Managing ADHD in the Primary Care Setting

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ADHD is Common

• Most common neurobehavioral disorder
• Affects approximately 8-11% of children
  – prevalence similar to asthma*

*http://www.nschdata.org/browse/survey
Nationwide Prevalence of Chronic Health Conditions in 2011 in Children Age 0-17

<table>
<thead>
<tr>
<th>Condition</th>
<th>Percent (%) of Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>8.8</td>
</tr>
<tr>
<td>ADHD</td>
<td>7.9</td>
</tr>
<tr>
<td>Anxiety</td>
<td>3.3</td>
</tr>
<tr>
<td>Bone, joint, or muscle problem</td>
<td>2.2</td>
</tr>
<tr>
<td>Depression</td>
<td>2.2</td>
</tr>
<tr>
<td>Autism Spectrum Disorder</td>
<td>1.8</td>
</tr>
<tr>
<td>Diabetes</td>
<td>0.3</td>
</tr>
</tbody>
</table>

ADHD has High Morbidity

• **Early in life,** ADHD is associated with:
  – Learning problems
  – Educational underachievement
  – Peer problems
  – Behavioral problems
  – Accidents and Injuries

• **Later in life,** ADHD is associated with:
  – Occupational under-attainment
  – Marital problems
Educational Impairment

Percentage of Those Who Attended High School

- "C" average or lower
  - ADHD (N=464): 52%
  - Non-ADHD (N=487): 27%

- Had a tutor
  - ADHD (N=464): 37%
  - Non-ADHD (N=487): 13%

- Had special classes
  - ADHD (N=464): 37%
  - Non-ADHD (N=487): 10%

- Had to repeat a grade
  - ADHD (N=464): 30%
  - Non-ADHD (N=487): 8%

*p ≤.001


www.mghcme.org
Average Household Income by Education Level Attained

ADHD also Increases Risk for

- **Psychiatric conditions** including:
  - Antisocial and criminal behavior
  - Addiction
  - Mood and anxiety disorders
  - Posttraumatic Stress Disorder

- **Medical conditions** including:
  - Asthma
  - Obesity
  - Metabolic syndrome
  - Traumatic Brain Injury
A greater proportion of children with ADHD versus children with anxiety/mood disorders saw a PCP only (41.8% vs 17.2%).

Primary care providers (PCPs) in the United States saw psychiatrists or psychologists/social workers for pediatric children with mental health conditions (and 42% of children) according to research published online in Pediatrics.
ADHD Management in Primary Care

• Comprehensive guidelines address the diagnosis and management of ADHD in children
  – From the American Academy of Pediatrics (AAP) (*Pediatrics*, 2011)
Objective

• To address specific important challenges in the management of ADHD in primary care:
  – Early identification
  – Early follow-up
  – Comorbidity
  – Disparity
Early identification
Early Intervention May Reduce Later Disease Burden

• Detecting ADHD symptoms early can lead to increased vigilance and monitoring
  – *School accommodations* may reduce burden of disease on academic progress
  – *Parent education* may reduce burden of disease on family and social functioning
  – *Behavioral interventions* may reduce degree of associated behavioral disturbances
Preventive Health Model: ADHD

**Primordial Prevention**
- Regulating environmental toxins including lead and alcohol consumption

**Primary Prevention**
- Prenatal care, education about risk of maternal smoking in pregnancy

**Secondary Prevention**
- Screening for early symptoms in young children

**Tertiary Prevention**
- Diagnosing and managing children who present with symptoms


**Delay in Diagnosis**

- There is often a significant delay from symptom onset to diagnosis.
- Symptoms most often begin in the preschool years (**ages 3-6**), but the majority of children are diagnosed in grade school years (**ages 6-10**).
Age of ADHD Diagnosis Nationwide
Children Age 2-17

Average age of ADHD diagnosis in the US in 2011

Improving Early Identification

• Screening for symptoms of ADHD in young children
• Addressing challenges to diagnosing young children in primary care
Screening

• Parent-report tools can be helpful, may be using them already in primary care, e.g. **Pediatric Symptom Checklist (PSC)**
  – Free
  – Validated for children as young as 4
  – Has an attention subscale
Choosing a cut-off for the PSC Attention Subscale

<table>
<thead>
<tr>
<th>Score</th>
<th>SENS</th>
<th>SPEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 7</td>
<td>0.42</td>
<td>0.94</td>
</tr>
<tr>
<td>≥ 3</td>
<td>0.87</td>
<td>0.49</td>
</tr>
</tbody>
</table>
Using the PSC to Identify ADHD in Referred Children

Mean PSC Attention Score

* indicates p < .05

No ADHD (n=47) | ADHD Simplex (n=34) | ADHD Complex (n=42)

*p < .05
Early Diagnosis Can Be Challenging

• Diagnosis in preschoolers (3-5) can be particularly challenging
  – May not have an alternate setting
  – May not be able to use the same rating scales
  – Developmental differences
Dealing with Diagnostic Uncertainty in Small Children

- Careful developmental History
- Referral for behavior therapy
- Start school/structured day setting
- Special education evaluation
- Invest in rating scales validated for this age (Conners, ADHD-RS-IV-Preschool Version)
- Close follow-up
Early follow-up
Early Follow-Up Is Associated with Improved Adherence to Treatment

• Patients most likely to drop out of treatment in the first 3 months (Toomey et al, Clin Ped, 2012)

• More provider contact, particularly in the 30 days following treatment initiation, is associated with improved adherence (Brinkman et al, JAACAP, 2016)

• MORE SPECIFICS AND REFERENCES HERE
Ways To Improve Early Follow Up

• Develop protocols, train and utilize ancillary staff (following a Chronic Care Model)
• Use rating scales to monitor symptom change early after diagnosis (in addition to long term) and in *at-risk* children
• Titrate medication over weeks to most effective dose
• Follow up early on other referrals and recommended interventions
Comorbidity
What is Comorbidity in ADHD?

- Most often used to refer to a co-existing psychiatric disorder
- Other types of comorbidity
  - Subthreshold psychiatric symptoms
  - Medical illness
  - Psychosocial stress
Comorbidity with ADHD is Common

• By most estimates, about two-thirds of individuals with ADHD have at least one comorbid condition
• Many more have “subthreshold” symptoms
Most Children with Attention Problems Identified at Well Child Visits Also Have Other Symptoms
Comorbid Disruptive Behavior Disorders and ADHD

- 40-70% of children with ADHD have ODD or CD
- 40-60% of children with ODD or CD have ADHD

Comorbid Depression and ADHD

• 70% of referred children with depression had comorbid ADHD
• 30% of referred children with ADHD had comorbid depression

Comorbid Anxiety and ADHD

- About 30% of individuals with generalized anxiety disorder also have ADHD
- About 25-50% of children with ADHD have a co-morbid anxiety disorder

Comorbid PTSD and ADHD

• In our meta-analysis, individuals with ADHD had nearly 4x the risk of developing PTSD compared to those without ADHD.

• Individuals with PTSD had 2x the risk of ADHD compared to controls with similar trauma exposure.

Comorbid Substance Use Disorders and ADHD

• Individuals with ADHD are twice as likely to develop a substance use disorder compared to those without ADHD

• Comorbidities increase the risk, especially conduct disorder

Pediatricians are better able to identify and treat ADHD than comorbidities

- **MGH Chelsea Pediatrics** 2013 needs assessment
- Pediatricians were most confident about identifying **ADHD** (vs. other psychiatric disorders)
- Also reasonably confident about identifying:
  - Depression
  - Developmental Disorders
  - Substance Use Disorders
Pediatrician Referrals to the MGH Chelsea Child Psychiatry Consultation Program (N=211)

- Children were most often referred for ADHD plus comorbidities
  - 50% referred for ADHD
  - 38% referred for ADHD plus comorbid symptoms
Children were most often referred for ADHD with comorbidity

- 57.3% of evaluated children had ADHD, many with multiple co-morbidities
Psychiatrist and Pediatrician Diagnoses (N=157)
Pediatrician and Psychiatrist agreed most frequently on diagnoses of ADHD and Developmental Disorders

<table>
<thead>
<tr>
<th>Disorder Category</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>Kappa Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADHD</td>
<td>0.78</td>
<td>0.88</td>
<td>0.64</td>
</tr>
<tr>
<td>Developmental Disorders</td>
<td>0.67</td>
<td>0.91</td>
<td>0.60</td>
</tr>
<tr>
<td>Anxiety Disorders</td>
<td>0.45</td>
<td>0.89</td>
<td>0.36</td>
</tr>
<tr>
<td>Behavior Disorders</td>
<td>0.70</td>
<td>0.76</td>
<td>0.32</td>
</tr>
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<td>0.38</td>
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Other conditions can be overlooked by pediatricians in children with ADHD.
ADHD Diagnosis Associated with Delayed Autism Spectrum Diagnosis

Comorbidity Complicates Diagnosis in Primary Care

• Lower confidence in making each diagnosis
• More than one diagnosis may not be fully considered
• Attention problems due to other conditions may mimic ADHD
Approach to Assessing Comorbidities in Primary Care

• Have high clinical concern for comorbidities in children with ADHD
• Consider screening children with ADHD for comorbidities using standardized tools
• Consider screening for ADHD to identify early and prevent later complications
• Child Psychiatry Consultation can be helpful to evaluate significant comorbidities
Standardized Tools to Identify ADHD and Comorbidities: Some Examples

• **Narrow Band**
  – Vanderbilt Rating Scales
  – ADHD Rating Scales
  – SNAP-IV Rating Scales
  – Conners Rating scales

• **Broad Band**
  – Pediatric Symptom Checklist (PSC)
  – Strengths and Difficulties Questionnaire (SDQ)
  – Child Behavior Checklist (CBCL)
Using the PSC and the CBCL to Identify ADHD and Comorbidities in Referred Children

Mean PSC Attention Score

Mean CBCL Attention Score

*\( p < .05 \)
Comorbidity Complicates Treatment in Primary Care

- PCP’s are more comfortable treating ADHD than other psychiatric conditions
- PCPs may be less likely to treat ADHD if they suspect comorbidities
- ADHD treatment may affect comorbid symptoms
- Each single condition may be harder to treat
Approach to Treating Comorbid ADHD in Primary Care

• Early detection of ADHD to minimize later dysfunction
• Optimize ADHD treatment when possible
• Monitor identified comorbidities
• Monitor for development of new comorbid symptoms
• Refer for treatment of more severe comorbidities
Unique Ways to Improve Treatment for Comorbid ADHD in Primary Care

• Short term parenting programs (e.g. Triple P, Incredible Years, PCIT)
• Parent mental health history and referral
• Collaborative or Integrated Child Psychiatry Consultation
Improving Patient Engagement with an Embedded Consultation Model

Arrival Rates for Initial Psychiatric Evaluation

- Behavioral Health Psychiatrists: 37%
- Primary Care Psychiatrist: 53%
Visit Numbers with Consultant

![Histogram showing the frequency of total number of visits with AS including evaluation](chart.png)
ADHD Referrals Common in Our Integrated Model at MGH Chelsea

• ADHD most common referral (52%) and diagnosis, mostly comorbid
## Demographics at Intake by ADHD Diagnosis

<table>
<thead>
<tr>
<th></th>
<th>No ADHD N (%)</th>
<th>ADHD N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>67 (100%)</td>
<td>90 (100%)</td>
</tr>
<tr>
<td><strong>Male</strong></td>
<td>28 (41.8%)</td>
<td>68 (75.6%)</td>
</tr>
<tr>
<td><strong>Age Group</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-5</td>
<td>13 (19.4%)</td>
<td>14 (15.6%)</td>
</tr>
<tr>
<td>6-10</td>
<td>19 (28.4%)</td>
<td>35 (38.9%)</td>
</tr>
<tr>
<td>11-18</td>
<td>32 (47.8%)</td>
<td>39 (43.3%)</td>
</tr>
<tr>
<td>19+</td>
<td>3 (4.5%)</td>
<td>2 (2.2%)</td>
</tr>
<tr>
<td><strong>Primary Language Not English</strong></td>
<td>49 (73.1%)</td>
<td>47 (52.2%)</td>
</tr>
<tr>
<td><strong>Hispanic/Latino Ethnicity</strong></td>
<td>52 (77.6%)</td>
<td>67 (74.4%)</td>
</tr>
<tr>
<td><strong>Evaluation Diagnoses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety Disorders</td>
<td>20 (29.9%)</td>
<td>13 (14.4%)</td>
</tr>
<tr>
<td>Conduct Disorders</td>
<td>10 (14.9%)</td>
<td>13 (14.4%)</td>
</tr>
<tr>
<td>Developmental Disorders</td>
<td>26 (38.8%)</td>
<td>31 (34.4%)</td>
</tr>
<tr>
<td>Mood Disorders</td>
<td>18 (26.9%)</td>
<td>32 (35.6%)</td>
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Disparity
**Disparity** in Identification

- Socioeconomically disadvantaged and underrepresented minority children with ADHD experience:
  - Under-diagnosis
  - Medication underuse
  - Treatment attrition
  - Poor linkage to school services
  - Decreased utilization of subspecialty care
- They are also at high risk of poor outcomes associated with ADHD including educational underachievement and addiction
Nationwide Prevalence of ADHD in 2011 by Ethnicity in Children Age 2-17

Racial and Ethnic Disparities in ADHD Diagnosis From Kindergarten to Eighth Grade

**AUTHORS:** Paul I. Morgan, PhD, a, Jeremy Staff, PhD b

**WHAT’S KNOWN ON THIS SUBJECT:** Minority children are less likely...

**CONCLUSIONS:** Racial/ethnic disparities in ADHD diagnosis occur by kindergarten and continue until at least the end of eighth grade. Measured confounding factors do not explain racial/ethnic disparities in ADHD diagnosis and treatment. Culturally sensitive monitoring should be intensified to ensure that all children are appropriately screened, diagnosed, and treated for ADHD. *Pediatrics* 2013;132:85–93

ADHD—attention-deficit/hyperactivity disorder
SES—socioeconomic status

Dr. Morgan conceptualized the study research questions and design, collaborated on the analyses and their interpretation, drafted the initial manuscript, and approved the final manuscript as submitted; Dr. Staff also conceptualized the study’s research questions and design, conducted the study’s initial analyses, reviewed and revised the manuscript for important content, and approved the final manuscript as submitted; Drs. Hillemeier and Farkas collaborated in the study’s

**abstract**

**OBJECTIVE:** Whether and to what extent racial/ethnic disparities in attention-deficit/hyperactivity disorder (ADHD) diagnosis occur across early and middle childhood is currently unknown. We examined the over-time dynamics of race/ethnic disparities in diagnosis from kindergarten to eighth grade and disparities in treatment in fifth and eighth grade.
Disparities in Symptom Reporting

• In our referred sample, patients with non-English speaking parents had significantly lower PSC Attention Subscale scores and fewer ADHD diagnoses
Non-English and English-speaking families were equally as likely to attend appointments with the embedded child psychiatrist.
Questions and Discussion