN'T WANT TO DO THINGS THAT TAKE A LOT OF MENTAL EFFORT FOR A LONG PERIOD OF TIME (SUCH AS SCHOOLWORK OR HOMEWORK).
- OFTEN LOSES THINGS NEEDED FOR TASKS AND ACTIVITIES (e.g., TOYS, SCHOOL ASSIGNMENTS, PENCILS, BOOKS OR TOOLS).
- IS OFTEN EASILY DISTRACTED.
- IS OFTEN FORGETFUL IN DAILY ACTIVITIES.

THREE TYPES OF ADHD

- PREDOMINANTLY INATTENTIVE TYPE
- PREDOMINANTLY HYPERACTIVE-IMPULSIVE TYPE
- COMBINED TYPE

HYPERACTIVITY

- OFTEN FIDGETS WITH HANDS OR FEET OR SQUIRMS IN SEAT.
- OFTEN GETS UP FROM SEAT WHEN REMAINING IN SEAT IS EXPECTED
- OFTEN RUNS ABOUT OR CLIMBS WHEN AND WHERE IT IS NOT APPROPRIATE (ADOLESCENTS AND ADULTS MAY FEEL VERY RESTLESS)
- OFTEN HAS TROUBLE PLAYING OR ENJOYING LEISURE ACTIVITIES QUIETLY.
- IS OFTEN “ON THE GO” OR OFTEN ACTS AS IF “DRIVEN BY A MOTOR”.
- OFTEN TALKS EXCESSIVELY.

IMPULSIVITY

- OFTEN BLURTS OUT ANSWERS BEFORE QUESTIONS HAVE BEEN FINISHED
- OFTEN HAS TROUBLE WAITING FOR HIS OR HER TURN.
- OFTEN INTERRUPTS OR INTRUDES ON OTHERS (e.g., BUTTS INTO CONVERSATIONS OR GAMES).

PREVALENCE

- CHILDREN WITH BEHAVIOR PATTERNS SIMILAR TO WHAT WE NOW CALL ADHD HAVE BEEN DESCRIBED IN THE MEDICAL LITERATURE FOR MORE THAN 100 YEARS.
- THE DEFINITION AND NAME OF THIS CONDITION HAS CHANGED SEVERAL TIMES DURING THIS PERIOD.
- MOST TEXTBOOKS QUOTE 3% TO 5% AS THE PREVELANCE OF ADHD IN SCHOOL AGED CHILDREN (EXTRAPOLATED FROM TERTIARY CARE CENTER DATA).
- COMMUNITY BASED SAMPLES SHOW PREVALENCE OF 6% TO 9% (11 LARGE STUDIES).
- MALE PREDOMINANCE OF ABOUT 3:1.
- 80% CONTINUE TO DISPLAY FULL CLINICAL SYNDROME IN ADOLESCENCE.

ETIOLOGY

- LIKELY MULTIFACTORIAL AND ENCOMPASSES A COMBINATION OF ENVIRONMENTAL, GENETIC AND BIOLOGIC FACTORS.
- PRENATAL (GENETIC COMPONENT) AND PERINATAL (CIGARETTE AND ALCOHOL EXPOSURE) FACTORS INCREASE THE RISK FOR DEVELOPMENT OF ADHD.
- TWIN STUDIES SHOW MEAN HEREDITABILITY OF 0.75 i.e. GENETIC INPUT ACCOUNTS FOR APPROXIMATELY 75% OF ETIOLOGIC CONTRIBUTION TO ADHD.
- GENE ASSOCIATION STUDIES POINT TO 7-REPEAT ALLEL OF D4 DOPAMINE RECEPTOR (DRD4.7).

PROPOSED ETIOLOGIES

- BRAIN DYSFUNCTION
- ANATOMICAL LESIONS
- GENETIC PREDISPOSITIONS
- NEUROCHEMICAL ALTERATIONS
- DEFICITS IN NEUROPSCHOLOGICAL FUNCTIONING
- DISORDERED ADAPTATION THEORY
- BEHAVIORAL INHIBITION THEORY

ADHD, SELF-REGULATION, AND TIME: TOWARD A MORE COMPREHENSIVE THEORY

(RUSSELL BARKLEY: J DEV BEHAV PEDIATR 18:271-279,1997)

A MODEL OF PREFRONTAL LOBE EXECUTIVE FUNCTIONS.

- THE DOMAIN OF EXECUTIVE FUNCTION IS DISTINCT FROM COGNITIVE DOMAINS SUCH AS SENSATION, PERCEPTION, AND MANY ASPECTS OF LANGUAGE AND MEMORY. IT OVERLAPS WITH DOMAINS SUCH AS ATTENTION, REASONING, AND PROBLEM SOLVING, BUT NOT PERFECTLY.

- DEFICIENCY IN BEHAVIORAL INHIBITION DIMINISHES THE EFFECTIVE DEPLOYMENT OF THE FOUR EXECUTIVE ABILITIES THAT SUBSERVE SELF-CONTROL AND GOAL DIRECTED BEHAVIOR:

- A) NONVERBAL WORKING MEMORY
- B) VERBAL WORKING MEMORY
- C) SELF-REGULATION OF AFFECT, MOTIVATION AND AROUSAL
- D) RECONSTITUTION

POOR WORKING MEMORY (NONVERBAL)

- INABILITY TO HOLD EVENTS IN MIND
- UNABLE TO MANIPULATE OR ACT ON THE EVENTS
- IMPAIRED IMITATION OF COMPLEX SEQUENCES
- DEFECTIVE HINDSIGHT
- DEFECTIVE FORETHOUGHT
- POOR ANTICIPATORY SET
- DIMINISHED SENSE OF TIME
- LIMITED SELF-AWARENESS

DELAYED INTERNALIZATION OF SPEECH (LIMITED VERBAL WORKING MEMORY)

- REDUCED DESCRIPTION AND REFLECTION
- DEFICIENT RULE-GOVERNED BEHAVIOR
- POOR PROBLEM SOLVING/SELF-QUESTIONING
- LESS EFFECTIVE GENERATION OF RULES
- IMPAIRED READING COMPREHENSION
- DELAYED MORAL REASONING

IMMATURE SELF-REGULATION (AFFECT/MOTIVATION/AROUSAL)

- LIMITED EMOTIONAL SELF-CONTROL
- LESS OBJECTIVITY/SOCIAL PERSPECTIVE TAKING
- DIMINISHED SELF-REGULATION OF DRIVE/MOTIVATION
- POOR REGULATION OF AROUSAL IN THE SERVICE OF GOAL-DIRECTED ACTION

IMPAIRED RECONSTITUTION

- LIMITED ANALYSIS AND SYNTHESIS OF BEHAVIOR
- REDUCED VERBAL/BEHAVIORAL FLUENCY
- DEFICIENT RULE CREATIVITY
- LESS GOAL-DIRECTED BEHAVIORAL CREATIVITY AND DIVERSITY
- LESS FREQUENT USE OF BEHAVIORAL STIMULATIONS
- IMMATURE SYNTAX OF BEHAVIOR

EXECUTIVE FUNCTIONS

- THE ABILITY TO MAINTAIN AN APPROPRIATE PROBLEM SOLVING SET FOR ATTAINMENT OF A FUTURE GOAL.
- INTENTION TO INHIBIT OR DEFER A RESPONSE.
- STRATEGIC PLAN OF ACTION SEQUENCES/MENTAL REPRESENTATION OF THE TASK.
- CONTEXT-SPECIFIC ACTION SELECTION.
- MAXIMAL CONSTRAINT SATISFACTION IN ACTION SELECTION.

REDUCED MOTOR CONTROL/FLUENCY/SYNTAX

- DISINHIBITED TASK-IRRELEVANT RESPONSE
- IMPAIRED EXECUTION OF GOAL-DIRECTED RESPONSES
- LIMITED NOVELTY/COMPLEXITY OF MOTOR SEQUENCES
- DIMINISHED GOAL-DIRECTED PERSISTANCE
- INSENSITIVITY TO RESPONSE FEEDBACK
- BEHAVIORAL INFLEXIBILITY
- LESS ABLE TO RE-ENGAGE TASKS FOLLOWING DISRUPTION
- BEHAVIOR POORLY CONTROLLED BY INTERNALLY REPRESENTED INFORMATION
- DEFICIENT CROSS-TEMPORAL ORGANIZATION OF BEHAVIOR

BEHAVIORAL INHIBITION

- IN ESSENCE, THIS MODEL STATES THAT THE BEHAVIORAL INHIBITION THAT IS DEFICIENT IN ADHD SHOULD GIVE RISE TO SECONDARY DEFICITS IN THE FOUR EXECUTIVE FUNCTIONS THAT DEPEND ON IT FOR THEIR OWN EFFECTIVE PERFORMANCE. THIS RESULTS IN BEHAVIOR IN THOSE WITH ADHD THAT IS LESS INTERNALLY GUIDED, LESS PURPOSEFUL, LESS GOAL DIRECTED, LESS GOVERNED BY AND ORIENTED TO TIME, AND LESS LIKELY TO BE AIMED AT MAXIMIZING NET FUTURE OUTCOMES IN LIEU OF IMMEDIATE ONES.

AAP EVIDENCED-BASED PRACTICE GUIDELINES

(PEDIATRICS 2001:105:1158-1170)

- IN A CHILD 6 TO 12 YEARS OLD WHO PRESENTS WITH INATTENTION, HYPERACTIVITY, IMPULSIVITY, ACADEMIC UNDER-ACHIEVEMENT, OR BEHAVIOR PROBLEMS, PRIMARY CARE CLINICIANS SHOULD INITIATE AN EVALUATION FOR ADHD.

- THE DIAGNOSIS OF AHDH REQUIRES THAT A CHILD MEET DSM-IV CRITERIA.

- THE ASSESSMENT OF ADHD REQUIRES EVIDENCE DIRECTLY OBTAINED FROM PARENTS OR CAREGIVERS REGARDING THE CORE SYMPTOMS OF ADHD IN VARIOUS SETTINGS, THE AGE OF ONSET, DURATION OF SYMPTOMS, AND DEGREE OF FUNCTIONAL IMPAIRMENT.
    - USE OF THESE SCALES IS A CLINICAL OPTION WHEN EVALUATING CHILDREN WITH ADHD
    - USE OF BROADBAND SCALES IS NOT RECOMMENDED IN THE DIAGNOSIS OF CHILDREN FOR ADHD, ALTHOUGH THEY MAY BE USEFUL FOR OTHER PURPOSES

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FUNCTIONAL IMPAIREMENT

- THE CORE SYMPTOMS OF ADHD CAN LEAD TO MARKED IMPAIRMENT IN KEY AREAS OF FUNCTIONING ESSENTIAL FOR OPTIMAL DEVELOPMENT.

- DELINEATING AREAS OF FUNCTIONAL IMPAIRMENT IS ESSENTIAL TO UNDERSTANDING THE IMPACT OF ADHD ON AN INDIVIDUAL CHILD OR ADOLESCENT.

KNOWN AREAS OF FUNCTIONAL IMPAIRMENTS INCLUDE:

- FAMILY RELATIONSHIPS
- PEER STATUS AND SOCIAL SKILLS
- ACADEMIC ACHIEVEMENT
- SELF-ESTEEM
- SELF PERCEPTION
- ACCIDENTAL INJURIES
- SUBSTANCE USE

PARENTS OF CHILDREN WITH ADHD EXPERIENCE:

- GREATER STRESS
- COPE LESS ADAPTIVELY
- DISPLAY MORE NEGATIVE BEHAVIOR TOWARDS THEIR CHILDREN
- HAVE MORE MARITAL DISCORD

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- OTHER DIAGNOSTIC TESTS ARE NOT ROUTINELY INDICATED TO ESTABLISH THE DIAGNOSIS OF ADHD.

Ten-year review of rating scales assessing attention-deficit/hyperactivity disorder

(j am. Acd. Child adolesc. Psychiatry, 42:9, 1015-1037, Sept.2003)

- SCALES COMPLTED BY ADULT INFORMANTS, SUCH AS PARENTS, TEACHERS OR CARE GIVERS.
- THE BEST REPORTER DEPENDS ON THE SETTING IN WHICH THE YOUTH'S BEHAVIOR IS BEING EXAMONED.
- ALTHOUGH CHILDREN AND ADOLESCENTS ARE THE BEST REPORTERS OF THEIR SUBJECTIVE EXPERIENCE, THEY TEND TO UNDERESTIMATE THEIR EXTERNALIZING BEHAVIORS.
- OPTIMAL TO HAVE MULTI-INFORMANT ASSESSMENTS AS IMPAIRMENTS ACCROSS SETTINGS IS REQUIRED FOR DIAGNOSIS.
- ADULT-REPORT SCALES ARE ALL NARROW BAND SCALES (i.e., FOCUS ON SPECIFIC BEHAVIOR OR SYMPTOM).
- BROADBAND SCALES HELPFUL IN DIFFERENTIAL DIAGNOSIS OR IN DETECTING CO-MORBIDITY (CHILD BEHAVIOR CHECKLIST)
- COMPREHENSIVE DIAGNOSTIC EVALUATION MAY INVOLVE BOTH NARROW AND BROAD BAND SCALES, HOWEVER MONITORING TREATMENT IS DONE WITH NARROW BAND.

GENERAL COSIDERATIONS OF RATING SCALES

- RATING SCALES DO NOT SUBSTITUTE FOR DIAGNOSTIC EVALUATION (i.e. HIGH SCORES ON RATING SCALES DO NOT EQUATE TO DIAGNOSIS).
- SCALES HAVE A HIGH FACE VALIDITY (IT IS NOT DIFFICULT FOR A PARENT OR TEACHER WHO BELIEVES THAT A CHILD HAS/DOES NOT HAVE ADHD TO COMMUNICATE THAT IMPRESSION TO THE CLINICIAN.
- THESE SCALES MEASURE QUANTITATIVE DIFFERENCES i.e., DIFFERENCES IN THE NUMBER AND SEVERITY OF SYMPTOMS RATHER THAN QUALITATIVE DIFFERENCES IN THE WAYS THAT SYMPTOMS ARE EXPRESSED.
- WHEN USED APPROPRIATELY, THESE ADHD-SPECIFIC RATING SCALES HAVE THE POTENTIAL TO IMPROVE CLINICAL ASSESSMENT, DIAGNOSTIC DETERMINATION, TREATMENT MONITORING, AND ULTIMATELY, ACCOUNTABILITY IN PRACTICE

PREVELENCE OF SELECTED COEXISTING CONDITIONS IN ADHD

COEXISTING CONDITION	ESTIMATED PREVELENCE
OPPOSITIONAL DEFIANT DISORDER	35.2%
CONDUCT DISORDER	25.7%
ANXIETY DISORDER	25.8%
DEPRESSIVE DISORDER	18.2%

AAP GUIDELINES FOR THE TREATMENT OF ADHD

- PRIMARY CARE CLINICIANS SHOULD ESTABLISH A TREATMENT PROGRAM THAT RECOGNIZES ADHD AS A CHRONIC CONDITION.
- THE TREATING CLINICIAN, PARENT, CHILD, IN COLLABORATION WITH SCHOOL PERSONNEL, SHOULD SPECIFY APPROPRIATE TARGET OUTCOMES TO GUIDE MANAGEMENT.
- THE CLINICIAN SHOULD RECOMMEND STIMULANT MEDICATION AND/OR BEHAVIOR THERAPY AS APPROPRIATE TO IMPROVE TARGET OUTCOMES IN CHILDREN WITH ADHD (FOR CHILDREN ON STIMULANTS, IF ONE STIMULANT DOES NOT WORK AT THE HIGHEST FEASIBLE DOSE, THE CLINICIAN SHOULD RECOMMEND ANOTHER).
- WHEN THE SELECTED MANAGEMENT FOR A CHILD WITH ADHD HAS NOT MET THE TARGET OUTCOMES, CLINICIANS SHOULD EVALUATE THE ORIGINAL DIAGNOSIS, USE OF ALL APPROPRIATE TREATMENTS, ADHERENCE TO THE TREATMENT PLAN, AND PRESENCE OF COEXISTING CONDITIONS.
- THE CLINICIAN SHOULD PERIODICALLY PROVIDE SYSTEMATIC FOLLOW-UP FOR THE CHILD WITH ADHD. MONITORING SHOULD BE DIRECTED TO TARGET OUTCOMES AND ADVERSE EFFECTS, WITH INFORMATION GATHERED FROM PARENTS, TEACHERS AND THE CHILD.

MANAGEMENT PROGRAM RECOGNIZES ADHD AS A CHRONIC DISEASE

- PROVIDING PARENTS AND CHILD WITH INFORMATION ABOUT THE CONDITION.
- UPDATING AND MONITORING FAMILY KNOWLEDGE AND UNDERSTANDING ON A PERIODIC BASIS.
- COUNSELING ABOUT FAMILY RESPONSE TO THE CONDITION
- DEVELOPMENTALLY APPROPRIATE EDUCATION OF CHILD ABOUT ADHD, WITH UPDATES AS THE CHILD GROWS.
- AVAILABILITY TO ANSWER FAMILY QUESTIONS.
- ENSURING COORDINATION OF HEALTH AND OTHER SERVICES.
- HELPING FAMILIES SET SPECIFIC GOALS IN AREAS RELATED TO CHILD'S CONDITION AND ITS EFFECTS ON DAILY ACTIVITIES.
- LINKING FAMILIES WITH OTHER FAMILIES WITH CHILDREN WHO HAVE A SIMILAR CHRONIC CONDITION AS NEEDED AND WHEN AVAILABLE

ADHD IN ADOLESCENTS

- LONGITUDINAL STUDIES OF HYPERACTIVE CHILDREN PUBLISHED OVER THE PAST TWO DECADES HAVE DONE MUCH TO OVERTURN THE VIEW OF THE DISORDER AS A BENIGN, TRANSIENT CONDITION, AS IT WAS BELIEVED TO BE IN EARLIER DECADES. IT IS NOW REALIZED THAT ADHD PERSISTS IN MOST CHILDREN INTO THEIR ADOLESCENCE. AT THE SAME TIME, THE GROWING RECOGNITION OF ADOLESCENCE AS A SEPARATE STAGE OF HUMAN PSYCHOLOGICAL DEVELOPMENT HAS ALSO CONTRIBUTED TO THE RECOGNITION AND ACCEPTANCE OF AN ADOLESCENT STAGE OF ADHD. UNFORTUNATELY THE SCIENTIFIC STUDY OF ADHD IN TEENS LAGS FAR BEHIND RESEARCH IN CHILDREN WITH THIS DISORDER.

- WHILE THE CONSTRUCTS COMPRISING THIS DISORDER (INATTENTION, POOR INHIBITION) DO NOT APPEAR TO CHANGE QUALITATIVELY, THEIR SURFACE MANIFESTATIONS MAY CHANGE DUE TO BIOLOGICAL-DEVELOPMENTAL CHANGES AS WELL AS CHANGES IN SOCIAL EXPECTATIONS AND RESPOSIBILITIES THAT OCCUR AT THIS DEVELOPMENTAL STAGE.

COMMON CLINICAL PRESENTATIONS

CASE 1

- S.T. IS AN ATTRACTIVE, 14 YEAR-OLD GIRL WHO HAS FRIENDS, IS CHARMING TO ADULTS AND GETS ALONG WELL WITH HER PARENTS.
- HAD NO PROBLEMS IN ELEMENTARY SCHOOL BUT BEGAN TO HAVE SOME DIFFICULTIES COMPLETING HER ASSIGNMENTS IN SEC. 1.
- BY THE MIDDLE OF HIGHSCHOOL SHE WAS FAILING SOME CLASSES, MISSING ASSIGNMENTS AND GENERALLY HAVING DIFFICULTY AT SCHOOL AND SOME EXTRA-CURRICULAR ACTIVITIES.
- THE DIAGNOSIS OF ADHD IS OFTEN MISSED IN GIRLS DURING THE ELEMENTARY SCHOOL YEARS.
- THEY ARE OFTEN SUCCESSFUL IN HIDING THEIR INATTENTIVENESS UNTIL THE ORGANIZATIONAL AND PLANNING DEMANDS OF MIDDLE SCHOOL AND HIGHSCHOOL OVERWHELM THEM.

CASE 2

- D.H. IS 17 YEARS OLD PRESENTING FOR DEPRESSION, SLEEP DIFFICULTIES AND HEAVY MARIJUANA USE.
- STAYS UP UNTIL 2 am ON SCHOOL NIGHTS, GETS UP LATE, MISSES FIRST HOUR OR TWO OF SCHOOL, SMOKES POT EVERY WEEKEND WITH FRIENDS.
- NO HISTORY OF CHILDHOOD HYPERACTIVITY AND WAS AN OUTSTANDING STUDENT IN ELEMENTARY SCHOOL.
- GRADES SLIPPING DURING PAST THREE YEARS, MOSTLY FROM MISSED OR INCOMPLETE ASSIGNMENTS. DISORGANIZED AND LEAVES MAJOR PROJECTS UNTIL THE LAST NIGHT TO COMPLETE.
- AS HIS MARKS DECLINED HE TURNED TO A MORE ALTERNATIVE PEER GROUP THAT IS INVOLVED WITH DRUGS AND HAS BECOME INCREASINGLY DEPRESSED, FALLING INTO POOR SLEEP HABITS.
- EXEMPLIFIES THE BRIGHT ADOLESCENT WHOSE HIGH IQ MASKS HIS ADHD UNTIL HIGHSCHOOL. FRUSTRATED AND BORED ACADEMICALLY, THEY MAY BECOME DEPRESSED AND TURN TO DRUGS AND DEVIANT PEER GROUPS.

CASE 3 AND CASE 4

- LONGSTANDING DIFFICULT BEHAVIOR WITH ADEQUATE SCHOOL PERFORMANCE
- VERY INVOLVED WITH SPORTS BUT FRQUENTLY IN THE PENALTY BOX.
- HAS BEEN LABELLED AS A TROUBLE MAKER FROM A VERY YOUNG AGE. SEEMS TO BE ALWAYS HANGING AROUND WITH THE WRONG TYPES OF KIDS.
- DOES NOT SMOKE OR USE DRUGS AND IS NOT DEPRESSED.
- IMPORTANCE OF GENETIC FACTORS AS PREDICTORS

TOP TEN COMMENTS

- I KNOW YOU COULD DO BETTER
- TRY A LITTLE HARDER
- WE ARE DISAPPOINTED IN YOU
- WE EXPECTED MORE FROM YOU
- YOU'RE SISTER ISN'T LIKE THAT
- WHERE IS YOUR HOMEWORK
- YOUR GROUNDED
- THE TEACHER WANTS TO TALK TO US
- YOU'RE OUT OF THE GAME
- WHAT WERE YOU THINKING

DIFFERENCES IN PRESENTATION IN ADOLESCENT ADHD

- APPPROXIMATELY 80% OF CHILDREN WITH ADHD CONTINUE TO DISPLAY THE FULL CLINICAL SYNDROME IN ADOLESCENCE.
- QUANTITATIVE DECLINE IN SYMPTOM SEVERITY OCCURS, PARTICULARLY IN THE DOMAIN OF HYPERACTIVE BEHAVIOR.
- OTHER SYMPTOMS SUCH AS THOSE REFLECTING POOR PERSISTENCE OF EFFORT, IMPAIRED SELF-CONTROL AND ORGANIZATION, AND DEFICIENT TIME MANAGEMENT, MAY BECOME MORE PROMINENT.
- NEW DOMAINS OF IMPAIRMENT THAT WERE NOT RELEVANT IN CHILDHOOD BECOME EVIDENT (e.g., DATING, SEXUAL RISKS, DRIVING RISKS).
- SOME MAY MANIFEST IMPAIRMENT DUE TO ADHD SYMPTOMS FOR THE FIRST TIME IN ADOLESCENCE. THESE YOUNGSTERS MAY NOT ALWAYS BE EASY TO IDENTIFY.

TEENAGERS WITH ADHD ARE MORE LIKELY THAN NON-ADHD TEENS TO HAVE:

- FAILED A GRADE
- BEEN SUSPENDED OR EXPELLED
- DROPPED OUT OF HIGHSCHOOL
- INCREASED CONFLICT
- NEGATIVE COMMUNICATION WITH PARENTS
- WORSE DRIVING HABITS
- MORE ACCIDENTS
- RECEIVED MORE TICKETS
- EARLIER AGE OF FIRST SEXUAL INTERCOURSE
- MORE SEXUAL PARTNERS
- LESS BIRTH CONTROL
- MORE SEXUALLY TRANSMITTED DISEASES

MULTIMODAL TREATMENT OF ADOLESCENT ADHD

- KEY PRINCIPLE FOR EFFECTIVELY TREATING ADOLESCENTS WITH ADHD IS TO RESPECT ADOLESCENT DEVELOPMENT. DISCUSS RATHER THAN LECTURE, TALK WITH RATHER THAN PREACH TO.

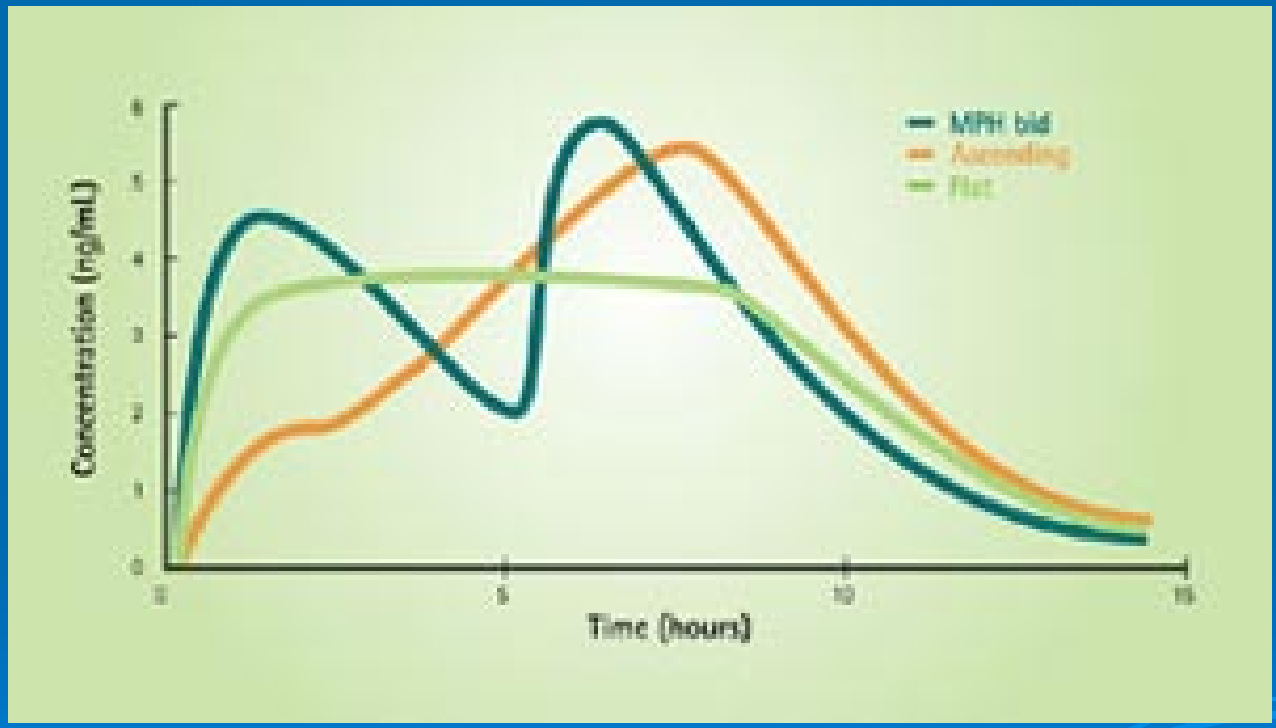
1. EDUCATE THE ADOLESCENT ABOUT ADHD (MYTHS AND REBUTTALS)
2. PERSCRIBE, TITRATE AND MONITOR MEDICATIONS
3. INTERVENE TO ENHANCE SCHOOL SUCCESS
4. INTERVENE TO IMPROVE BEHAVIORAL PROBLEMS AT HOME
5. DEAL WITH ANY COMORBIDITIES OR REMAINING PROBLEMS

MEDICATIONS FOR ADHD

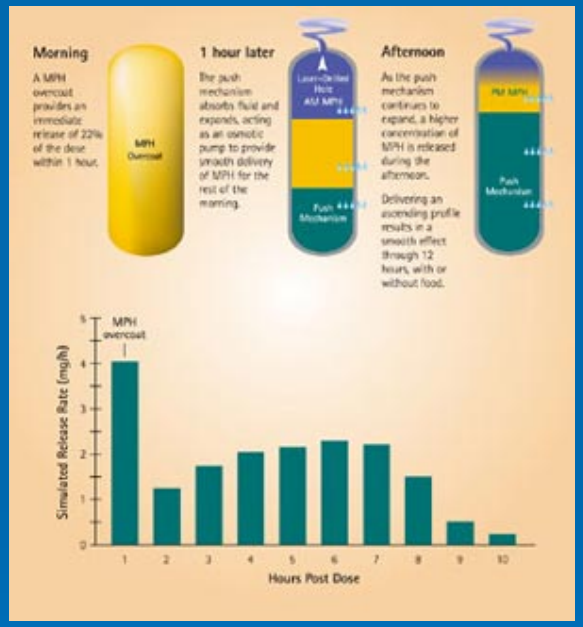
- STIMULANTS
- NORADRENERGIC REUPTAKE INHIBITORS
- TRICYCLIC ANTIDEPRESSANTS
- ANTIHYPERTENSIVE AGENTS

STIMULANTS

- METHYLPHENIDATE (RITALIN, RITALIN SR, CONCERTA, FOCALIN)
- D-AMPHETAMINE (DEXEDRINE)
- MIXED AMPHETAMINE SALTS (ADDERALL, ADDERALL XR)
- PEMOLINE (CYLERT)


MPH bid
Ascending
Flat
Concentration (ng/mL)
Time (hours)

CONCERTA


Morning
A MPH overcoat provides an immediate release of 22% of the dose within 1 hour.
MPH Overcoat
1 hour later
The push mechanism absorbs fluid and expands, acting as an osmotic pump to provide smooth delivery of MPH for the rest of the morning.
Push Mechanism
Afternoon
As the push mechanism continues to expand, a higher concentration of MPH is released during the afternoon.
Delivering an ascending profile results in a smooth effect through 12 hours, with or without food.
Push Mechanism
MPH overcoat
Simulated Release Rate (mg/h)
0
1
2
3
4
5
1
2
3
4
5
6
7
8
9
10
Hours Post Dose

Prescribe CONCERTA	 18 mg q am	 27 mg q am	 36 mg q am	 54 mg q am
To provide an initial dose of	**4 mg**	**6 mg**	**8 mg**	**12 mg**
Plus an extended dose of	**14 mg**	**21 mg**	**28 mg**	**42 mg**

STIMULANT MEDICATION

- OF PHARMACOLOGIC OPTIONS AVAILABLE FOR ADHD, STIMULANTS MEDICATION ARE THE

- MOST STUDIED
- MOST COMMONLY USED
- MOST EFFECTIVE
- FIRST-LINE AGENTS FOR TREATMENT

IN ADHD
STIMULANTS FOUND TO IMPROVE

CORE SYMPTOMS

- INATTENTION
- IMPULSIVITY
- HYPERACTIVITY

ADDITIONAL IMPROVEMENTS

- NONCOMPLIANCE
- IMPULSIVE AGGRESSION
- SOCIAL INTERACTIONS
- ACADEMIC EFFICIENCY
- ACADEMIC ACCURACY

STIMULANT ADVERSE EFFECTS

DEX,MPH,PEM: SIMILAR SIDE EFFECT PROFILES

- DECREASED APPETITE
- INSOMNIA
- ABDOMINAL DISCOMFORT
- HEADACHE
- IRRITABILITY

AREAS OF CONCERN AND CONTROVERSY WITH STIMULANT USE

- GROWTH SUPPRESSION
- DEVELOPMENT OF TICS
- MEDICATION ABUSE
- USE IN ADOLESCENTS
- REBOUND
- COGNITIVE TOXICITY

ADVERSE EFFECTS OF TRICYCLICS

ANTI-CHOLINERGIC
DRY MOUTH
CONSTIPATION

ANTIHISTAMINERGIC
SEDATION
WEIGHT GAIN

ALPH-ADRENERGIC
BLOOD PRESSURE CHANGES
TREMOR

QUINIDINE-LIKE EFFECT
CARDIAC EFFECTS

CONTINGENCY MANAGEMENT

- CONTINGENT APPLICATION OF REINFORCEMENT OR PUNISHMENT FOLLOWING APPROPRIATE/INAPPROPRIATE BEHAVIORS.

LIMITING FEATURES OF THESE APPROACHES

- THEY RELY ON THE COMPASSION AND WILLINGNESS OF OTHERS TO EMPLOY THEM WITH TEENAGERS WITH ADHD, WHEN THOSE OTHERS MAY HAVE LITTLE TIME OR INCLINATION TO DO SO.
- TEENS SPEND PROGRESSIVELY GREATER AMOUNTS OF TIME AWAY FROM CAREGIVERS, OFTEN WITH PEERS, WHO ARE NOT PART OF THE TREATMENT TEAM.
- TEENS ARE LIKELY TO TAKE CLASSES WITH A LARGE NUMBER OF EDUCATORS, INCREASING THE LIKELIHOOD THAT THESE EDUCATORS WILL NOT COMPLY WITH RECOMMENDATIONS.
- TEENS HAVE INCREASING OPPORTUNITIES TO SPEND TIME WITH OTHERS IN PLACES LARGELY OUT OF REACH OF PSYCHOSOCIAL TREATMENTS.
- TEENS HAVE AN INCREASING CAPACITY AND DESIRE FOR SELF-DETERMINATION AND FREEDOM FROM COERCION BY OTHERS.

PARENT TRAINING

- BEHAVIOR MANAGEMENT TRAINING (BMT)
- PROBLEM SOLVING COMMUNICATION TRAINING (PSCT) PROGRAM.THREE MAJOR COMPONENTS FOR CHANGING PARENT ADOLESCENT CONFLICT.

A. PROBLEM SOLVING: PROBLEM DEFINITION, BRAINSTORMING ON POSSIBLE SOLUTIONS, NEGOTIATION, DECISION MAKING ABOUT A SOLUTION, IMPLEMENTING OF THE SOLUTION.

B. COMMUNICATION TRAINING: DEVELOPING MORE EFFECTIVE COMMUNICATION SKILLS, TONE, PARAPHRASING, AVOIDING INSULTS AND ULTIMATUMS

C. COGNITIVE RESTRUCTURING: RESTRUCTURE IRRATIONAL, EXTREME OR RIGID BELIEF SYSTEMS.

PARENT TRAINING

- FAMILY TREATMENTS DO NOT APPEAR TO BE USEFUL IN THE MANAGEMENT OF ADHD SYMPTOMS, BUT THEY MAY BE USEFUL IN ADDRESSING THE PARENT-TEEN CONFLICT THAT OFTEN ARISES IN SUCH FAMILIES, ESPECIALLY WHEN COMORBID ODD IS PRESENT.
- THE COMBINATION OF BMT WITH PSCT SEEMS TO BE THE MOST USEFUL APPROACH, IF ONLY IN REDUCING DROPOUTS FROM TREATMENT.
- SOME FAMILIES MAY ACTUALLY SHOW A WORSENING OF CONFLICTS AS A FUNCTION OF TREATMENT

CLASSROOM MANAGEMENT

- META-ANALYSIS OF OVER 70 SEPARATE STUDIES.
- CBT (e.g., SELF INSTRUCTION) INEFFECTIVE.
- CONTINGENCY MANAGEMENT PROCEDURES HAVE POSITIVE EFFECTS ON ACADEMIC PERFORMANCE.
- MANIPULATION OF THE CURRICULUM OR OF SURROUNDING TASK-RELATED ENVIRONMENTAL CONDITIONS EFFECTIVE.
- BEHAVIORAL AND ACADEMIC INTERVENTIONS IN THE CLASSROOM CAN BE EFFECTIVE IN IMPROVING BEHAVIORAL PROBLEMS AND ACADEMIC PERFORMANCE.

EXAMPLES OF CLASSROOM BEHAVIOR MANAGEMENT

- DECREASE WORK LOAD TO FIT CHILD'S ATTENTIONAL CAPACITY
- ALTER TEACHING STYLE AND CURRICULUM
- MAKE RULES EXTERNAL
- INCREASE FREQUENCY OF REWARDS AND FINES
- INCREASE IMMEDIACY OF CONSEQUENCES
- INCREASE MAGNITUDE/POWER OF REWARDS
- SET TIME LIMITS FOR WORK COMPLETION
- DEVELOP HIERARCHY OF CLASSROOM PUNISHMENTS

MPH AND MULTIMODAL PSYCHOSOCIAL TREATMENT IN CHILDREN WITH ADHD

(J AM ACAD CHILD ADOLESC PSYCHIATRY 43:7, JULY 2004)

INVESTIGATION TO TEST THE FOLLOWING OVERALL HYPOTHESES;

- CHILDREN WITH ADHD WHO IN ADDITION TO MPH RECEIVED 2 YEARS OF MULTIMODAL PSYCHOSOCIAL TREATMENT (MPT), WOULD EXHIBIT SIGNIFICANTLY SUPERIOR FUNCTIONING COMPARED TO CHILDREN TREATED WITH MPH ALONE.

- THE SUPERIORITY OF MPH + MPT OVER MPH ALONE WOULD RESULT FROM SPECIFIC THERAPEUTIC CONTENT OF THE PSYCHOSOCIAL INTERVENTION AND NOT NON-SPECIFIC TREATMENT EFFECTS.

- SIGNIFICANTLY MORE CHILDREN WHO RECEIVED MPH + MPT WOULD BE ABLE TO BE WITHDRAWN FROM MEDICATION.

- BENEFITS ACCRUED FROM THE COMBINATION TREATMENT WOULD HAVE LONG-LASTING EFFECTS SO THAT THESE CHILDREN WOULD HAVE SUPERIOR FUNCTION OVER TIME COMPARED TO THE OTHER TREATMENT GROUPS.

MTA COOPERATIVE GROUP

(ARCH GEN PSYCHIATRY 56:1073,1999)

- LARGEST COMPARATIVE TRIAL OF MEDICATION AND NONMEDICATION TREATMENTS.
- 14 MONTH TREATMENT PROGRAM.
- INCLUSION OF IN-SCHOOL AIDES WHO IMPLEMENTED SYSTEMATIC BEHAVIORAL TREATMENTS AND ASSISTED TEACHERS IN PROVIDING APPROPRIATE CLASSROOM MANAGEMENT.
- IMPROVEMENTS IN NONCORE ADHD BEHAVIORS (e.g., OPPOSITION, ANXIETY, SOCIAL SKILLS) FOLLOWING INTENSIVE BEHAVIOR-MODIFICATION.

LESSONS FROM PATIENTS

CANDACE G.
WE ALL SAW IT COMING.

LINDA C.
HOW ABOUT A JOB.

BARRETT G.
GET A JOB MAN.

JEAN DAVID B.
EAT SOMETHING LITTLE STICK MAN.

JONATHAN B.
YOU'RE A BIG BOY NOW

LESSONS FROM PATIENTS

TATIANA D.
YOU'RE NOT KIDDING AROUND.

MICHELLE AND JOELLA S.
WHO IS TAKING WHAT ANYWAYS?

JUSTIN O.
LET'S GET OFF THE ROLLERCOASTER.

TYLER P.
WINTER BLUES.

PETER M.
WHAT A STAR.

HELPFUL RESOURCES

PROFFESIONALS

BARKLEY RA. ATTENTION-DEFICIT HYPERACTIVITY DISORDER: A HANDBOOK FOR DIAGNOSIS AND TREATMENT, GUILFORD PRESS.

ADHD. PEDIATRIC ANNALS 31:8 AUGUST 2002.

ADHD, DIAGNOSIS, EVALUATION AND MANAGEMENT. PEDIATRIC CLINICS OF NORTH AMERICA, OCTOBER 2003.

BOOKS FOR PARENTS

EDWARD HALLOWELL, DRIVEN TO DISTRACTION ISBN 0-684-80128-0.

DR. GUY FALARDEAU. LES ENFANTS HYPERACTIF ET LUNATIQUES.

WEB SITES

WWW.CHADDCANADA.ORG A NON-PROFIT PARENT RUN SUPPORT AND INFORMATION SITE.

WWW.AQETA.QC.CA THE LEARNING DISABILITIES ASSOCIATION OF QUEBEC.

WWW.CANADIAN-HEALTH-NETWORK.CA HIGH QUALITY NETWORKED PRACTICAL HEALTH GUIDE.