Opioid Misuse and Opioid Use Disorders in Adolescents

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Disclosures

I, Sharon Levy, have no relevant financial or commercial relationships to disclose.
Opiates
(Codeine)

Opioids
(Hydrocodone)
Opioid pharmacology

Opioid μ-receptor and agonist
Opioid neurobiology

- Prefrontal Cortex
- Limbic System
- Brain Stem
- Spinal Cord
Adolescents are developmentally primed to use drugs
MRI scans of human brain development

Image retrieved from: http://www.pediatricmri.nih.gov/nihpd/info/image_gallery.html#
Neuron growth in brain development

Cerebellum
Nucleus accumbens
Prefrontal cortex
Children, ages 7-11  Teens, ages 13-17  Adults, ages 23-29


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Nucleus accumbens

Prefrontal cortex

Activation of the reward pathway by addictive drugs
Most drug use starts in adolescence

**Percentage of Past Year Initiates**
(among persons at risk for initiation)

- 12-13: 1.7%
- 14-15: 5.9%
- 16-17: 9.5%
- 18-20: 9.7%
- 21-25: 3.4%
- 26 and Older: 0.2%

*Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2014*
Growth in Opioid Prescriptions

Opioid Prescriptions by proportion of 12th graders misusing of opioids

Adolescents are developmentally vulnerable to develop substance use disorders
Age at first use and later risk

**Alcohol**

<table>
<thead>
<tr>
<th>Age at First Drink</th>
<th>% with Alcohol Disorder</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;=13</td>
<td>47</td>
</tr>
<tr>
<td>14</td>
<td>45</td>
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<tr>
<td>15</td>
<td>38</td>
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<td>16</td>
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<td>18</td>
<td>15</td>
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<td>19</td>
<td>17</td>
</tr>
<tr>
<td>20</td>
<td>11</td>
</tr>
<tr>
<td>&gt;=21</td>
<td>9</td>
</tr>
</tbody>
</table>

**Marijuana**

<table>
<thead>
<tr>
<th>Age at First Use</th>
<th>% with Marijuana Disorder</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>17</td>
</tr>
<tr>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>17</td>
<td>11</td>
</tr>
<tr>
<td>19</td>
<td>8</td>
</tr>
<tr>
<td>21+</td>
<td>4</td>
</tr>
</tbody>
</table>

Age of onset of non-medical use of prescription drugs

Prescribed opioid use

Opioid misuse
Association between prescribed opioids and opioid misuse

Prescribed pain relief

AOR: 1.33
(95% CI 1.04-1.70)

Gateway to Opioid Misuse

- **Lifetime Cigarette use**
  - AOR: 1.25
  - (95% CI 1.16-1.36)

- **Lifetime Marijuana use**
  - AOR: 2.44
  - (95% CI 2.22-2.67)

- **Lifetime Alcohol use**
  - AOR: 1.23
  - (95% CI 1.11-1.36)

Prescribed opioid use

Alc/MJ/tobacco use

Opioid misuse

Younger age
Genetic vulnerability
Mental health disorders
Motivation

Opioid addiction
Younger age*

*AOR decreases by 5% each year that non-medical use is delayed
(after one year, **AOR: 0.95** with 95% CI 0.94-0.97)

**Sources:** McCabe et al. *Addiction.* (2007). 102(12):1920-30
Mental health and opioid use

Familial alcohol problem/drug use
Drug abuse/Dependence
OR: 7.89-7.92

Major depression, anxiety disorder, or panic disorder
Opioid use OR: 4.43
(95% CI 3.64-5.38)

PTSD
Drug abuse/Dependence
OR: 8.68

Motivations for opioid misuse

48.1% Used to relieve pain

51.9% Used to get high/experiment

Association between motivation for use and Opioid Use Disorder

Unprescribed pain relief
AOR: 1.8
(95% CI 1.20-2.60)

Recreational use
AOR: 3.42
(95% CI 1.45-8.07)

Risks

Benefits

Risks
Think your patients aren’t at risk of having an opioid use disorder?

Think Again.

This is the Face of Opioid Use Disorder