

*Slides of unpublished findings have been removed for web-posting.*

**Growth in alcohol consumption among teenagers with childhood ADHD:  
The role of ADHD-related impairments and parenting**

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*In October 17 2008 “From science to practice and back: Mechanisms of change in developmental psychopathology.” The Community Health Systems Resource Group at SickKids, Hospital for Sick Children, Toronto, Ontario.*

# ADHD and Alcoholism

## What's the Connection?

More alcoholism in families with childhood ADHD

Symptoms of ADHD same or overlap with characteristics of children of alcoholics (e.g., hyper, impulsive, disinhibited)

Symptoms of ADHD are well-known in the drug use/abuse literature to be prospective predictors of adolescent alcohol and drug use.

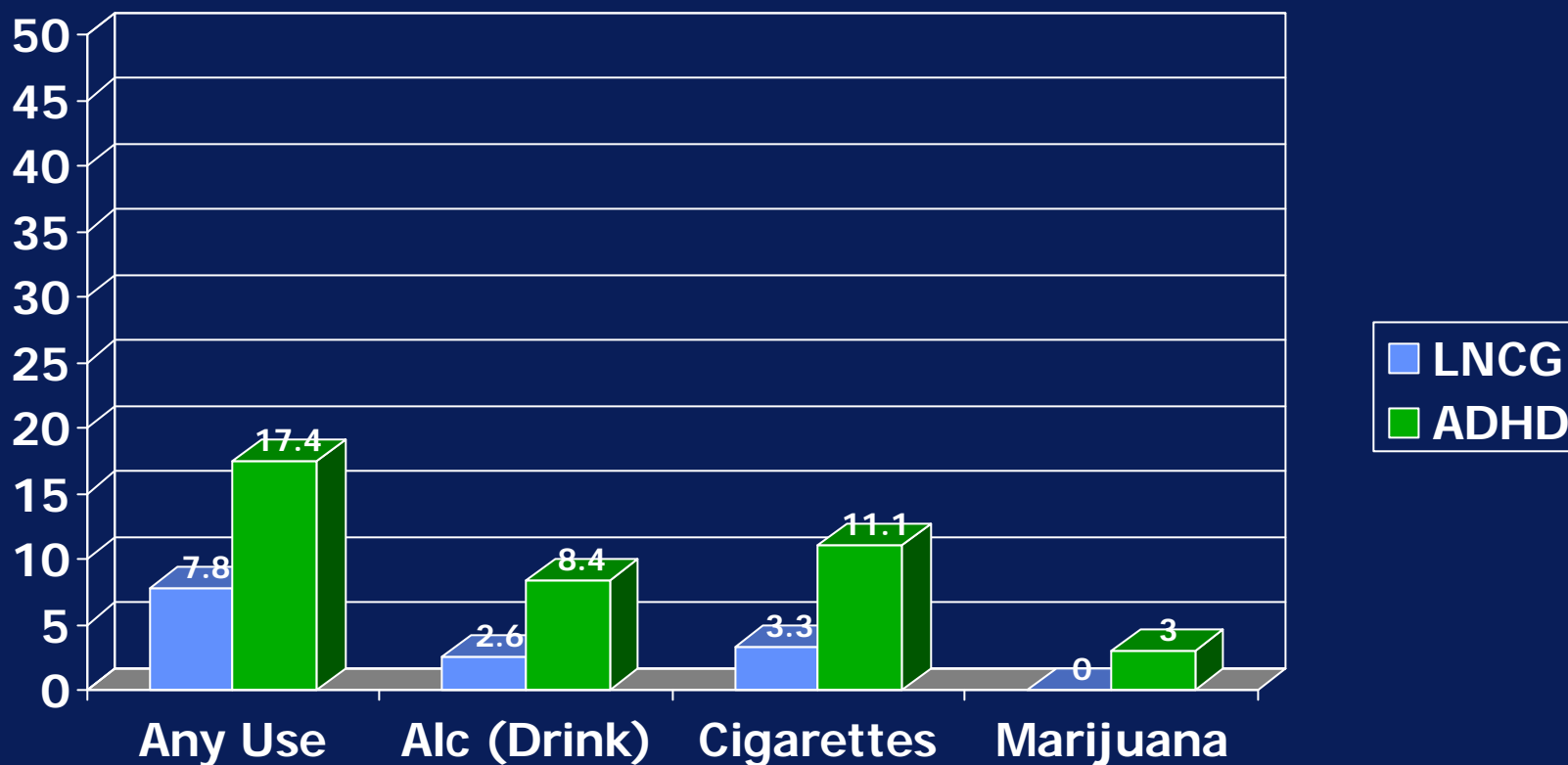
ADHD-related impairments (academic and social problems; behavioral transgressions) which persist into adolescence and adulthood, are known to predict adolescent alcohol and drug use.

The connection may also be appreciated in the overlap between biological and genetic vulnerabilities to both disorders.

# Studies of the Association

- **Clinic versus community /epidemiologic samples**
- **Mixed findings across studies but sufficient evidence of modest size effect to move forward in studies of mechanisms**
- **Most widely cited clinic samples**
  - Barkley (Milwaukee), Mannuzza/Gittelman (NY), Lambert (Oakland CA), Biederman (Boston), Hechtman (Montreal), Loney (Iowa)
- **Newer studies emerging**
  - Pittsburgh ADHD Longitudinal Study (Molina, Pelham)
  - Multimodal Treatment of ADHD multisite study (MTA Cooperative Group)
  - Hinshaw longitudinal study of girls
  - Biederman longitudinal study of girls
  - Lahey Pelham longitudinal study of preschoolers with ADHD

# In the MTA 3-year Follow-Up (10-14 yrs): Significantly More Substance Use in ADHD

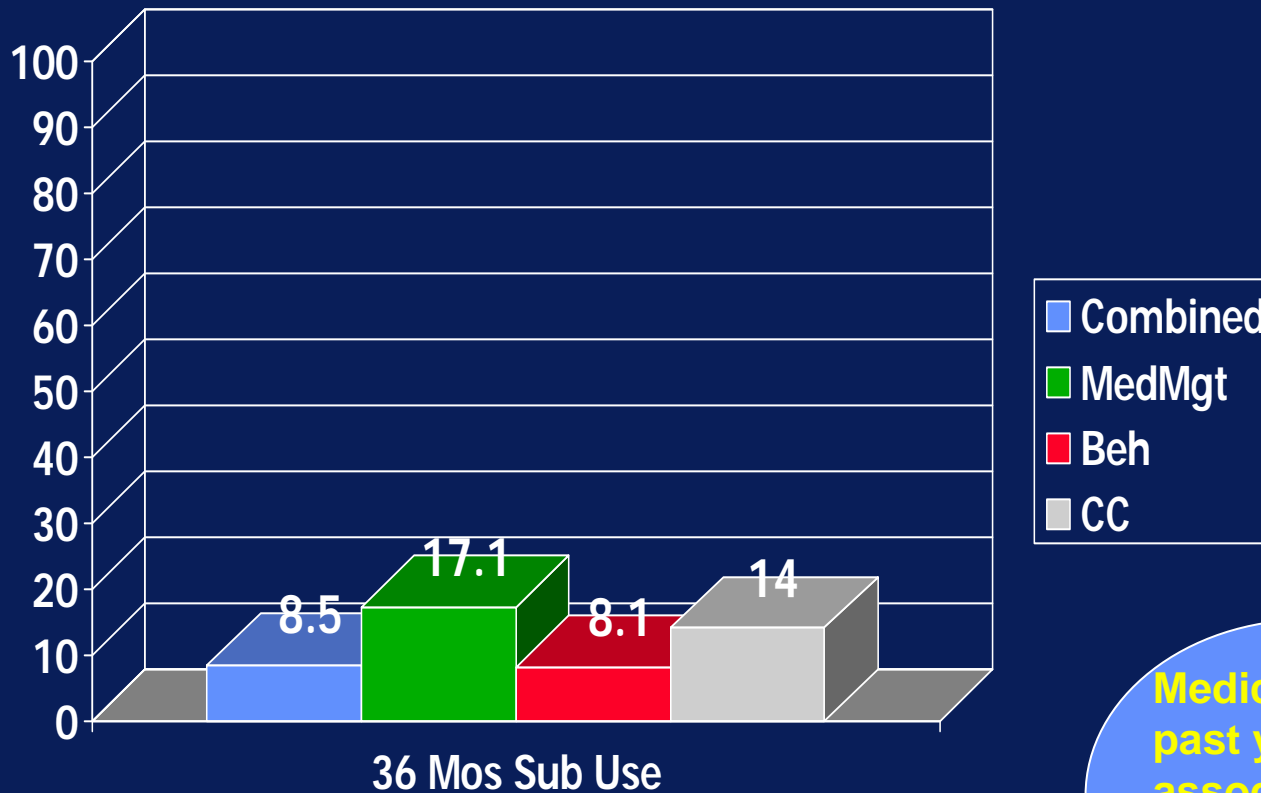


Group differences  $p < .001$ . Also sign diff at 24 mos, 11.7 vs 5.6%,  $p = .003$ .

*Molina et al., 2007, JAACAP*

# Less Substance Use with Behavior Therapy (p=.02)

## % MTA children with any Substance Use by 24 months



8.3% for Beh vs 15.5% for Med/CC.

Medication in past year not associated with substance use at 24, 36 months

# Pittsburgh ADHD Longitudinal Study

- Course and causes of alcohol use and AUD in a well-characterized sample of children diagnosed with ADHD (DSM-III-R or DSM-IV).
- Wide age range yet large sample size, extensive childhood data with variability in predictors of interest (e.g., ODD/CD, stimulant medication), and detailed measurement of alcohol use and putative explanatory domains through adolescence and early adulthood.

# The Pittsburgh ADHD Longitudinal Study (PALS)

## Investigators

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# PALS ADHD Sample

364 children with ADHD being followed through adolescence and early adulthood.

- **Summer Treatment Program for ADHD (Pelham)**
  - In Pittsburgh 1987-1996
  - Elementary school-aged children
  - Standard diagnostic interview with clinician including parent/teacher rating scales
  - Behavior management, medication trials, academics, social skills, problem-solving skills, sports skills, parent training
  - 8 weeks of treatment

# PALS ADHD Sample

## At follow-up in adolescence and adulthood

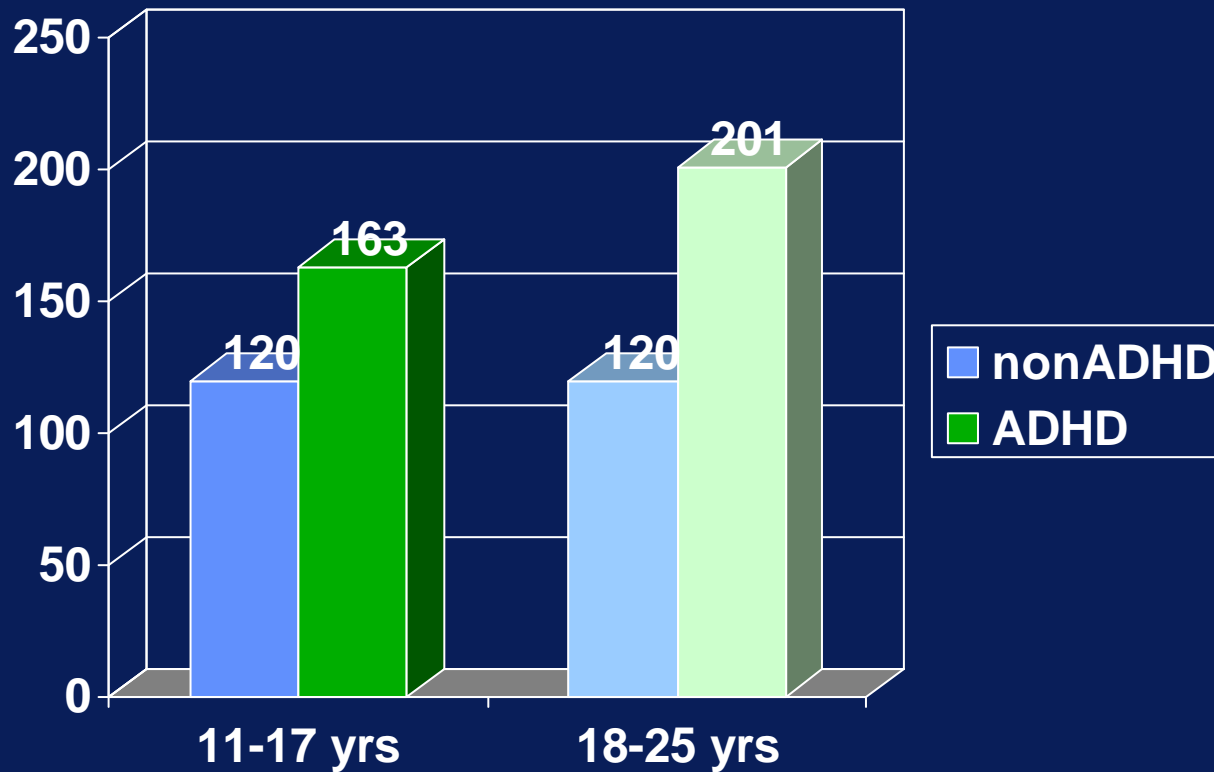
- 11 to 28 years old at first follow-up interview (70.5% participation rate)
- Average of 8.35 year lapse from childhood assessment
- 89.6% male, 18.4% minority, range of SES and deviance
- Little difference between participants and non-participants (1/14 comparisons sign at  $p < .05$ ).
  - *Conduct Disorder symptoms in childhood (small effect,  $d = .3$ ).*
- Annual interviews thereafter, 90% plus retention

# PALS NonADHD Sample

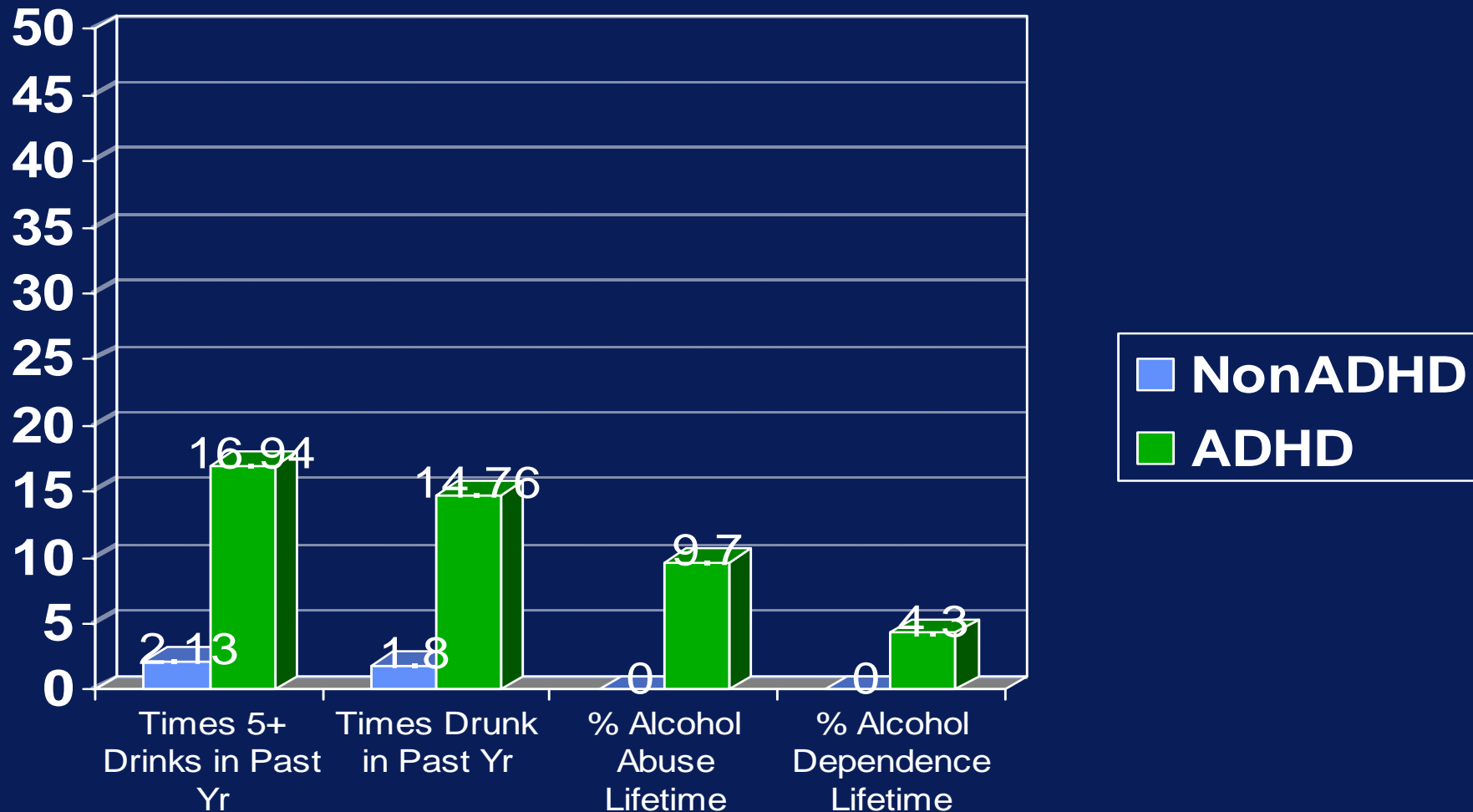
240 adolescents and young adults without ADHD

- Recruited between 1999 and 2001
- Allegheny County (same as probands)
  - Pediatric practices that overlap with probands' pediatricians.
  - Advertisements (e.g., local newspapers, hospital staff bulletins, university/community colleges, etc.)
- Matched by age, gender, ethnicity.
- Not matched on 1 vs 2 parent household or parent income
- No ADHD based on parent/self (adult) screening
- Annual interviews thereafter

# PALS Sample by Age Group at First Annual Interview

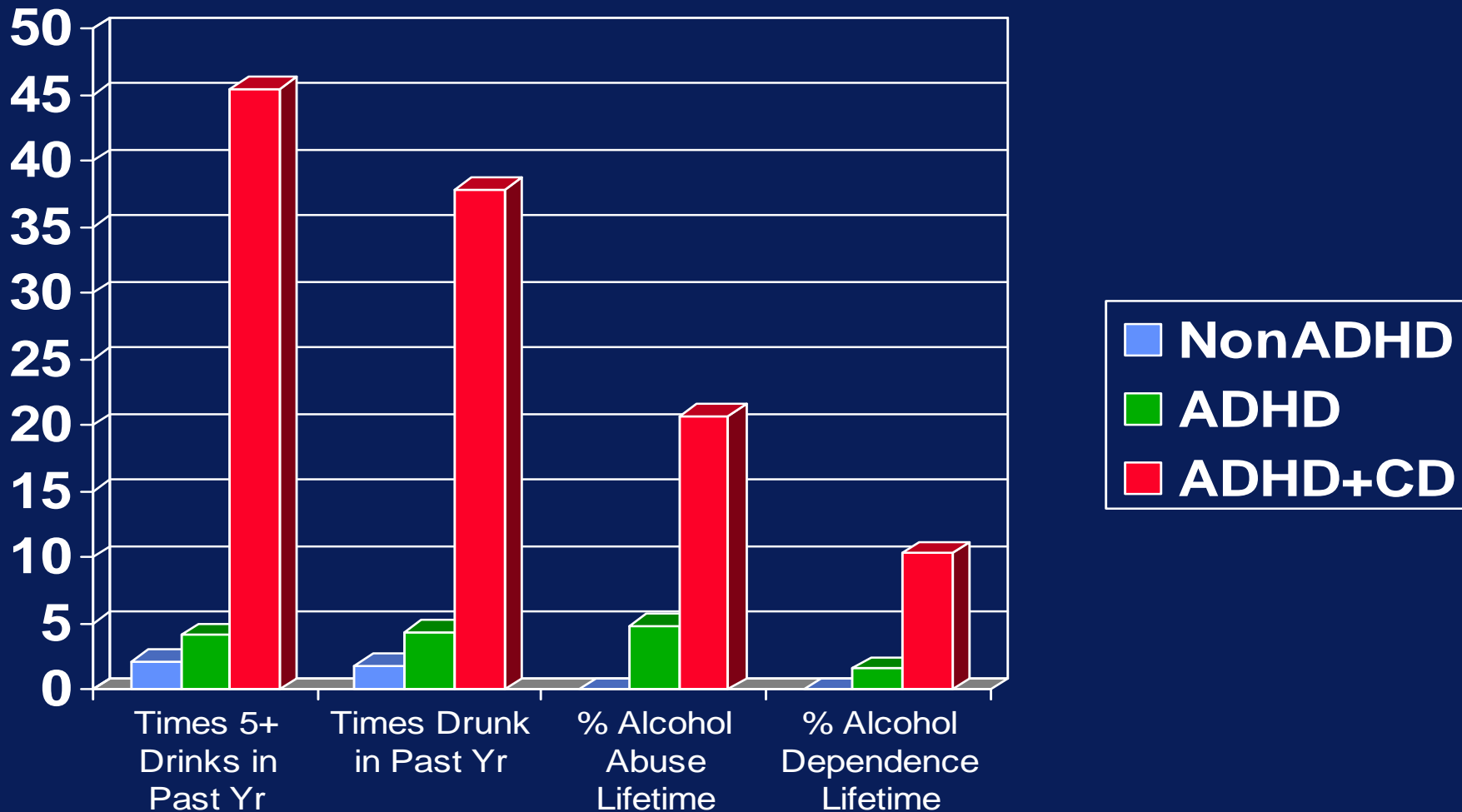


# Childhood ADHD → Heavy Drinking and Alcohol Abuse/Dependence in Late Adolescence



# CD Concurrent with Adolescent Alcohol Outcomes in ADHD

(61 nonADHD, 63 ADHD, 29 ADHD+CD)



# What explains risk among the less well-monitored probands? Candidates for mediation: Common impairments

Social impairments (Pelham & Bender, 1982; Hinshaw & Melnick, 1995; Hoza et al., 2005) that persist into adolescence (Bagwell et al., 2001).

Academic difficulties (Barkley, 2006) that persist into adolescence (Molina, Smith, Pelham, 2001; Molina & MTA Group, in press).

Delinquency that either persists into or develops by adolescence (Hinshaw, 1987; Molina, Flory, et al, 2007; Waschbusch, 2002).

Persistence of ADHD symptoms into adolescence (Barkley et al., 1990; Bagwell et al., 2001).

# Common correlates with ADHD that may be propelling or accounting for ADHD-associated risk

## Parental psychopathology

- Depression
- Antisociality
- Alcoholism

## Socioeconomic disadvantage in families with presence of ADHD

- Marital disruption
- Downward drift in education and income

# Implications

- **ADHD as a chronic vulnerability to impairment including alcohol**
- **Parental monitoring efficacy potentially protective**
- **Traditional diagnostic assessments may miss basic impairments that propel help-seeking and that elevate alcoholism risk.**

# Moving Beyond Common Impairments

- **Parental alcoholism and stressful life events in the family (Marshal et al. under review; Wymbs et al., 2008; King et al.)**
- **Implications of stimulant treatment (Pelham et al., 2005)**
- **Affiliation with alcohol-tolerant peers (Marshal et al., 2003; 2006; in progress)**
- **Coping skill deficits (Molina et al., 2005)**
- **Educational failures (Pelham et al.)**
- **Differential sensitivity to alcohol and protection from negative expectancies (Molina et al.)**

# Deviant Peers and Substance Use

Deviant peer affiliation

Central to theories of adolescent substance use

Strong predictor of substance use



Environmental  
Genetic  
Individual



Substance Use

*Marshal, Molina, Pelham et al., 2003; Marshal, King, Molina et al., in preparation*

# Deviant Peers and ADHD

## Among adolescents with childhood ADHD:

The association between substance-using peers and own substance use is stronger than for adolescents without ADHD

Affiliating with substance-tolerant peers partially explains our earlier finding (Molina et al 2003) that children with more severe ADHD symptoms in childhood have a greater risk for adolescent substance use.

Childhood  
ADHD



Substance Use

# Implications

**Replicates previous work (e.g. Curran et al., 1997; Marshal et al., 2003)**

**Peer selection *and* influence operate to influence drinking across adolescence**

Or, at least the *perception* of peer effects

**Social relations particularly salient in the etiology of AUDs for children with ADHD.**

**May be dampened by effective parental monitoring; needs to be tested.**

# **Is Medication a Viable Intervention for ADHD?**

# In the MTA, Number of Children Medicated Decreases with Age

Medicated at			
<u>14 Months</u>	<u>8 Years</u>		
YES	YES	99 (24%)	
YES	NO	158 (39%)	← <i>Many stopped meds</i>
NO	NO	116 (29%)	
NO	YES	33 (8%)	← <i>Few started meds</i>

*“medicated” = any meds > 50% of days in past year*

# Summary

## Knowledge-based interventions are not likely to be helpful to prevent drinking

- Interventions that target common ADHD-related impairments may dampen risk for alcohol consumption
- Pittsburgh data supporting importance of effective parental monitoring
- Some promise with MTA behavioral interventions for prevention but short-term effects
- MET/CBT/family-based approaches efficacious for teens with addictions -- some promise here for adolescent ADHD?
- Stimulant treatment may be acutely efficacious in treating ADHD symptoms but long-term protective effects for drug abuse not supported and palatability is a problem
- Traditional diagnostic assessments may miss basic impairments that propel help-seeking and that elevate alcoholism risk.