ADHD and Substance Abuse

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Relevant Questions

• Does ADHD ‘cause’ addiction?
• Does ADHD treatment make things worse?
• Can the ADHD medicines be abused?
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• Does ADHD ‘cause’ addiction?
• Does ADHD treatment make things worse?
• Can the ADHD medicines be abused?
Prescribing for ADHD in children, adolescents and adults

POMH-UK Quality Improvement Programme. Topic 13a (baseline audit)

Prepared by the Prescribing Observatory for Mental Health-UK for
South West Yorkshire Partnership NHS Foundation Trust
<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Paediatrics n=429</th>
<th>CAMHS n=3,738</th>
<th>Adult mental health n=1,312</th>
<th>Total sample n=5,479</th>
</tr>
</thead>
<tbody>
<tr>
<td>F00-F09 - Organic mental disorder</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>S06-S07 - Traumatic brain injury</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
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</tr>
<tr>
<td>F10 - Mental and behavioural disorders due to use of alcohol</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>4%</td>
<td>1%</td>
</tr>
<tr>
<td>F11 - Mental and behavioural disorders due to use of opioids</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>0%</td>
<td>1%</td>
</tr>
<tr>
<td>F12 - Mental and behavioural disorders due to use of cannabinoids</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>3%</td>
<td>1%</td>
</tr>
<tr>
<td>F14 - Mental and behavioural disorders due to use of cocaine</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>F19 - Mental and behavioural disorders due to multiple drug use and use of other psychoactive substances</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>F20-F29 - Schizophrenia spectrum disorder</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>2%</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>F31 - Bipolar affective disorder</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>2%</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>F30-F39 - Other mood disorder</td>
<td>&lt;1%</td>
<td>1%</td>
<td>13%</td>
<td>4%</td>
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<tr>
<td>F40-F48 - Neurotic, stress related and somatoform disorders</td>
<td>&lt;1%</td>
<td>3%</td>
<td>8%</td>
<td>4%</td>
</tr>
<tr>
<td>F50 - Eating disorder</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>F50-F59 - Other behavioural syndromes associated with physiological disturbances and physical factors</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
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<tr>
<td>F60.2 - Dissocial personality disorder</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>3%</td>
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<tr>
<td>F60.3 - Borderline personality disorder</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>3%</td>
<td>1%</td>
</tr>
<tr>
<td>F60-F69 - Disorders of adult personality and behaviour</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>6%</td>
<td>1%</td>
</tr>
<tr>
<td>F70-79 - Mental retardation (includes learning disability)</td>
<td>10%</td>
<td>10%</td>
<td>14%</td>
<td>11%</td>
</tr>
<tr>
<td>F84 - Pervasive developmental disorder (includes autism and Asperger’s syndrome)</td>
<td>10%</td>
<td>21%</td>
<td>15%</td>
<td>20%</td>
</tr>
<tr>
<td>F80-F89 - Other disorders of psychological development</td>
<td>2%</td>
<td>2%</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>F91 - Conduct disorder</td>
<td>4%</td>
<td>5%</td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td>F91.3 - Oppositional defiant disorder</td>
<td>5%</td>
<td>11%</td>
<td>2%</td>
<td>8%</td>
</tr>
<tr>
<td>F93 - Emotional disorders with onset specific to childhood</td>
<td>3%</td>
<td>4%</td>
<td>1%</td>
<td>3%</td>
</tr>
<tr>
<td>F95 - Tic disorders (including Tourette’s)</td>
<td>2%</td>
<td>4%</td>
<td>2%</td>
<td>4%</td>
</tr>
<tr>
<td>F94 - Disorders of social functioning with onset specific to childhood and adolescence</td>
<td>4%</td>
<td>2%</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>F98 - Other behavioural and emotional disorders with onset usually occurring in childhood and adolescence</td>
<td>6%</td>
<td>3%</td>
<td>1%</td>
<td>3%</td>
</tr>
<tr>
<td>G40 - Epilepsy</td>
<td>2%</td>
<td>1%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>G47 - Sleep disorders</td>
<td>24%</td>
<td>5%</td>
<td>2%</td>
<td>6%</td>
</tr>
<tr>
<td>Other</td>
<td>11%</td>
<td>7%</td>
<td>4%</td>
<td>7%</td>
</tr>
<tr>
<td>None of the above comorbid disorders</td>
<td>36%</td>
<td>44%</td>
<td>40%</td>
<td>42%</td>
</tr>
</tbody>
</table>
Substance Abuse & ADHD

• A individual with ADHD persisting into adulthood is at increased risk to develop a substance abuse disorder; that risk increases substantially in the presence of concurrent Conduct Disorder.

• ADHD is associated with earlier onset of substance abuse disorders, and a shortened time from use to abuse
Substance Abuse & ADHD

• Substance abuse disorders in individuals with ADHD persisting into adulthood appear to be more chronic with lower rates of remission

• Overall, there is a 2-fold increased risk of developing a substance abuse disorder
Substance Abuse & ADHD

• The core rate of substance abuse in adolescents with ADHD is 10-15% (cannabis).

• Teens who were medicated with stimulants showed no increased risk as compared to “normal” teens.

• Teens with ADHD who were not medicated have a 3-4 fold increased risk, as compared with affected teens who were treated.
Onset of Substance Abuse in Untreated ADHD Adults (Retrospectively Derived)

![Graph showing the onset of substance abuse probability for ADHD and control groups. The ADHD group shows a higher probability of onset compared to the control group, with a statistically significant difference marked by an asterisk (*). The graph includes a trend line for ADHD and a dotted line for control, with the ADHD line reaching a higher probability at age 40.]
ADHD
Risk of Substance Abuse

- 0%
- 20%
- 40%
- 60%

Youth
Adults
Control
ADHD

% with SUD

?
Risk Factors

• Inhibition Deficits
• Attention Deficits
• Novelty seeking
• Reward deficiency
Relevant Questions

• Does ADHD ‘cause’ addiction?
• Does ADHD treatment make things worse?
• Can the ADHD medicines be abused?
Drug Studies

**deliberious**   **protective**

- Huss 2003
- Barkley 2002
- Molina 1999
- Loney 1999
- Huss 1999
- Biederman 1999
- Lambert 1998

Odds Ratio

* indicates p<0.05
Alcohol Studies

deleterious  protective

Barkley 2

Molina 1999

Loney 1999

Biederman 1999

Lambert 1998

0  1  2  3  4

* indicates p<0.05
Age Effect

- deleterious
- protective

Adolescence

- Adolescence
- Adulthood

- Odds Ratio

* indicates p<0.05
ADHD with SUD or SUD with ADHD?

Waid, et al. 2004

In: Kranzler and Tinsley: Dual Diagnosis and Psychiatric Treatment

* Approximately 33% of adults with ADHD have histories of alcohol abuse or dependence
* Approximately 20% of adults with ADHD have histories of drug abuse or dependence
* Treatment seeking alcoholics have childhood ADHD in 17-50%, and drug addicts in 17-45%

*Treatment seeking SUD patients have adult ADHD in approximately 20%
Relevant Questions

• Does ADHD ‘cause’ addiction?
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Abuse of Stimulants

• Epidemiological studies involving adolescents have found rates of non-prescription use of Methylphenidate ranging from a low of .1% in 1992, to a peak of 2.8% in 1997 & 1998, to a rate of 2.2% in 2000.
Abuse of Stimulants

• A survey of 6000 students in Mass. reported that 13% of high school students and 4% of junior high school students had used Methylphenidate without a prescription.
Amphetamine Overview
(poor man’s cocaine, crystal meth, ice, glass, speed)

- Synthetic analog of ephedrine, active ingredient in mahuang
- **Mahuang** used in China for asthma
  - Chinese (Mandarin) má huáng : má, hemp + huáng, yellow
- Methamphetamine and Methylphenidate (Ritalin) are very similar
- Medical uses: obesity, ADHD, narcolepsy
Models of Abuse

- Medical Model
- Psychodynamic Model
- Social Model
- Moral Model
- Bio-Psycho-Social Model
Medical Model

- Addiction as a “brain disease”
- Neurotransmitter imbalance
- Disease Model:
  - Agent: drug
  - Vector: dealers
  - Host: addict

- Need to “stamp out” the disease by eliminating drugs
- Drug antagonist medications: Welbutrin; naltrexone; antabuse
- NIDA
Addiction *is* a Brain Disease

Prolonged Use Changes the Brain in Fundamental and Lasting Ways
Psychodynamic Model

- Drug abusers are “self-medicating”
- Drug abuse is a symptom of underlying psychological problems
- Drug use is a maladaptive psychological coping strategy
- Drug abusers need to resolve internal conflict, and when they do, drug use will be unnecessary
Social Model

- Drug use is a learned behavior
- People use drugs because drug use is modeled by others
- Peer pressure
- Environmental effects lead to drug use (advertising, etc.)
- Drug use is a maladaptive relationship negotiation strategy
Moral Model

- Addicts are "weak" and can overcome a compulsion to use with willpower
- Drug abusers choose to use drugs
- Drug abusers are anti-social and should be punished
- Drugs are evil
Bio-psycho-social model

- All the above are true, to greater or lesser degrees
- Each person’s drug use is a result of some aspects of some or all the other models
- Treatment and recovery require addressing the body, mind, social environment, and spiritual needs of an individual (including nutrition, employment, family issues, psychological issues, etc.
- Developmental approach to recovery.
- Maslow’s Hierarchy of Needs
Addiction Risk Factors

• Genetics
• Earlier Age of Onset
• Childhood Trauma (violent, sexual)
• Learning Disorders & ADD/ADHD
• Mental Illness Predating Use
  – Depression
  – Bipolar Disorder
  – Psychosis
  – ADHD
Challenges for treatment

- In ADHD care: diagnoses of SUD
- In SUD care: diagnoses of ADHD
- In problematic children: diagnoses of both

- Better integration of treatment for both of the disorders
- Enhanced communication between caregivers/parents and researchers