

# The Society for Clinical Child and Adolescent Psychology (SCCAP): Initiative for Dissemination of Evidence-based Treatments for Childhood and Adolescent Mental Health Problems

With additional support from Florida International University and The Children's Trust.



# Keynote

## Evidence-based Psychosocial and Combined Approaches to Treating ADHD in Children and Adolescents

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# Disclosures

**Past Consultant, scientific advisor,  
speaker, grant recipient:**

**McNeil/Alza/Janssen (Concerta)**

**Abbott (Cylert)**

**Shire (Adderall, Adderall XR,  
guanfacine)**

**Noven (Daytrana)**

**Lilly (Strattera)**

**Cephalon (Sparlon)**

**Current consultant: Noven**

# ADHD: Importance to Professionals

Prevalence: 2-9% of population in the U.S.--higher in boys—  
similar prevalence across many countries

Children dealt with by:

- Health Care Professionals
- Mental Health Professionals
- Allied Health Professionals
- Educators

Most common behavioral referral to health care professionals

Most common referral/diagnosis in special education

Most common behavior problem in regular education  
classrooms

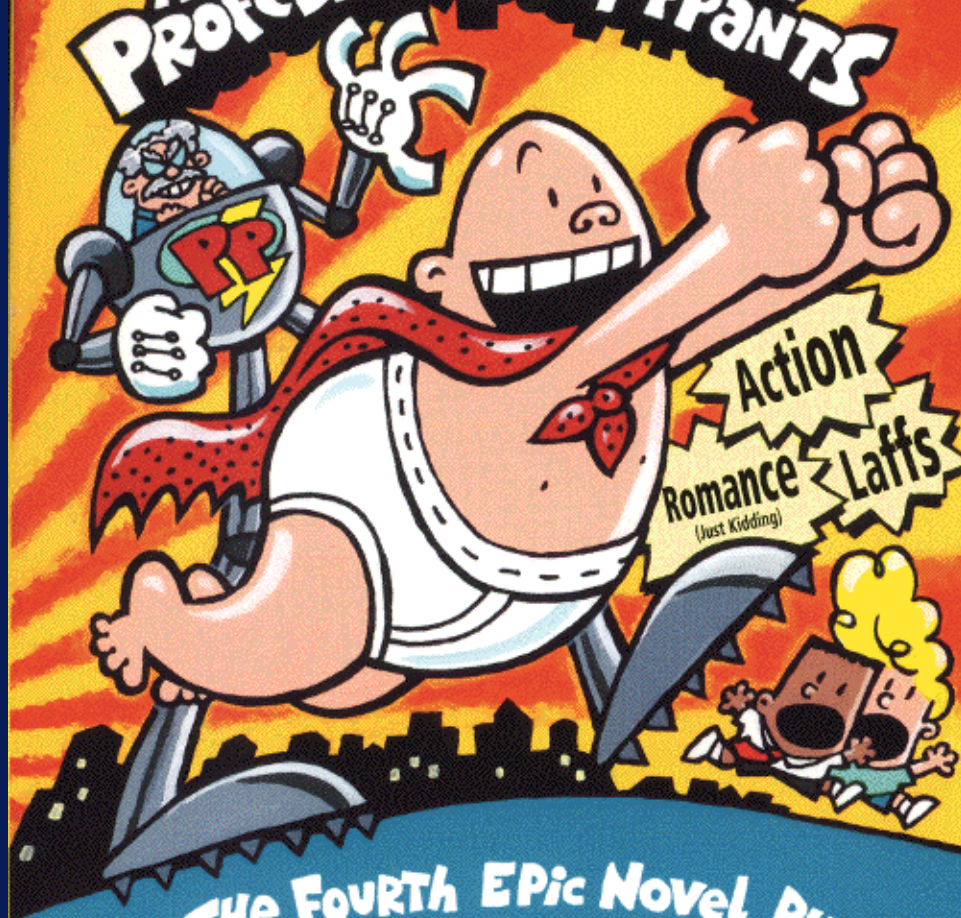
Most common diagnosis in child mental health facilities

(Barkley, 2006; CDC, 2010; Pelham, Fabiano & Massetti, 2005)



# CAPTAIN UNDERPANTS

AND THE PERILOUS PLOT OF  
PROFESSOR POOPYPANTS



THE FOURTH EPIC NOVEL BY  
DAV PILKEY

“All of the ‘experts’ at Jerome Horwitz Elementary School had their opinions about George and Harold. Their guidance counselor, Mr. Rected, thought the boys suffered from **A.D.D.** The school psychologist, Miss Labler, diagnosed them with **A.D.H.D.** And their mean old principal, Mr. Krupp, thought they were just plain old **B.A.D.!**”

# **ADHD: Core Symptoms--Same Over Past 50 Years**

**Inattention**

**Impulsivity**

**Hyperactivity**

# A Variety of Names—Same Disorder—Same Children

(Barkley, 2006)

- Brain Damage (BD)
- Minimal Brain Damage (MBD)
- Minimal Brain Dysfunction (MBD)
- Hyperkinetic-Impulse Disorder
- Hyperkinetic Reaction of Childhood/Hyperkinesis/Hyperactivity—DSM II
- Attention Deficit Disorder (with and without hyperactivity)—DSM III
- Attention Deficit-Hyperactivity Disorder—DSM III-R, DSM-IV, DSM V



# DSM-IV Definition of ADHD

## A. Six Symptoms of either Inatt. or Hyp/Impuls.

### (1) Inattention:

- often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities
- often has difficulty sustaining attention in tasks or play activities
- often does not seem to listen to what is being said to him or her
- often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace
- often has difficulties organizing tasks and activities
- often avoids or has difficulties engaging in tasks that require standard mental effort
- often loses things necessary for tasks or activities
- is often easily distracted by extraneous stimuli
- often forgetful in daily activities

# DSM-IV Definition of ADHD

## (2) Hyperactivity-Impulsivity:

- often has difficulty playing or engaging in leisure activities quietly
- is always "on the go" or acts as if "driven by a motor"
- often talks excessively
- often blurts out answers to questions before the questions have been completed
- often has difficulty waiting in lines or awaiting turn in games or group situations
- often interrupts or intrudes on others (e.g. butts into other's conversations or games)
- often runs about or climbs inappropriately
- often fidgets with hands or feet or squirms in seat
- leaves seat in classroom or in other situations in which remaining seated is expected

## DSM-IV Definition of ADHD

- **Predominantly Inattentive Type:** Criterion (1) is met but not criterion (2) for the past six months
- **Predominantly Hyperactive-Impulsive Type:** Criterion (2) is met but no criterion (1) for the past six months
- **Combined Type:** Both criteria (1) and (2) are met for the past six months
- **Not Otherwise Specified:** This category is for disorders with prominent symptoms of attention-deficit or hyperactivity-impulsivity that do not meet criteria for Attention Deficit/Hyperactivity Disorder.

## DSM-IV Definition of ADHD

**B.** Some symptoms that caused **impairment** were present before age seven.

**C.** Some symptoms that cause **impairment** are present in two or more settings (e.g. at school, work, and at home).

**D.** There must be clear evidence of clinically significant **impairment** in social, academic, or occupational functioning.

**E.** Does not occur exclusively during the course of Pervasive Developmental Disorder, Schizophrenia or other Psychotic Disorder, and is not better accounted for by a Mood Disorder, Anxiety Disorder, Dissociative Disorder, or a Personality Disorder.

# Domains of Functional Impairment in ADHD Children

- Relationships with **parents**, teachers, and other adults
- Relationships with **peers** and siblings
- **Academic** achievement
- Behavioral functioning at school
- Family functioning at home
- Leisure activities

(Barkley, 2006; Fabiano & Pelham, in press)

# Central Role of Functional Impairment in Treatment

- Impairment--that is, problems in daily life functioning that result from symptoms and deficits in adaptive skills is
  - (1) why children are referred,
  - (2) **what mediates long-term outcome**, and therefore
  - (3) what should be targeted in treatment.
- **Key domains are peer relationships, parenting/family, and academic achievement**
- **Assessment of impairment in daily life functioning and adaptive skills is the most fundamental aspect of**
  - initial evaluation to determine targets of treatment
  - Ongoing assessment to evaluate treatment response.
- **Normalization or **minimization** of impairment in daily life functioning and **maximization** of adaptive skills is the goal of treatment--**not elimination** of symptoms**



# **Why Is it Important to Treat ADHD in Childhood?**

# Prognosis for ADHD Children

Chronic disorder (AAP, 2000, 2011) extending into adolescence and adulthood

One-third: **Tolerable outcome**; appear to have mild problems but must constantly work to adapt to their difficulties

One-third: **Moderately poor outcome**; continue to have a variety of moderate to serious problems, including school difficulties (adolescents) or **vocational adjustment** difficulties (adults), **interpersonal problems**, general underachievement, **problems with alcohol, etc.**

One-third: **Bad outcome**; severe dysfunction and/or psychopathology, including sociopathy, repeated **criminal activity** and resulting incarceration, **alcoholism, drug use disorders**

# Annual Societal Costs of Childhood/Adolescent ADHD in North America

|  |                             |
|--|-----------------------------|
| Health and Mental Health   | \$7.9 billion               |
| Education  | \$13.6 billion              |
| Crime and Delinquency  | \$21.1 billion              |
| Parental work loss   | ?                           |
| <b>Total (low estimate based on incomplete data)</b>                       | <b>\$42.5 billion</b>       |
| <b>Range (lower to upper bounds based on<br/>currently available data)</b> | <b>\$36--\$52.4 billion</b> |

**\*Using 5% prevalence estimate and US 2000 Census data**

(Pelham, Robb & Foster, Ambulatory Pediatrics, 2007; Robb et al, 2011)

# Annual Societal Cost of Several Public Health Problems in U.S.

|                                 |                        |
|---------------------------------|------------------------|
| <b>Depression (adults):</b>     | <b>\$44 billion</b>    |
| <b>Stroke:</b>                  | <b>\$53.6 billion</b>  |
| <b>ADHD (child, adolescent)</b> | <b>\$50-60 billion</b> |
| <b>ADHD (adult)</b>             | <b>\$30 billion</b>    |
| <b>Alzheimer's</b>              | <b>\$100 billion</b>   |
| <b>Alcohol abuse/dep.</b>       | <b>\$180</b>           |

(Pelham, Foster & Robb, 2007)

# **What is Effective, Evidence-based Treatment for ADHD in Children?**

# Common but Not Evidence-Based Treatments

- (1) Traditional one-to-one therapy or counseling
- (2) Cognitive therapy
- (3) Office based "Play therapy"
- (4) Elimination diets
- (5) Biofeedback/neural therapy/attention (EEG) training
- (6) Allergy treatments
- (7) Chiropractics
- (8) Perceptual or motor training/sensory integration training
- (9) Treatment for balance problems
- (10) Pet therapy
- (11) Dietary supplements (megavitamins, blue-green algae)
- (12) Duct tape

(AAP, 2001, 2011; Pelham & Fabiano, 2008)



# Evidence-Based Short-term Treatments for ADHD

(1) Behavior modification

-175 studies

(2) CNS stimulant medication

>300 studies

(3) The combination of (1) and (2).

>25 studies

Moderate to large effect sizes across  
treatments

(AAP, 2001, 2011; Fabiano et al, 2009; Greenhill & Ford, 2002; Hinshaw et al, 2002; Pelham & Fabiano, 2008; Swanson et al, 1995)

# **AAP Clinical Practice Guideline: Treatment of the School-Aged Child with Attention-Deficit/Hyperactivity Disorder**

(Pediatrics, 2001, 2011)

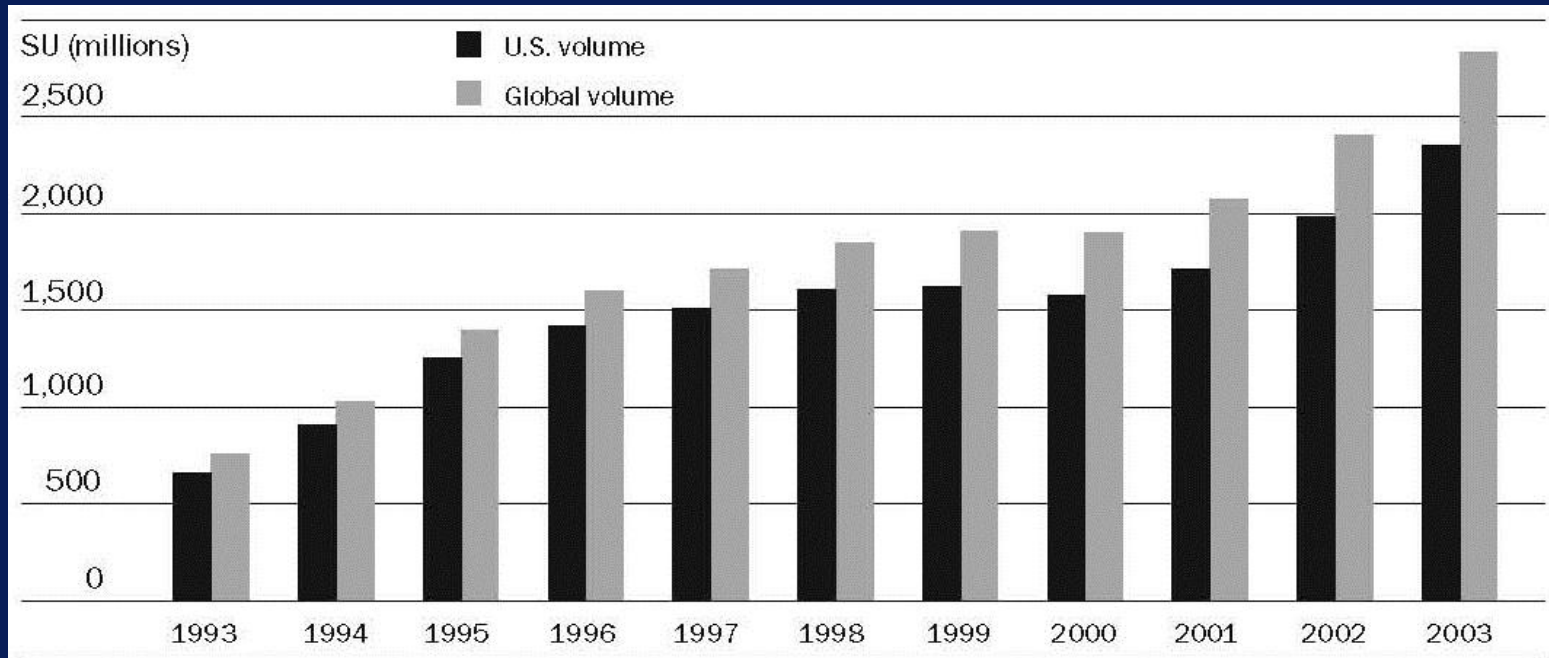
- For elementary-aged children, the primary care clinician should recommend FDA-approved medication and/or behavior therapy, preferably both, to improve target outcomes in children with ADHD.
- For children under 6, behavior therapy should be the first line treatment, with medication perhaps as ancillary.
- For adolescents, medication should be prescribed with behavior therapy as ancillary.

**Given that Two Modalities  
of Treatment Work  
(Medication, and Behavioral  
Treatment), Which Should  
be Used as First Line  
Treatment?**

# Guidelines on Treatment Sequencing

- **AAP guidelines**
- **Task Force of APA (2007) says psychosocial first**
- **Guidelines of the AACAP (2007) say medication first**
- **Japanese pediatric guidelines (2008) say behavioral/educational first**
- **British guidelines (NICE, 2009) say behavioral first in mild to moderate cases**
- **CHADD says simultaneous**

# U.S. And Global Volume Of Attention Deficit Hyperactivity Disorder (ADHD) Medications, 1993–2003



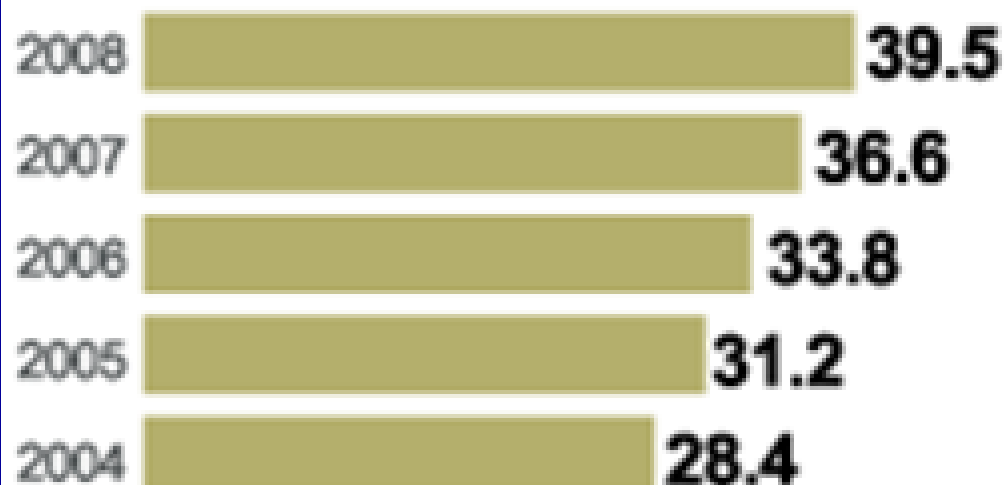
**SOURCE:** MIDAS database, IMS Health, 1993–2003.

**NOTES:** Volume adjusted to generate dosage equivalence between short- and long-acting medications. Long-acting medications are weighted twofold over short-acting medications. SU is standard units.

# ADHD Medication Usage

(USA Today 4/13/09)

Number of prescriptions  
(in millions)



## Treating ADHD

The number of prescriptions written for drugs that treat ADHD has risen steadily for the past five years.

Source: IMS Health

By Keith Simmons, USA TODAY



# Components of Effective, Comprehensive Treatment for ADHD

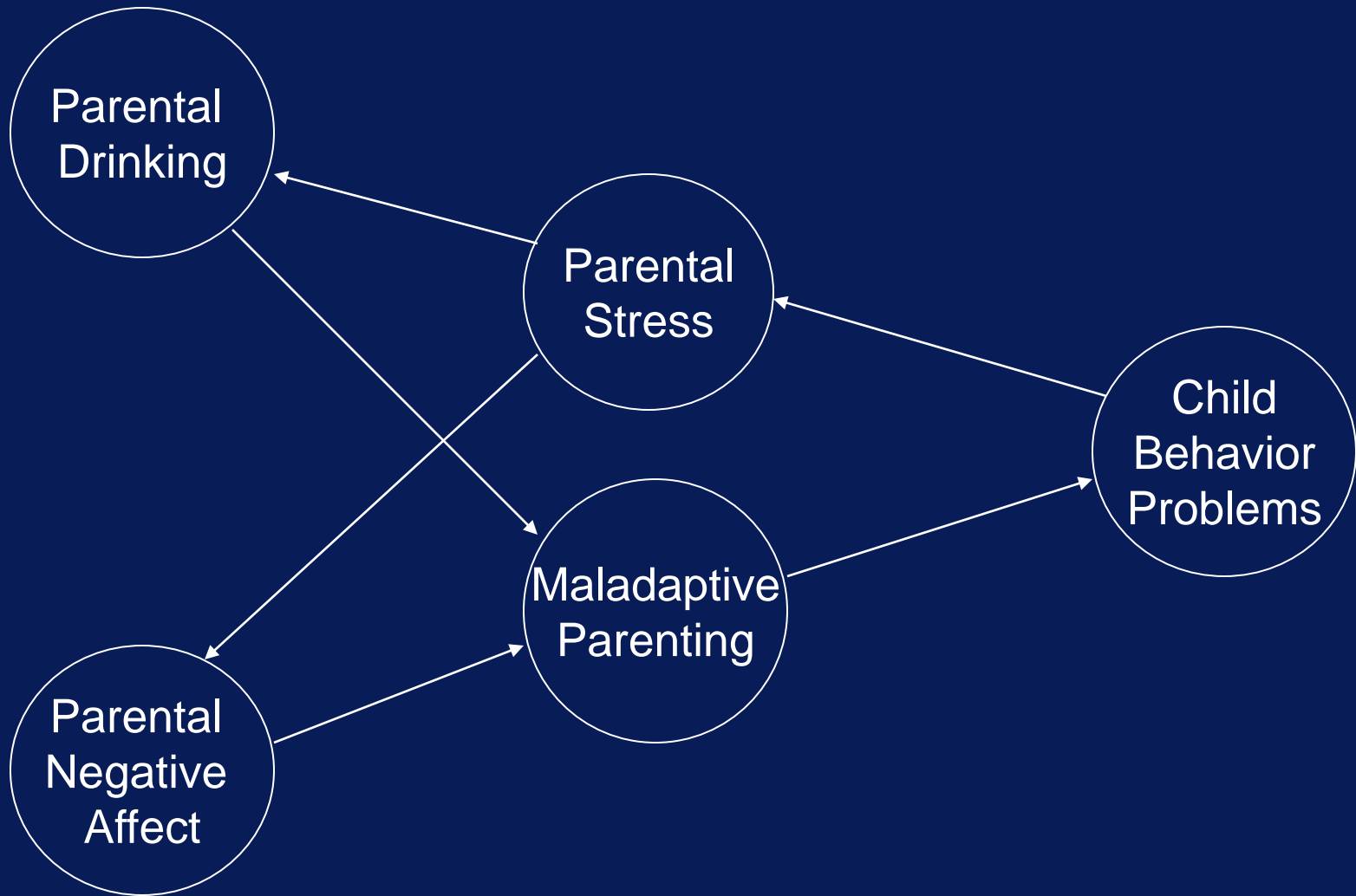
- **Behavioral Intervention**
  - Behavioral Parent Training
  - Behavioral School Intervention
  - Behavioral Child Intervention
- **Medication as adjunct**

- (Pelham & Fabiano, 2008; Fabiano et al, 2009)

# Why is it Important to Include Parent Training in ADHD Treatment?

- **No one is taught how to be a parent**
- **Parents of ADHD children have significant stress, psychopathology, and poor parenting skills**
- **ADHD children contribute greatly to parental stress and disturbed parent-child relationships**
- **Parenting styles characteristic of ADHD parents predict and mediate long term negative outcomes for children**

(Johnston & Mash, 2001)



# Components of Evidence-based Treatment for ADHD

## Parent Training

Behavioral approach

Focus on parenting skills, child's behavior, and family relationships

Parents learn skills and implement treatment with child, modifying interventions as necessary using ongoing functional analysis

Group-based or individual weekly sessions with therapist initially (8-16 sessions), then contact faded

Don't expect instant changes in child--improvement (learning) often gradual

Continued support and contact as long as necessary (e.g., 2 or 3 years and/or when deterioration occurs)

Program for maintenance and relapse prevention (e.g., develop plans for dealing with concurrent cyclic parental problems, such as maternal depression, parental substance abuse, and divorce; make programs palatable and feasible)

Reestablish contact for major developmental transitions (e.g., adolescence)

Can be offered in MH, primary care, schools, churches, community centers by individuals with wide variety of training--very cost effective

Many studies documenting benefits of behavioral parent training

(Pelham & Burrows-MacLean, 2004)

**Why is it also important to use behavioral treatments for ADHD in school settings?**

# Academic Functioning

- 33% of ADHD children/teens have academic problems (special ed., academic probation, dropped out, or held back) **every year of school**, vs. 2% of controls
- 29% of ADHD children have a school discipline problem **monthly** vs 1% of other children
- 48% of ADHD children have at least one year of **special education** placement vs. 3% of controls (bulk of cost)
- 12% of ADHD vs. 5% of controls have been **held back** a grade
- 9% of ADHD adolescents **drop out** of school vs. 1% of controls
- ADHD adolescents a **full letter grade** lower than controls, with twice the rate of absences

(Dupaul & Stoner, 2003; Kent et al, 2011; Loe & Feldman, 2007; Molina et al, 2009; Robb et al, 2011)

# Components of Evidence-based, Treatment for ADHD

## School Intervention

Behavioral approach--teachers are trained and implement treatment with the child, modifying interventions as necessary using ongoing functional analysis

Focus on classroom behavior, academic performance, and peer relationships

Widely available in schools

Teacher training: (1) in service training and follow up or (2) consultant model—initial weekly sessions as needed, then contact faded—**Daily Report Card**

Don't expect instant changes in child--improvement (learning) often gradual

Continued support and contact for as long as necessary--typically multiple school years and/or if deterioration

Program for maintenance and relapse prevention (e.g., school-wide programs, train all school staff, including administrators; train parent to implement and monitor)

Reestablish contact for major developmental transitions (e.g., adolescence)

(Pelham & Burrows-MacLean, 2004)

# Daily Report Card

(downloadable parent-teacher packet at [ccf.fiu.edu](http://ccf.fiu.edu))

- **Child's Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_

|  | Special | LA    | Math | Reading | SS/Sci. |       |   |   |
|--|---------|-------|------|---------|---------|-------|---|---|
| • Follows class rules with no more than 3 violations per period. | Y       | N____ | Y    | N__     | Y       | N____ | Y | N |
| • Completes assignments within the designated time.              | Y       | N____ | Y    | N__     | Y       | N____ | Y | N |
| • Completes assignments at 80% accuracy.                         | Y       | N____ | Y    | N__     | Y       | N____ | Y | N |
| • Complies with teacher requests. (< 3 noncompliance per period) | Y       | N____ | Y    | N__     | Y       | N____ | Y | N |
| • No more than 3 teasings per period. _____                      | Y       | N____ | Y    | N__     | Y       | N____ | Y | N |

## OTHER

- Follows lunch rules (less than 3 violations). Y N
- Follows recess rules (less than 3 violations). Y N

- **Total Number of Yeses:** \_\_\_\_\_

- **Teacher's Initials:** \_\_\_\_\_

- **Comments:** \_\_\_\_\_

\_\_\_\_\_



**Why is it Important to Use  
Behavioral Treatments for ADHD  
Children's Problems in Peer  
Relationships?**

# Peer Relationships

- **Are seriously disturbed in the majority of ADHD children—particularly negative relationships with peers**
- **Are the best predictors of adverse adult outcomes for children**
- **Are the best mediators of adverse adult outcomes**

(Barkley, 2006; Milich & Landau, 1982)

# Peer Perceptions of ADHD Children

| • Those who: (% named)                                     | ADHD Boys | Controls |
|--|-----------|----------|
| • Try to get other people into trouble                     | 51        | 17       |
| • Play the clown and get others to laugh                   | 40        | 19       |
| • Tell other children what to do                           | 41        | 16       |
| • Are usually chosen last to join in group activities      | 27        | 13       |
| • Start a fight over nothing                               | 48        | 19       |
| • Pupil Evaluation Inventory Items (Pelham & Bender, 1982) |           |          |

# Components of Evidence-based, Treatment for ADHD

## Child Intervention

Behavioral and developmental approach

Focus on teaching academic, recreational, and social/behavioral competencies, decreasing aggression, increasing compliance, developing close friendships, improving relationships with adults, and building self-efficacy

Paraprofessional or teacher-based

**Intensive treatments** such as summer treatment programs, and/or in-school, after-school, and Saturday sessions (**NOT clinic-based social skills—social validity of setting is important**)

Don't expect instant changes--improvement (learning) gradual

Continued support and contact as long as necessary--multiple years or if deterioration occurs

Program for generalization and relapse prevention (e.g., integrate with school and parent treatments--link all through home/school report card systems and parent oversight)

Reestablish contact for major developmental transitions (e.g., adolescence)

(Pelham & Burrows-MacLean, 2004; Pelham et al, 2010)

# Evidence-Based Short-term Treatments for ADHD

(1) Behavior modification

-175 studies

(2) CNS stimulant medication

>300 studies

(3) The combination of (1) and (2).

>25 studies

Moderate to large effect sizes across  
treatments

(AAP, 2001, 2011; Fabiano et al, 2009; Greenhill & Ford, 2002; Hinshaw et al, 2002; Pelham & Fabiano, 2008; Swanson et al, 1995)

# Beneficial Effects of Behavioral Treatments

(Fabiano et al, 2009)

- Improved functioning in home (e.g., improved compliance and parent ratings), school (e.g., improvement in classroom disruptive behavior and teacher ratings), and peer settings (e.g., improved positive and negative interactions)
- Evidence for benefit throughout the age range (4 to 15) but fewer studies at younger and older ages
- moderate to large effect sizes across treatments and measures
- Benefits generally independent of comorbidity
- However, room for improvement even after acute clinic-level treatment for many children
- Less evidence (few studies) for long-term benefits
- Little evidence on how to maintain benefits and thus recent emphasis on chronic care model

# Fabiano et al, Clin. Psych. Review, 2009

**Table 2**

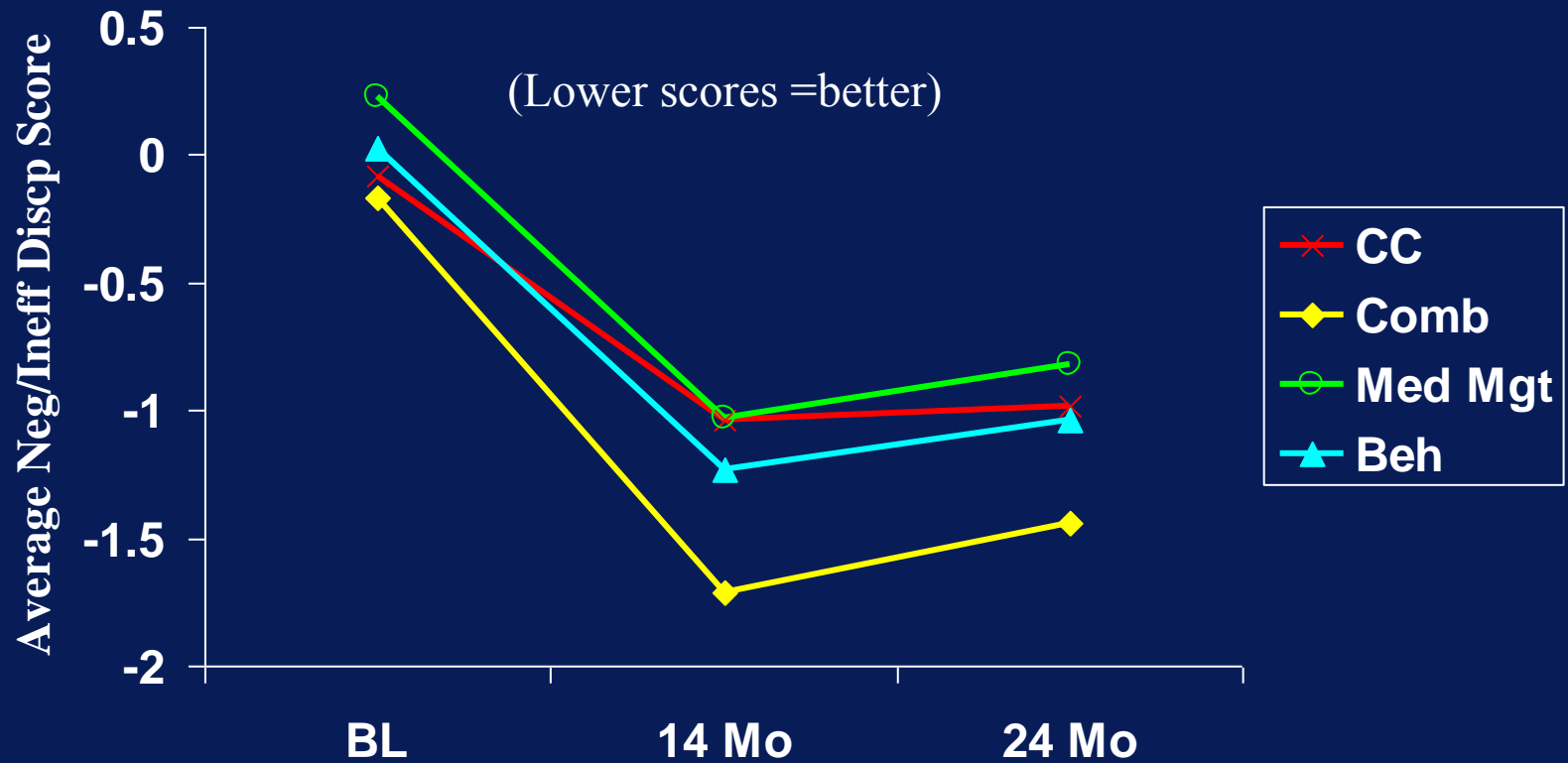
Unweighted effect sizes across study designs and types of measures

| Design         | Total        |             | Parent ratings |            |           |           | Teacher ratings |           |           | Observations |               |                  | Academics  |              |           |
|----------------|--------------|-------------|----------------|------------|-----------|-----------|-----------------|-----------|-----------|--------------|---------------|------------------|------------|--------------|-----------|
|                |              |             | ADHD Sx        | Ext Sx     | Imp       | Parenting | ADHD Sx         | Ext Sx    | Imp       | Child clinic | Child natural | Parenting clinic | ITBC       | Productivity | Ach       |
| Between group  | N of studies | 20          | 11             | 9          | 12        | 8         | 8               | 6         | 8         | 5            | 3             | 4                | 0          | 1            | 3         |
|                | M (SD)       | .83(.54)    | .39 (.46)      | .33 (.60)  | .84 (.74) | .70 (.44) | .79 (.81)       | .50 (.48) | .55 (.51) | .19 (.41)    | .56 (.20)     | 1.05 (.68)       | -          | .63 (N/A)    | .32 (.35) |
|                | Range        | .05-1.91    | -.45-.98       | -.21-1.80  | -.21-2.12 | .17-1.42  | 0-2.37          | .05-1.19  | .07-1.45  | .16-.90      | .42-.78       | .27-1.87         | -          | N/A          | -.04-.66  |
| Pre-post       | N of studies | 30          | 21             | 17         | 19        | 8         | 12              | 9         | 6         | 5            | 8             | 6                | 4          | 1            | 5         |
|                | M (SD)       | .70 (.31)   | .90 (.46)      | .76 (.41)  | .74 (.46) | .56 (.24) | .79 (.78)       | .33 (.27) | .78 (.38) | .96 (1.00)   | .64 (.56)     | 5.08 (11.54)     | .71 (.11)  | .43 (N/A)    | .11 (.23) |
|                | Range        | .20-1.38    | .05-1.70       | .10-1.63   | -.27-2.36 | .28-.93   | -.19-2.09       | -.11-.77  | .12-1.15  | .00-2.58     | -.04-1.63     | -.08-28.63       | .55-.81    | N/A          | -.28-2.8  |
| Within-subject | N of studies | 23          | 1              | 1          | 0         | 0         | 3               | 3         | 2         | 0            | 22            | 0                | 2          | 8            | 0         |
|                | M (SD)       | 2.64 (3.71) | .92 (N/A)      | 1.54 (N/A) | -         | -         | .51 (.73)       | .45 (.14) | .41 (.11) | -            | 2.16 (2.93)   | -                | 1.57 (.18) | 1.91 (4.67)  | -         |
|                | Range        | -.37-13.41  | -              | -          | -         | -         | -.26-1.20       | .30-.57   | .33-.48   | -            | -.37-12.62    | -                | 1.44-1.70  | -.61-13.41   | -         |
| Single-subject | N of studies | 101         | 4              | 0          | 0         | 0         | 0               | 0         | 0         | 8            | 89            | 9                | 4          | 26           | 0         |
|                | M (SD)       | 3.78 (4.88) | 3.70 (2.65)    | -          | -         | -         | -               | -         | -         | 1.06 (.97)   | 4.38 (6.15)   | 2.60 (3.87)      | 1.70 (.31) | 3.33 (4.93)  | -         |
|                | Range        | -.75-29.38  | .67-7.05       | -          | -         | -         | -               | -         | -         | -.82-2.12    | -.43-33.91    | -.119-12.08      | 1.34-2.01  | -.30-23.31   | -         |

Notes: ADHD = Attention-deficit/hyperactivity disorder, Sx = Symptoms, Ext=Externalizing, Imp = Impairment, ITBC = Individualized target behavior checklist, Ach = Academic Achievement Testing. \*Effect size for between group studies weighted by the inverse of the variance in a random effects model = .74.

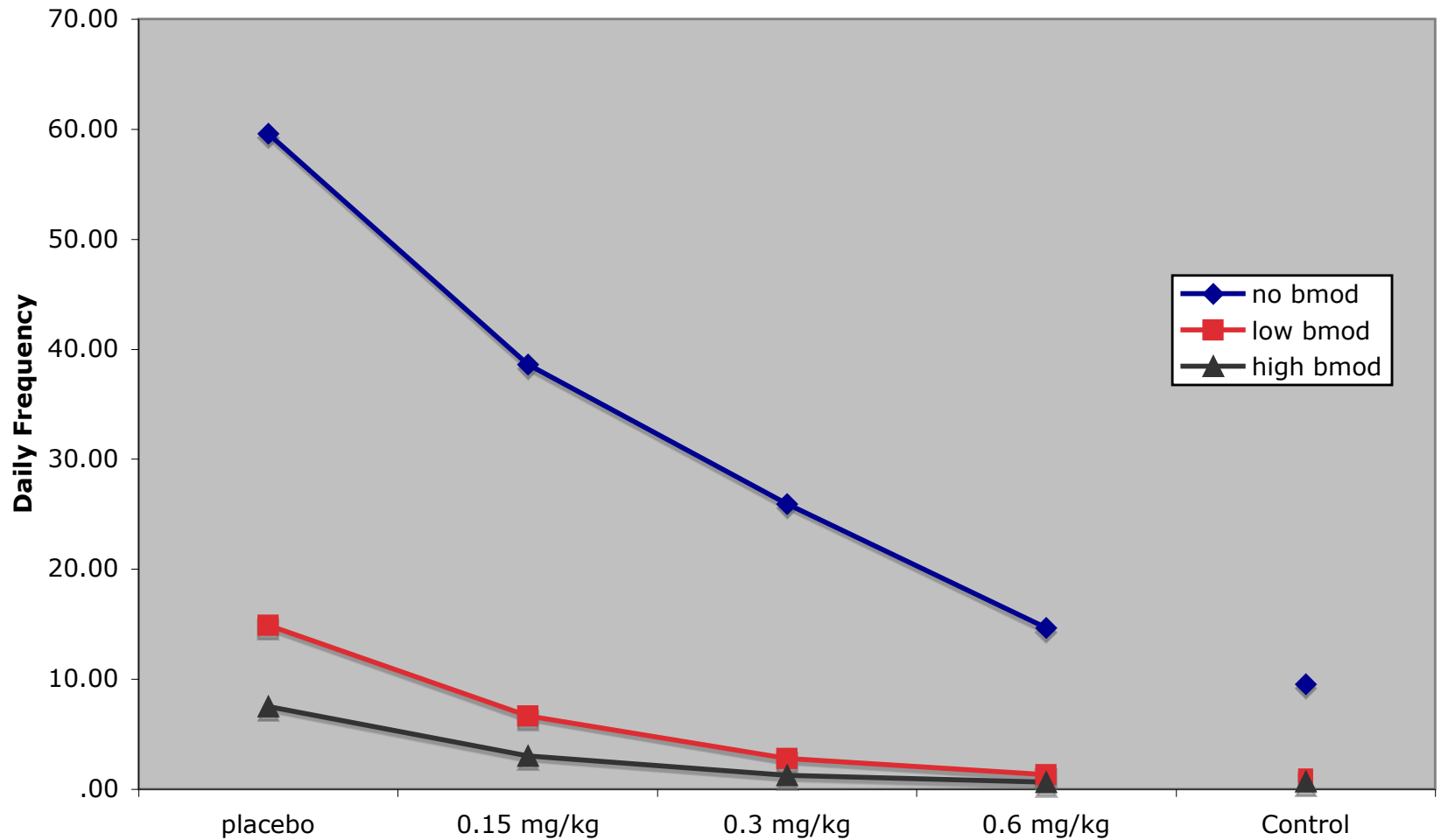
# Negative/Ineffective Discipline in the MTA

(Wells et al, J. Abnormal Child Psychology, 2001)





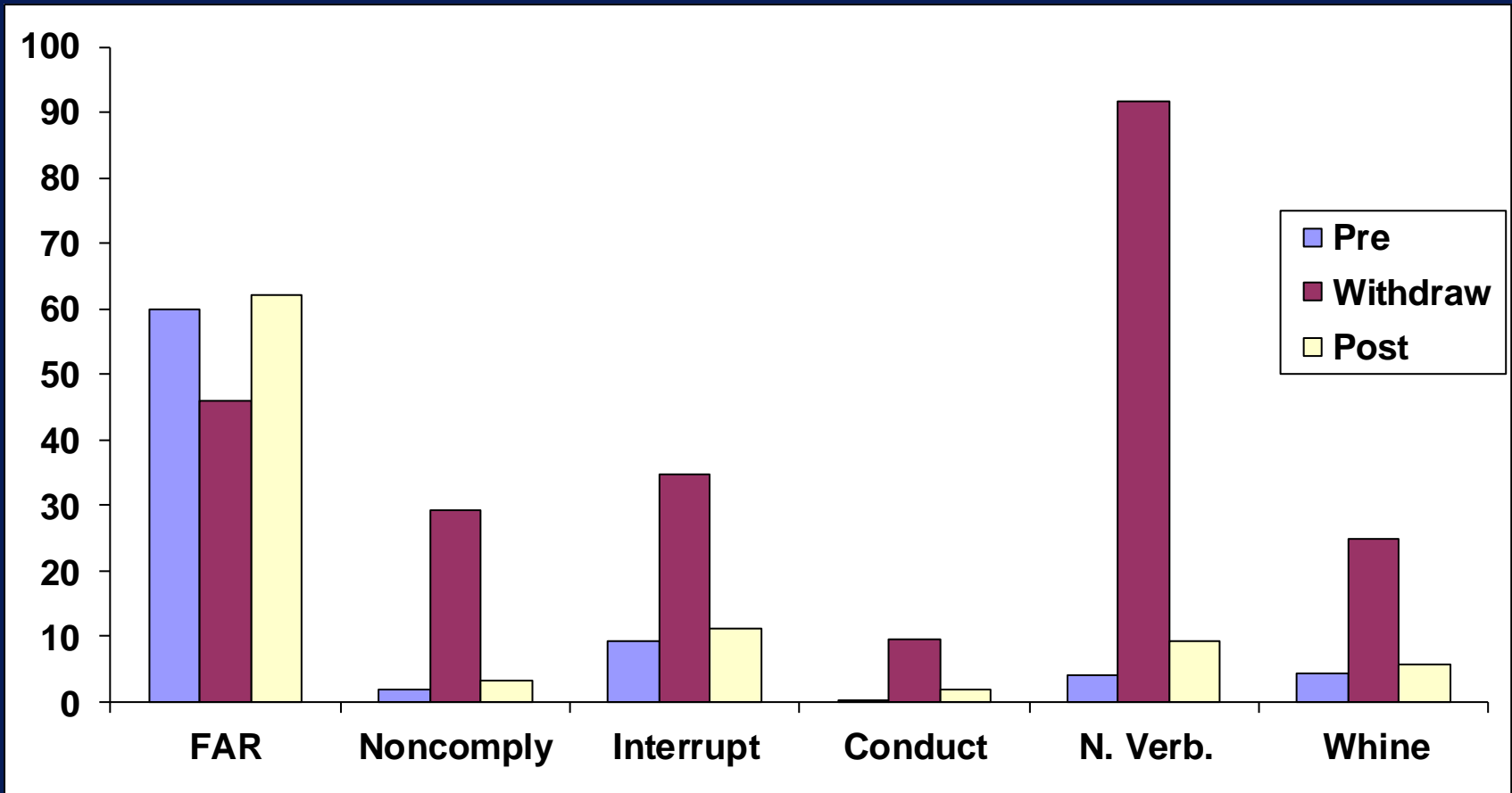
## Classroom Rule Violations



(Fabiano et al, School Psychology Review, 2007)

# Daily Rates of Behavior in Summer Treatment Program with/and without Intervention

(Chronis et al, Behavior Therapy, 2004)



# Components of Evidence-based Treatment for ADHD

## Psychostimulant Medication

Need determined following initiation of behavioral treatments; timing depends on severity and responsiveness

Cycle through methylphenidate and amphetamine-based compounds and atomoxetine before other drug classes

Dosing should be based on objective data regarding impairment at home and school independently

Use at minimal rather than maximal effective dose - minimal times of day and days of week—to reduce SE

Continue for as long as need exists (typically years--evaluate need and dose annually)

Plan for possible emergent iatrogenic effects (e.g., growth suppression)

Lack of evidence for long term benefit (Molina et al, 2009) and lack of evidence of long term safety (Volkow & Swanson, 2008)

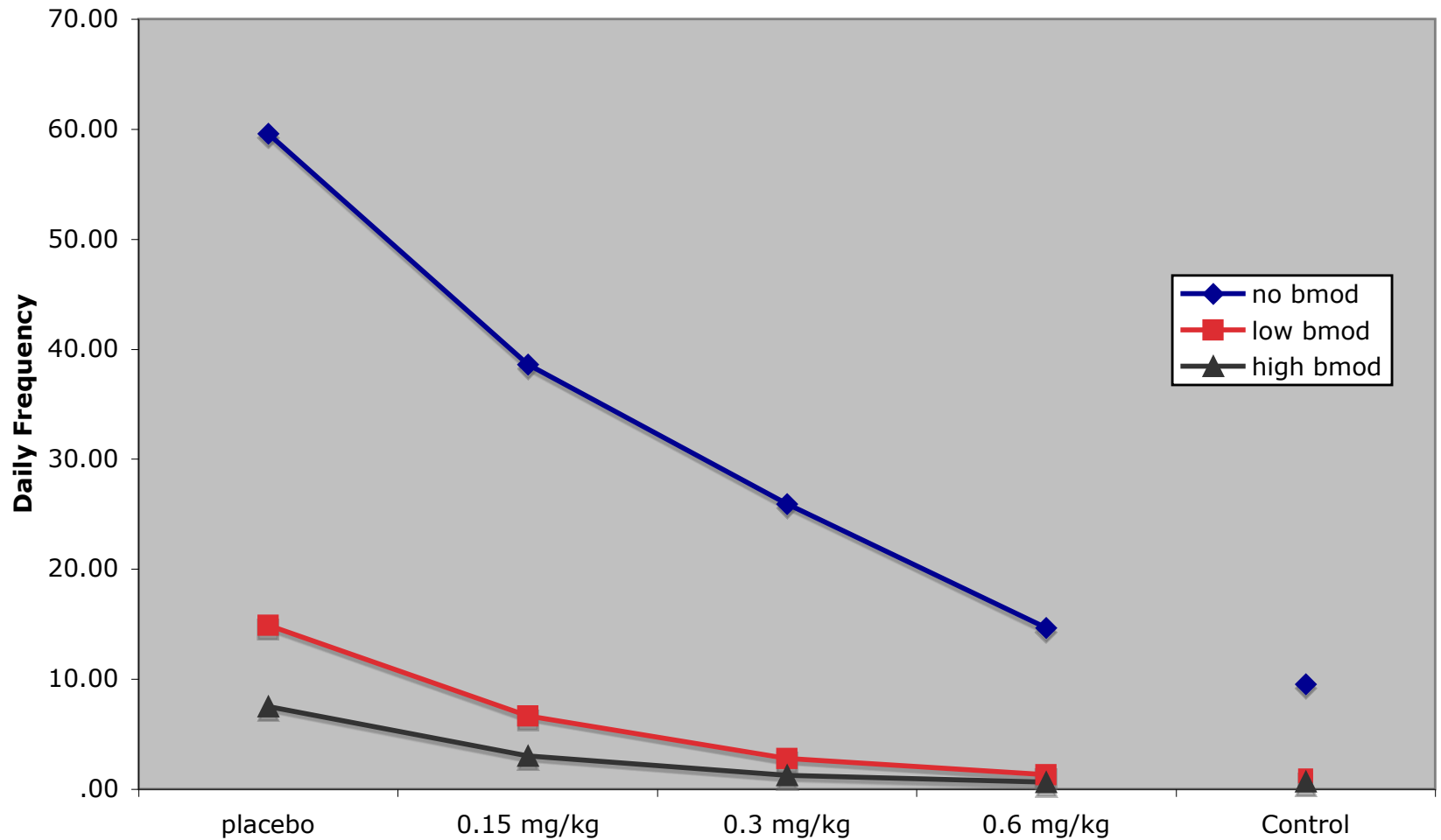
(Pelham, 2007)

# Main Beneficial Short-term Effects of Pharmacological Treatments

1. Decrease in classroom disruption
2. Improvement in teacher and parent ratings of behavior
3. Improvement in rule following and compliance with adult requests and commands
4. Increase in on-task behavior and daily academic productivity and accuracy (but not achievement)
5. Improvement in peer interactions
6. Improvement on a variety of laboratory tasks of cognition

(Greenhill, 2002)

## Classroom Rule Violations



(Fabiano et al, School Psychology Review, 2007)

# Limitations of Pharmacological Interventions When Used Alone

- 1) Rarely sufficient to bring a child to the normal range of functioning
- 2) Works only as long as medication taken
- 3) Not effective for all children
- 4) Does not affect several important variables (e.g., academic achievement, concurrent family problems, peer relationships)
- 6) Poor Compliance in long-term use
- 7) Parents are not satisfied with medication alone
- 8) Removes incentive for parents and teachers/schools to work on other treatments
- 9) **Uniform lack of evidence for beneficial long-term effects**
- 10) Potential serious adverse effects in growth and substance use (data controversial)

(Pelham, 2009)

# Would Parent Recommend Treatment?

(Pelham & MTA Coop. Group, under review)

|                      | Medmgt | Comb | Beh |
|----------------------|--------|------|-----|
| Declined/dropped out | 12%    | 4%   | 0%  |
| Not recommend        | 8%     | 3%   | 5%  |
| Neutral              | 8%     | 1%   | 2%  |
| Slightly Recommend   | 4%     | 2%   | 2%  |
| Recommend            | 31%    | 15%  | 24% |
| Strongly recommend   | 38%    | 76%  | 67% |

## **Summary:**

# **Components of Effective, Evidence-based, Psychosocial Treatment for ADHD**

- Parent Training--Use always
- School Intervention--Use always
- Child Intervention--Use when indicated because of complexity/expense
- Medication--Use when behavioral treatments insufficient



# **What About Comparative and Combined Treatment Studies?**

# Comprehensive Psychosocial and Pharmacological Treatment for ADHD: The NIMH/USOE Multimodal Treatment Study

(MTACG, Archives of General Psychiatry, 1999)

Randomized Clinical Trial of four treatments:

- Community Comparison Control

- Psychosocial Alone

- Pharmacological Alone

- Combined Psychosocial and Pharmacological

576 subjects, recruited from community, entered between January and May of three consecutive years across six sites

144 subjects per group overall; 24 per group per site

Treatment for 14 months; follow-up for 10 months

Extensive manualization and standardization of treatment:

- 1000+ pages of treatment manuals

- Coordinated staff training across sites

- Extensive measures of treatment fidelity for all components

- 10+ hours of weekly conference calls to standardize protocol

# Summary of MTA Results

(MTACG, 1999, 2004, 2007, 2009)

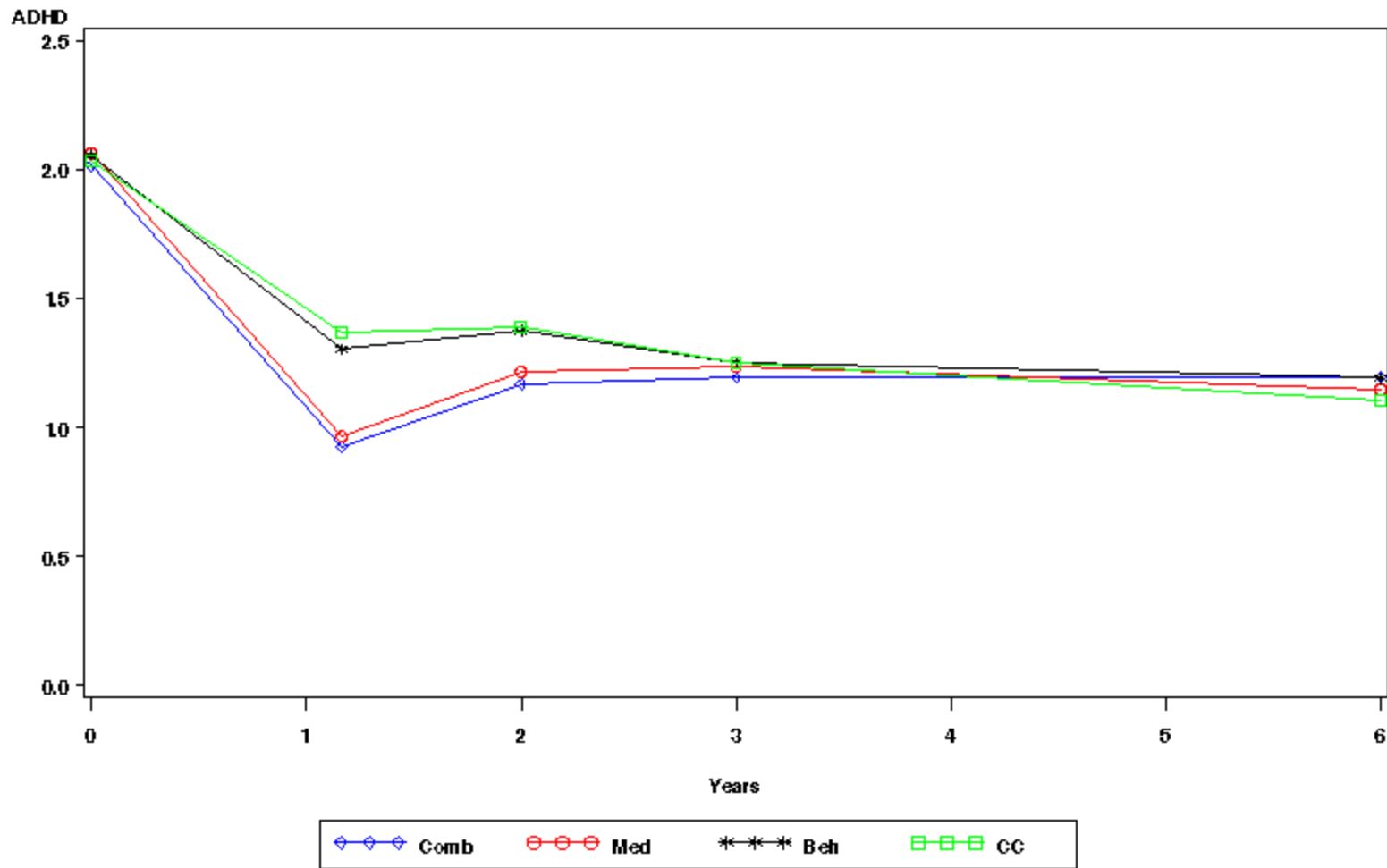
- **At End of Treatment**

- All four groups improved dramatically with time
- **Active** Med (study: 39 mg MPH/day) was superior to **faded** Beh on ADHD symptom measures and some measures of impairment
- Combined treatment was better than behavioral alone but not medication alone
- However, combined treatment produced **more normalization at lower doses** (and lower **rates** of increase in dose) than Med and was **much preferred** by parents

- **One year, three years, and six years later**

- All groups better than baseline
- 50% of medication incremental benefit lost at one year, all at 3 years
- All groups equivalent on functional outcomes after one year
- All groups equivalent on all outcomes after 3 years through 6 years

# Average ADHD Over Time for All Subjects by Treatment Group



# Questions the MTA Study Did Not Answer

What treatments does a given child need?

Should behavioral treatment begin before medication (parent preference) or vice versa (physician practice) or should they be implemented simultaneously (as in the MTA).

What are the best “doses” of psychosocial, pharmacological, and combined treatments?

If one or the other modality is begun first, how long should it be conducted and at what dose before adding in the second modality?

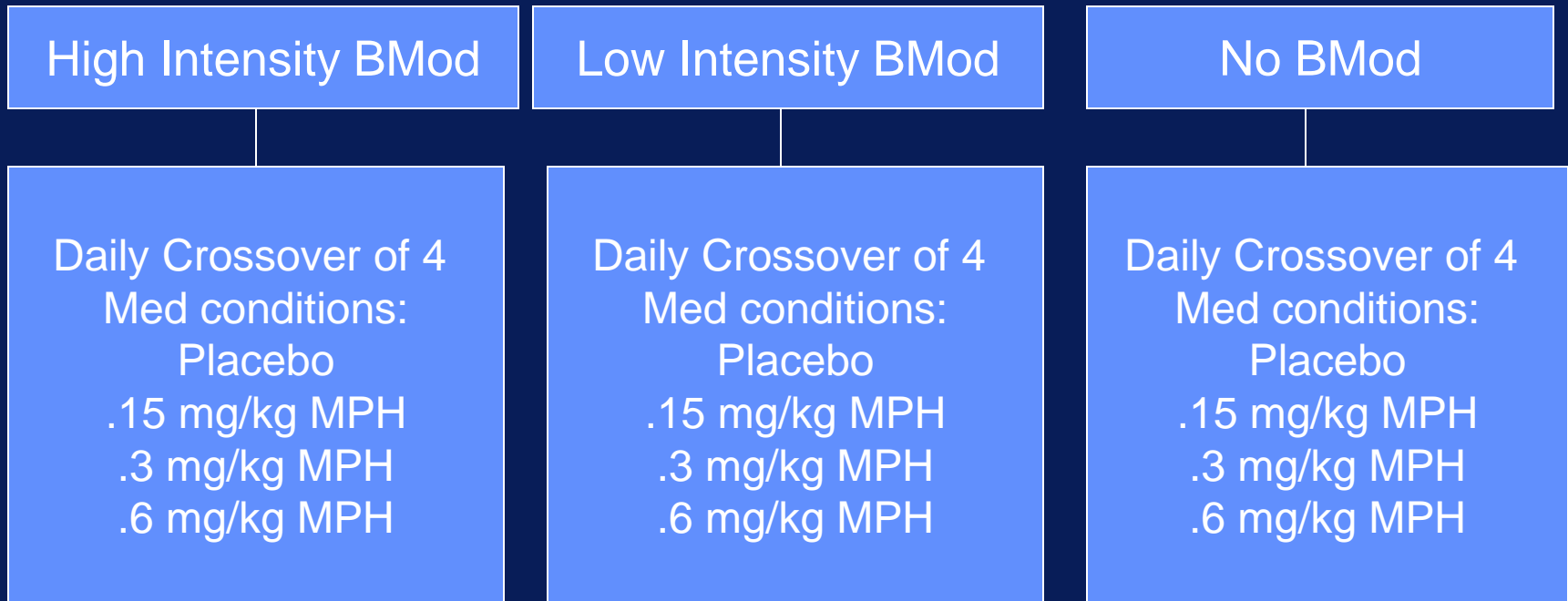
What are the implications of different doses and sequences for treatment dosing, benefit, and risk of side effects?

These are the questions that families, practitioners, and educators face daily, but they have only recently begun to be studied.

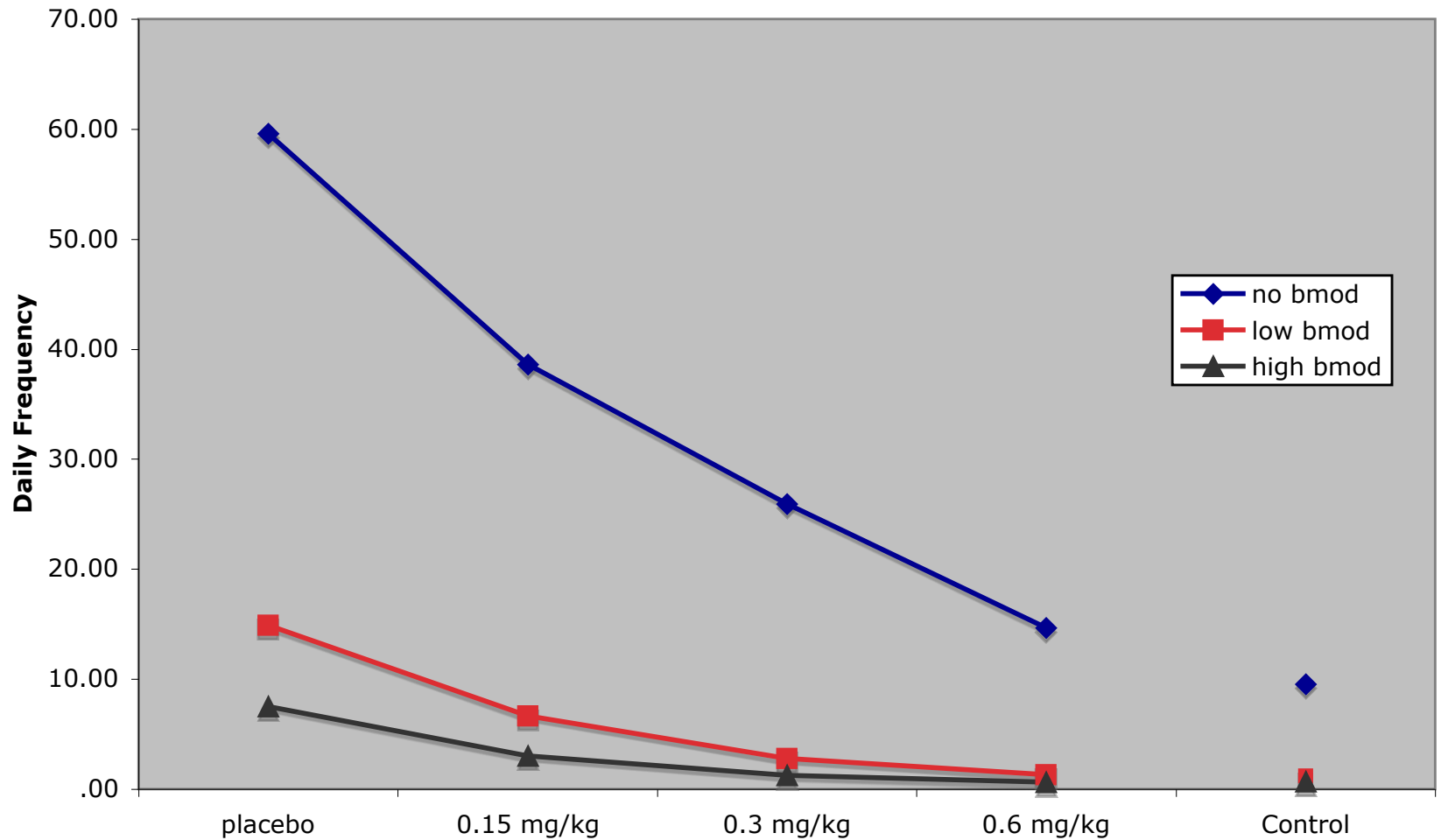
# Comparative and Combined Treatments for ADHD

(Pelham et al, NIMH 2001-2007)

3, 3-week Behavior Modification conditions assigned randomly:



## Classroom Rule Violations



(Fabiano et al, School Psychology Review, 2007)

# Fabiano et al, 2007, Summary

Both medication and behavioral treatment produced significant and generally comparable effects (moderate to large effect sizes) on nearly all measures of functioning in recreational and classroom settings.

Relatively low doses of both modalities produced benefit

On most measures, the combination of the lowest dose of medication (a very low dose) and LBM produced as much and sometimes more change than did the four-times-higher doses of medication in the NBM condition and more change than LBM and HBM alone.

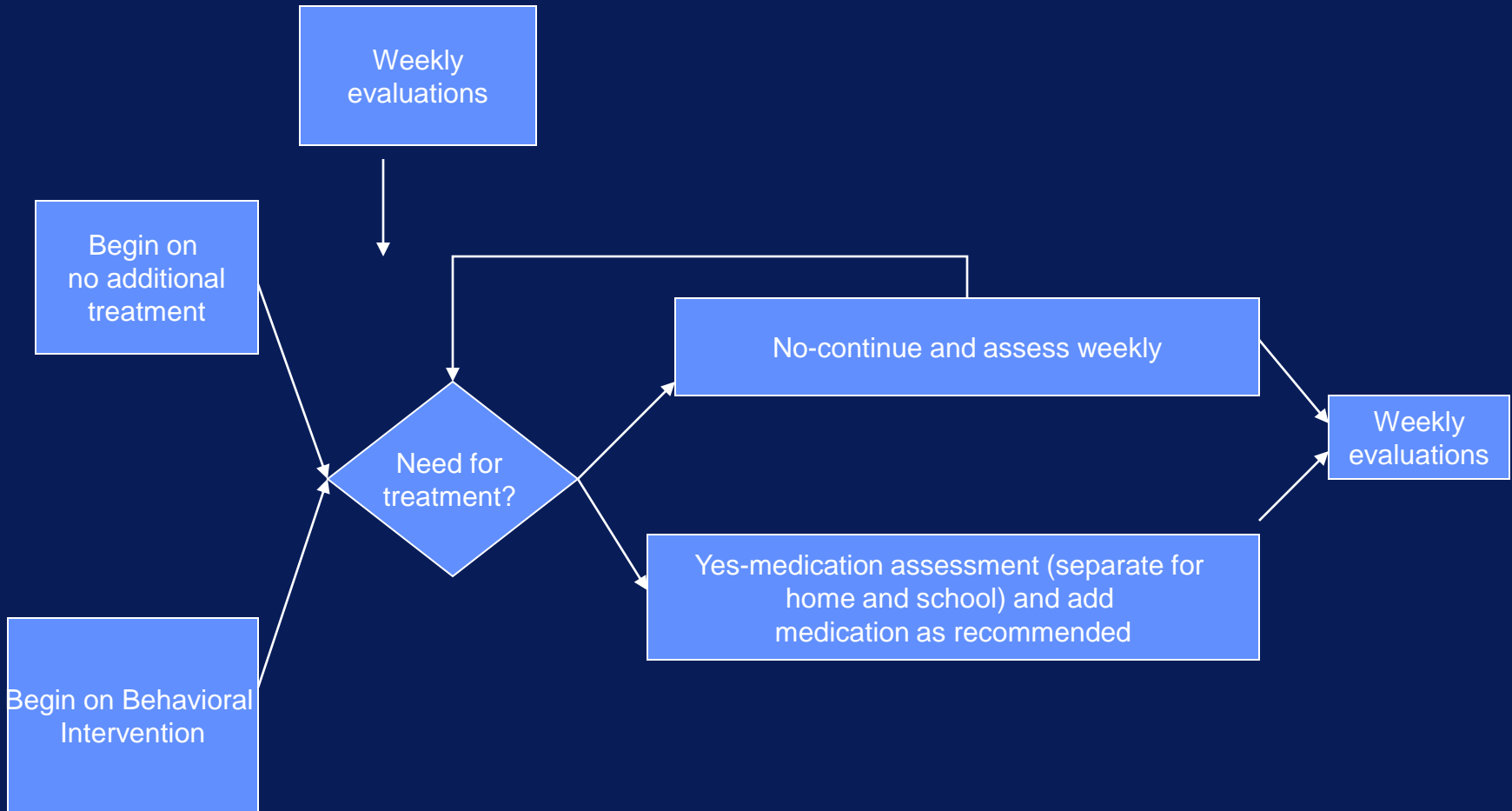
There were no side effects at this dose and many side effects at the higher doses.

Thus, combined treatment allows low doses of medication and lower doses of behavior modification



# School Year Follow-Up

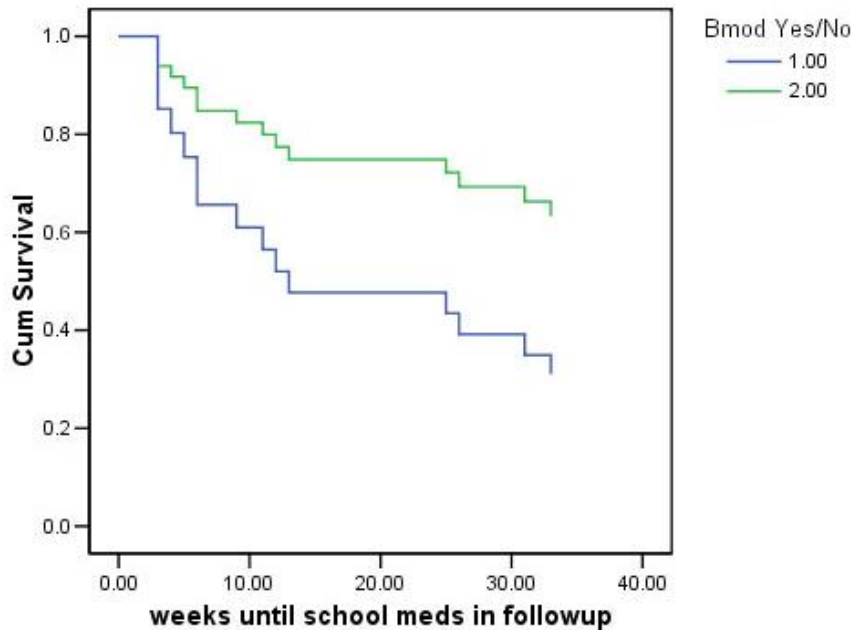
(Coles et al, NCDEU, 2008)



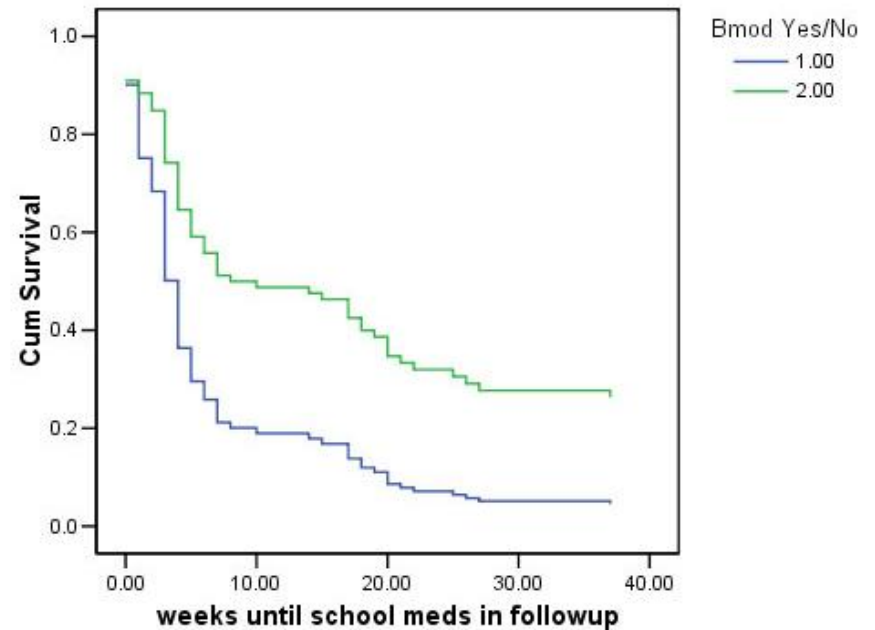
# School Survival Curves

Coles et al, NCDEU, 2008

## No Previous School Medication



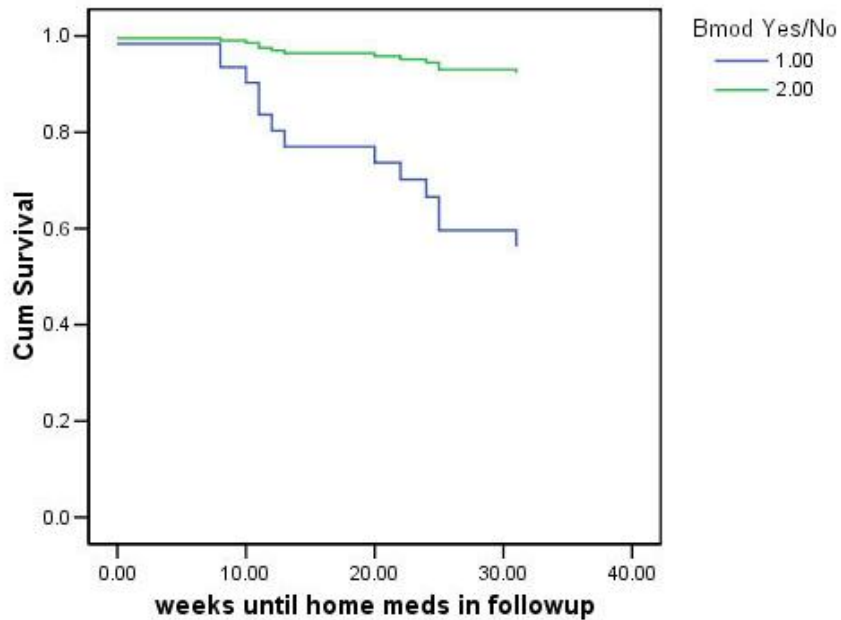
## Previous School Medication



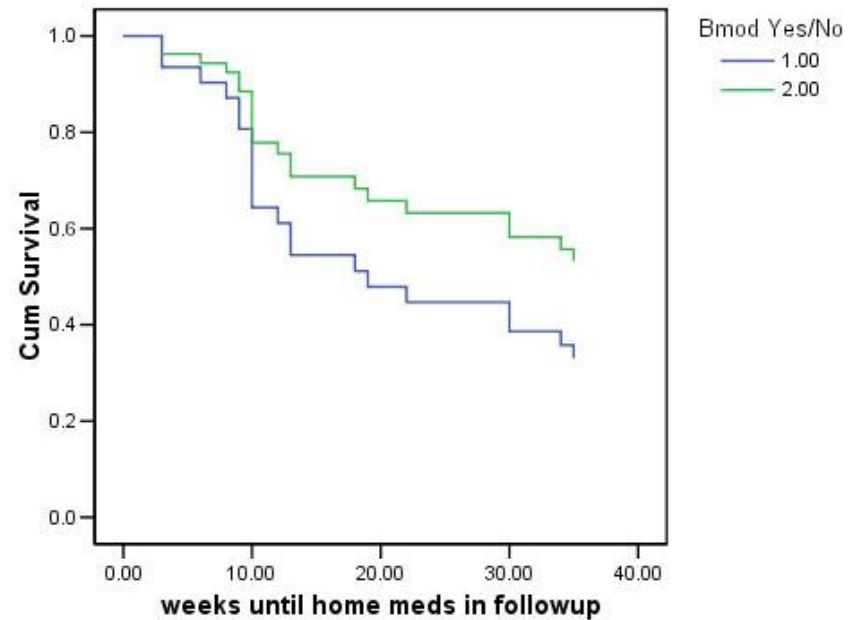
# Home Survival Curves

Coles et al, NCDEU, 2008

## No Previous Home Medication



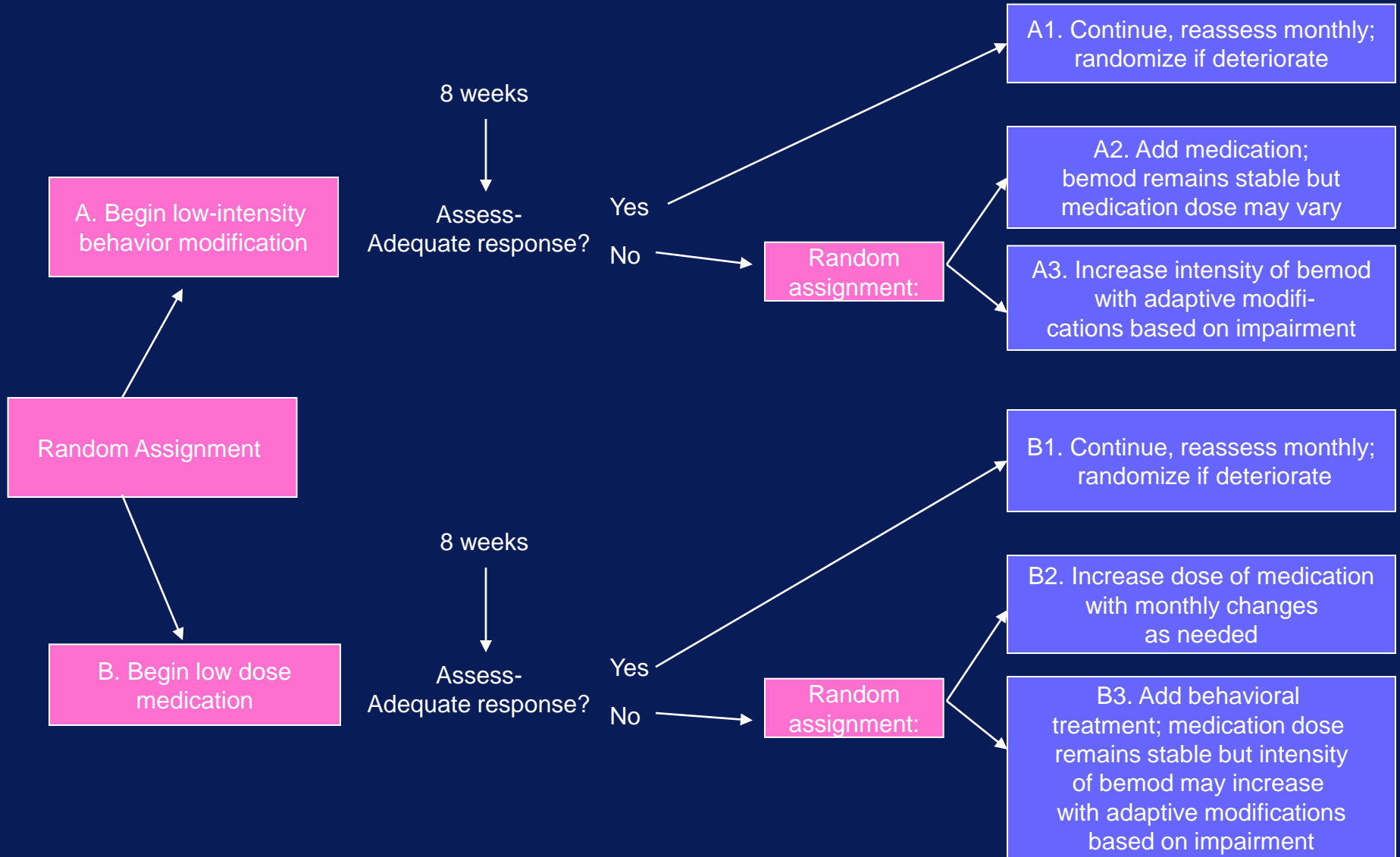
## Previous Home Medication



# **Adaptive Pharmacological and Behavioral Treatments for Children with ADHD: Sequencing, Combining, and Escalating Doses**

William E. Pelham, Jr., Lisa Burrows-MacLean,  
James Waxmonsky, Greta Massetti, Daniel  
Waschbusch, Gregory Fabiano, Martin  
Hoffman, Susan Murphy, E. Michael Foster,  
Randy Carter, Elizabeth Gnagy, Jihnhee Yu  
(IES 2006-2012)

# Adaptive Treatment Study Design



# Rerandomization?

(Pelham et al, NDCEU, 2011)

## SCHOOL SETTING:

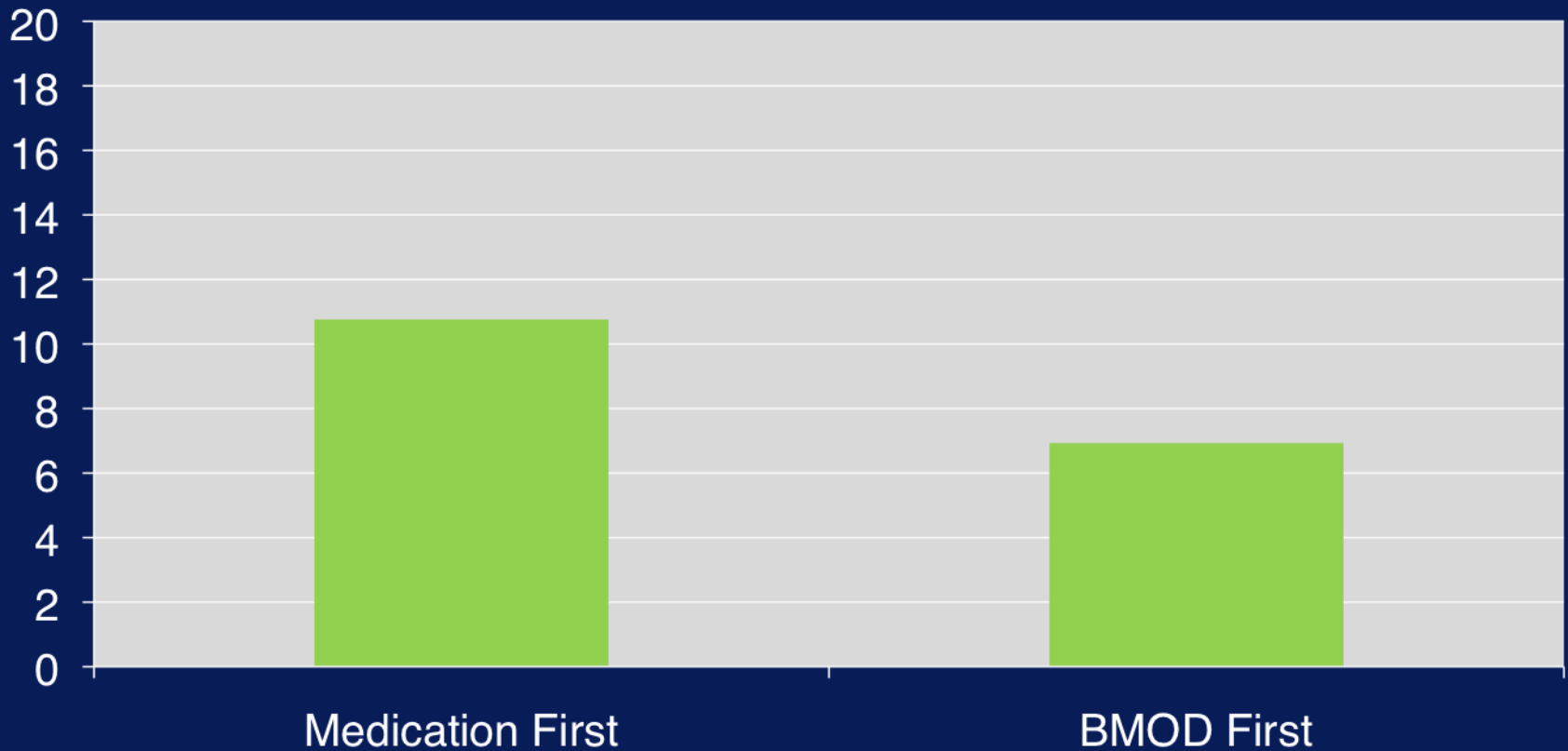
- By the end of the school year, 44%% of Med First and 64% in Bemod first were rerandomized (that is required intervention beyond a .15 mg/kg dose b.i.d. of MPH or a Daily Report Card)

## MODERATED BY PRIOR MEDICATION

- Children who had been previously medicated were far more likely to be rated by parents as needing medication for home and school settings.

# Classroom Observations

## Overall Strategy



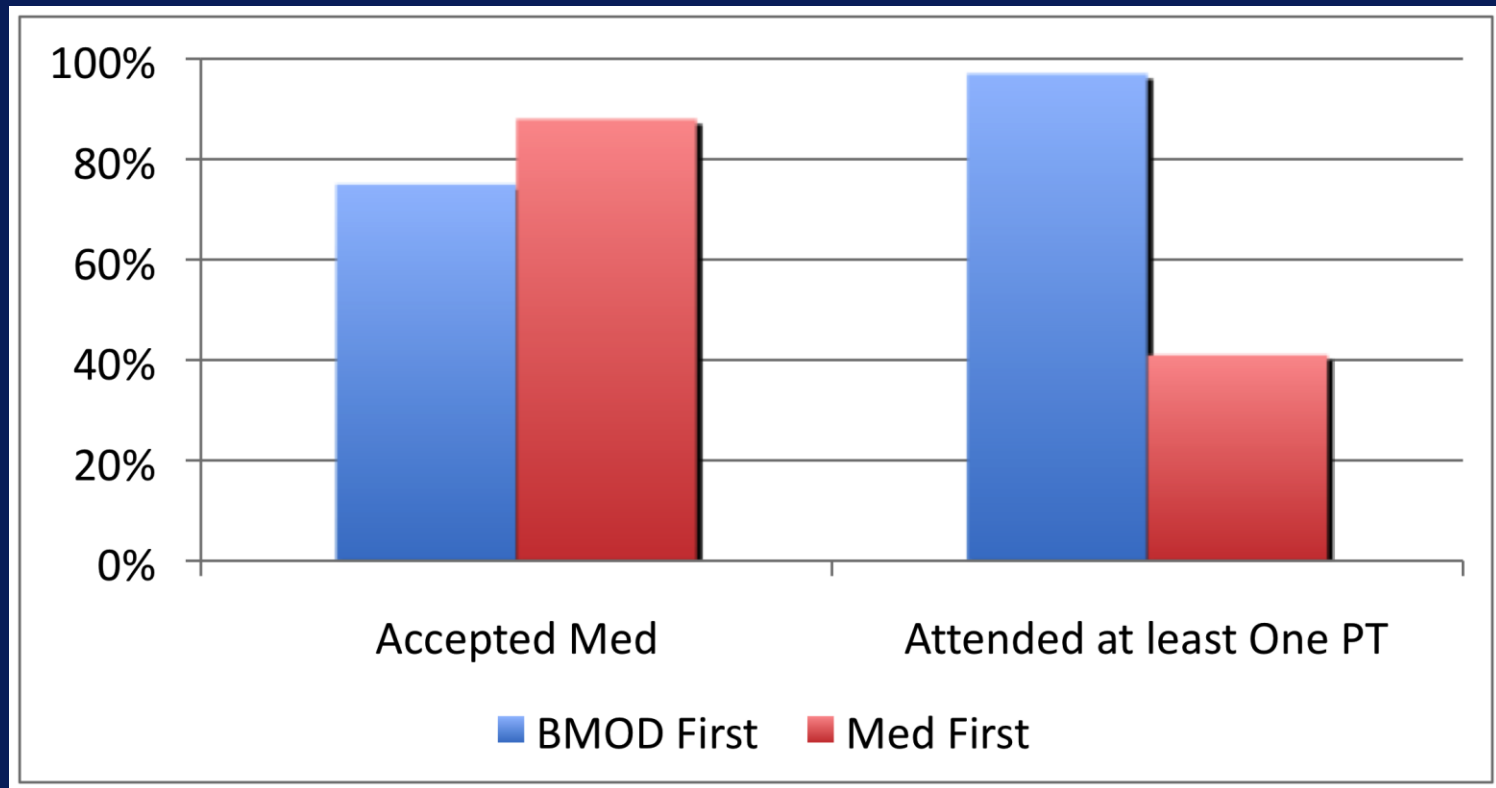
$p < .05$

# Why Is BMOD-MED Sequence Superior to MED-BMOD Sequence?

- Treatment uptake?



# Treatment Acceptance as a Function of First Treatment



# Preliminary Conclusions

(Pelham et al NCDEU, 2011)

- Sequence of treatment impacts outcomes
- Behavioral treatment THEN medication if necessary resulted in better outcomes in school on direct observations and teacher ratings
- Medication THEN behavioral treatment reduced attendance at PT.
- Thus improvement in parental skills at home and parental involvement with the children's schools (e.g., backing up the DRC, communicating with teachers) were limited dramatically when medication was begun first
- 8 sessions of group PT and a teacher implemented DRC is sufficient for 36% of ADHD children but 64% need either more group or individual sessions or combined treatment with medication
- Prior experience with medication moderated these effects
- Combined low dose multimodal intervention produced good functioning

# Evidence-Based Short-term Treatments for ADHD

(1) Behavior modification

-175 studies

(2) CNS stimulant medication

>300 studies

(3) The combination of (1) and (2).

>25 studies

Moderate to large effect sizes across  
treatments

(AAP, 2001, 2011; Fabiano et al, 2009; Greenhill & Ford, 2002; Hinshaw et al, 2002; Pelham & Fabiano, 2008; Swanson et al, 1995)

# Beneficial Effects of Behavioral Treatments

(Fabiano et al, 2009)

- Improved functioning in home (e.g., improved compliance and parent ratings), school (e.g., improvement in classroom disruptive behavior and teacher ratings), and peer settings (e.g., improved positive and negative interactions)
- Evidence for benefit throughout the age range (4 to 15) but many fewer studies at younger and older ages and more research needed
- Moderate to large effect sizes across treatments and measures
- Benefits generally independent of comorbidity
- However, room for improvement even after acute treatment for many children—acute combined treatment necessary for some children
- Less evidence (few studies) for long-term benefits
- Little evidence on how to maintain benefits and produce good adult outcomes and thus recent emphasis on chronic care model

# Clinical Recommendations for Evidence-based Psychosocial Treatment of ADHD

- Focus on impairment in daily life functioning rather than DSM symptoms, treat for settings and domains of impairment, and monitor impairment to modify treatment
- Depending on severity, **start with behavioral treatment** (parent, teacher, child) and evidence-based academic interventions
- Add medication when impairment is not minimized and parents prefer medication or resources limit more intensive behavioral treatments
- Dose meds low (not optimally) so as not to remove need for behavioral and educational treatments and to minimize SE & risks

# Clinical Recommendations for Evidence-based Psychosocial Treatment of ADHD

- Start behavioral and academic interventions early and continue—reading example and severity of social problems
- Stay in regular contact with family to monitor both behavioral treatments and medication--**chronic condition model of treatment**
- Make interventions feasible for and palatable for families so they will be maintained in the long run
- Effective treatment requires systems cooperation (e.g., collaboration between families, schools, mental health clinics, primary care) and a public health perspective

# **Downloadable Materials (Free) on our Website (<http://ccf.fiu.edu>)**

## **Instruments**

**Impairment Rating Scales (Parent and Teacher)**

**Disruptive Behavior Disorder Symptom Rating Scale (Parent and Teacher)**

**Pittsburgh Side Effect Rating Scale**

**DBD Structured Interview**

**Parent Application Packet and Clinical Intake Outline**

**Initial Teacher Interview**

## **Information**

**What Parents and Teachers Should Know about ADHD**

**Medication Fact Sheet for Parents and Teachers**

**Psychosocial Treatment Fact Sheet for Parents and Teachers**

**Many reprints**

**Videos of lectures on child treatments**

## **“How to” Handouts**

**How to Establish a School-Based Daily Report Card**

**How to Conduct a School-based Medication Assessment**

**How to Establish a Home-Based Daily Report Card**

**How to Begin a Summer Treatment Program**

For more information, please go to the main website and browse for workshops on this topic or check out our additional resources.

## Additional Resources

### Online resources:

1. Center for Children and Families website: <http://ccf.fiu.edu>
2. Children and Adults with ADHD (CHADD):  
<http://www.chadd.org/Content/CHADD/AboutCHADD/NationalResourceCenter/default.htm>
3. Society of Clinical Child and Adolescent Psychology website: <http://effectivechildtherapy.com>

### Books:

1. Barkley, R. A., Murphy, K. R., & Fischer, M. (2008). *ADHD in adults: What the Science Says*. New York: Guilford.
2. Pelham, W.E., Gnagy, E.M., Greiner, A.R., Waschbusch, D.A., Fabiano, G.A & Burrows-MacClean, L. (2010). Summer treatment Programs for attention-deficit/hyperactivity disorder. In J.R. Weisz & A.E. Kazdin. (Eds.), *Evidence-based psychotherapies for children and adolescents* (pp. 80-92). New York: Guilford Press.

### Peer-reviewed Journal Articles:

1. Fabiano, G., Pelham, W.E., Coles, E.K., Gnagy, E.M., Chronis, A.M., & O'Connor, B.C. (2009). A meta-analysis of behavioral treatments for attention-deficit/hyperactivity disorder. *Behavior Therapy, 40*, 190-204.
2. Pelham, W.E., & Fabiano, G.A. (2008). Evidence-based psychosocial treatment for attention-deficit/hyperactivity disorder. *Journal of Clinical Child and Adolescent Psychology, 37*(1), 184-214.
3. Pelham, W.E., Fabiano, G.A., Massetti, G.M., (2005). Evidence-based assessment of attention deficit hyperactivity disorder in children and adolescents. *Journal of Clinical Child and Adolescent Psychology, 34*(3), 449-476.
4. Wells, K.C., Chi, T.C., Hinshaw, S.P., Epstein, J.N., Pfiffner, L.J. & Nebel-Schwain, M. et al. (2006). Treatment-related changes in objectively measured parenting behaviors in the Multimodal Treatment Study of Children with ADHD. *Journal of Consulting and Clinical Psychology, 74*, 649–657.

