The Opioid Epidemic and Youth Prescription Drug Abuse

Sandy Chung, MD
Chair, Board of Trustees
Virginia Foundation for Healthy Youth
Disclosures:

I have no relevant financial relationships with the manufacturer(s) of any commercial product(s) and/or provider of commercial services discussed in the CME activity.

I do not intend to discuss an unapproved/investigative use of a commercial product/device in my presentation.
What is VFHY?

MISSION STATEMENT:
VFHY reduces and prevents youth tobacco use, substance use and childhood obesity across Virginia.

In 2017, the Virginia General Assembly expanded our mission to include substance use prevention.

VFHY is member of Governor’s Opioid Abuse & Addiction Leadership Team.
VFHY Overview Video
Opioid epidemic worsens in Md.

By Kelly Stewart | @KStewartWTOP
July 10, 2017 3:28 pm

A new study found that many people who turn to heroin had first used an opioid prescription drug. (Thinkstock)

ROCKVILLE, Md. — In Maryland, opioid-related deaths nearly quadrupled between 2010 and 2016, mainly due to an increase in heroin and fentanyl overdoses. And while Montgomery County has not had overdose rates as high as other clustered counties, it saw an increase in deaths last year.
OPIOID ABUSE
BY THE NUMBERS

OPIOIDS INCLUDE:
Oxycodone, hydrocodone, codeine, morphine, fentanyl, and heroin

From 2000 to 2015, more than half a million people died from drug overdoses.

91 AMERICANS
die every day from an opioid overdose.

SOURCE: CENTERS FOR DISEASE CONTROL AND PREVENTION
Across the nation…

MORE AMERICANS DIE EVERY DAY FROM DRUG OVERDOSES THAN FROM CAR CRASHES.
The majority of those deaths involve legal prescription drugs.

Drug Overdose & Motor Vehicle Accident Deaths

Data: CDC
In Virginia, deaths from overdose surpass gun- or motor vehicle-related deaths

Total Number of Motor Vehicle, Gun, and Drug Related Fatalities by Year of Death, 2007-2016

<table>
<thead>
<tr>
<th>Year</th>
<th>Motor Vehicle Related</th>
<th>Gun Related</th>
<th>Fatal Drug Overdose</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>1124</td>
<td>836</td>
<td>721</td>
</tr>
<tr>
<td>2008</td>
<td>928</td>
<td>818</td>
<td>735</td>
</tr>
<tr>
<td>2009</td>
<td>841</td>
<td>843</td>
<td>713</td>
</tr>
<tr>
<td>2010</td>
<td>823</td>
<td>868</td>
<td>690</td>
</tr>
<tr>
<td>2011</td>
<td>878</td>
<td>863</td>
<td>819</td>
</tr>
<tr>
<td>2012</td>
<td>877</td>
<td>835</td>
<td>799</td>
</tr>
<tr>
<td>2013</td>
<td>832</td>
<td>852</td>
<td>913</td>
</tr>
<tr>
<td>2014</td>
<td>808</td>
<td>901</td>
<td>994</td>
</tr>
<tr>
<td>2015</td>
<td>879</td>
<td>940</td>
<td>1028</td>
</tr>
<tr>
<td>2016*</td>
<td>889</td>
<td>1057</td>
<td>1420</td>
</tr>
</tbody>
</table>

*1 Top 3 methods of death (motor vehicles, guns, and drugs) include all manners of death (accident, homicide, suicide, and undetermined)

Americans consume more opioids than any other country

Standard daily opioid dose for every 1 million people

<table>
<thead>
<tr>
<th>Country</th>
<th>Dose (in thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>40,000</td>
</tr>
<tr>
<td>Canada</td>
<td>30,000</td>
</tr>
<tr>
<td>Germany</td>
<td>20,000</td>
</tr>
<tr>
<td>Denmark</td>
<td>15,000</td>
</tr>
<tr>
<td>Belgium</td>
<td>10,000</td>
</tr>
<tr>
<td>Austria</td>
<td>10,000</td>
</tr>
<tr>
<td>Switzerland</td>
<td>15,000</td>
</tr>
<tr>
<td>Australia</td>
<td>5,000</td>
</tr>
<tr>
<td>Holland</td>
<td>5,000</td>
</tr>
<tr>
<td>Spain</td>
<td>5,000</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>5,000</td>
</tr>
<tr>
<td>Norway</td>
<td>5,000</td>
</tr>
<tr>
<td>Great Britain</td>
<td>5,000</td>
</tr>
<tr>
<td>Ireland</td>
<td>5,000</td>
</tr>
<tr>
<td>New Zealand</td>
<td>5,000</td>
</tr>
<tr>
<td>Sweden</td>
<td>5,000</td>
</tr>
<tr>
<td>Iceland</td>
<td>5,000</td>
</tr>
<tr>
<td>Israel</td>
<td>5,000</td>
</tr>
<tr>
<td>France</td>
<td>5,000</td>
</tr>
<tr>
<td>Slovenia</td>
<td>5,000</td>
</tr>
<tr>
<td>Portugal</td>
<td>5,000</td>
</tr>
<tr>
<td>Finland</td>
<td>5,000</td>
</tr>
<tr>
<td>Italy</td>
<td>5,000</td>
</tr>
<tr>
<td>Mauritius</td>
<td>5,000</td>
</tr>
<tr>
<td>Greece</td>
<td>5,000</td>
</tr>
</tbody>
</table>

Source: United Nations International Narcotics Control Board
Adolescents and Opioids

- 26 adolescents are admitted to the ED daily for nonmedical use of prescription opioids.

- 2,151 children initiate nonmedical use of opioids for the first time every day.

- 42% of 12th graders and 18.8% of 8th graders believed it was “fairly easy” or “very easy” to obtain opioids if they wanted.


Fatal Opioid Overdoses in Virginia by Locality in 2016

## Va. Opioid Deaths, ages 25 and under, 2007-16

Number of Fatal Opioid Overdoses in Persons Under 25 Years of Age by Age Group and Year of Death, 2007-2016

<table>
<thead>
<tr>
<th>Year of Death</th>
<th>&lt;1</th>
<th>1-4</th>
<th>5-9</th>
<th>10-14</th>
<th>15-19</th>
<th>20-24</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>10</td>
<td>51</td>
<td>63</td>
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<tr>
<td>2008</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>20</td>
<td>49</td>
<td>70</td>
</tr>
<tr>
<td>2009</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>49</td>
<td>58</td>
</tr>
<tr>
<td>2010</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>13</td>
<td>39</td>
<td>53</td>
</tr>
<tr>
<td>2011</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>62</td>
<td>78</td>
</tr>
<tr>
<td>2012</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>45</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>8</td>
<td>8</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>13</td>
<td>87</td>
<td>93</td>
</tr>
<tr>
<td>2015</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>17</td>
<td>69</td>
<td>87</td>
</tr>
<tr>
<td>2016</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>17</td>
<td>111</td>
<td>130</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2</td>
<td>6</td>
<td>1</td>
<td>7</td>
<td>123</td>
<td>590</td>
<td>729</td>
</tr>
</tbody>
</table>

Source: Office of Chief Medical Examiner, Virginia Department of Health
### Substance Dependence in Virginia Among Youth and Young Adults

#### Past Year Dependence, Abuse and Treatment by Age Group *  

<table>
<thead>
<tr>
<th></th>
<th>12-17</th>
<th>18-25</th>
<th>26+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illicit Drug Dependence</td>
<td></td>
<td></td>
<td>67,000</td>
</tr>
<tr>
<td>Illicit Drug Dependence or Abuse</td>
<td>18,000</td>
<td>65,000</td>
<td>88,000</td>
</tr>
<tr>
<td>Alcohol Dependence</td>
<td>6,000</td>
<td>60,000</td>
<td>159,000</td>
</tr>
<tr>
<td>Alcohol Dependence or Abuse</td>
<td></td>
<td></td>
<td>331,000</td>
</tr>
<tr>
<td>Alcohol or Illicit Drug Dependence or Abuse</td>
<td>29,000</td>
<td>169,000</td>
<td>369,000</td>
</tr>
<tr>
<td>Needing but not Receiving Treatment for Illicit Drug Use</td>
<td>17,000</td>
<td>59,000</td>
<td>78,000</td>
</tr>
<tr>
<td>Needing but not Receiving Treatment for Alcohol Use</td>
<td>16,000</td>
<td>130,000</td>
<td>317,000</td>
</tr>
</tbody>
</table>

*Source: National Survey on Drug Use and Health, 2013-14, Substance Abuse and Mental Health Services Administration (SAMHSA)*
## Virginia Opioid Addiction Indicators

### 2016 Virginia State Summary

<table>
<thead>
<tr>
<th></th>
<th>Fentanyl and/or Heroin Overdose</th>
<th>Prescription Opioid Overdose</th>
<th>ED Heroin Overdose</th>
<th>ED Opioid Overdose</th>
<th>EMS Narcan Administrations</th>
<th>Reported Hepatitis C (18-30 year olds) New Cases</th>
<th>Diagnosed HIV New Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Deaths</strong></td>
<td>803</td>
<td>465</td>
<td>1,401</td>
<td>8,710</td>
<td>4,076</td>
<td>2,023</td>
<td>863</td>
</tr>
<tr>
<td><strong>Mortality Rate</strong></td>
<td>9.6</td>
<td>5.5</td>
<td>16.7</td>
<td>103.5</td>
<td>48.5</td>
<td>131.3</td>
<td>10.3</td>
</tr>
</tbody>
</table>

### 2016 Locality Rate Summary by Age Group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Fentanyl and/or Heroin Overdose</th>
<th>Prescription Opioid Overdose</th>
<th>ED Heroin Overdose</th>
<th>ED Opioid Overdose</th>
<th>EMS Narcan Administrations</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-14</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>41.2</td>
<td>1.5</td>
</tr>
<tr>
<td>15-24</td>
<td>8.2</td>
<td>4.7</td>
<td>24.7</td>
<td>169.2</td>
<td>47.6</td>
</tr>
<tr>
<td>25-34</td>
<td>23.7</td>
<td>8.7</td>
<td>49.3</td>
<td>168.9</td>
<td>100.4</td>
</tr>
<tr>
<td>35-44</td>
<td>18.5</td>
<td>9.6</td>
<td>21.0</td>
<td>118.4</td>
<td>66.1</td>
</tr>
<tr>
<td>45-54</td>
<td>12.4</td>
<td>9.3</td>
<td>15.8</td>
<td>108.0</td>
<td>57.7</td>
</tr>
<tr>
<td>55-64</td>
<td>6.9</td>
<td>7.1</td>
<td>9.7</td>
<td>85.5</td>
<td>51.6</td>
</tr>
<tr>
<td>65+</td>
<td>0.8</td>
<td>1.6</td>
<td>1.7</td>
<td>55.4</td>
<td>31.8</td>
</tr>
<tr>
<td>All Ages</td>
<td>9.6</td>
<td>5.5</td>
<td>16.7</td>
<td>103.5</td>
<td>48.5</td>
</tr>
</tbody>
</table>

*Rates are calculated as per 100,000 Virginia residents, except for Neonatal Abstinence Syndrome (NAS), which is calculated as per 1,000 live births.*

Source: Virginia Department of Health
Youth Prevention and Opioid Use

- Teens most likely to initiate substance use between ages 12-17
- About 42 percent of heroin users initiated substance use under the age of 18
- Four out of five heroin users start by using prescription opioid painkillers
The Adolescent Brain

- Ages 11-25 years have significant brain changes
- Brain development occurs caudal to rostral
- “Inverted U” grey matter development
  - Initial increase in grey matter caudally
  - Progressive loss of grey matter rostrally
- Increased white matter development simultaneously in all regions
  - Increase myelination
  - Increase axonal diameter
  - Increased connections between pre-frontal cortex and subcortical regions
Self-control comes later…

Early brain development
• Sensory
• Motor
• Limbic System develops faster than Basal Ganglia

Later brain development
• Executive functioning
• Self-control
• Problem-solving
Pruning increases during adolescence

Reward! Consequence
The Teenage Brain: Ripe for Addiction

Higher levels of dopamine in the prefrontal cortex – the “pleasure” neurotransmitter
Changing dopamine levels in the reward center of the brain (nucleus accumbens) are changing throughout adolescence

Teens requires more excitement and stimulation to achieve the same level of pleasure as an adult. Leads to risk seeking behaviors.

As nerve pathways are forming, adolescents become addicted more easily.
40% of adult alcoholics identify onset between 15 and 19 years of age.

Teens more likely to become addicted with even minimal exposure to a high-risk behavior. For example, adolescent may smoke fewer cigarettes than an adult, the adolescent demonstrates higher rates of addiction.
Substance Use is Common

• Substance use is very common during adolescence
• By 12th grade in high school
  • 70% of teens have had alcohol
  • 50% of teens have taken an illegal drug
  • 40% of teens have smoked a cigarette
  • >20% of teens have used a prescription drug for a non-medical purpose
• Some reasons teens experiment with drugs
  • Peer pressure
  • Dealing with stressors
  • Trying something new (risk-taking)
  • Enhancing performance (e.g., academic, athletic)
  • Availability
  • Family dysfunction
Risk Factors for Addiction

- Initial drug use during early adolescents (<14 years of age)
- Genetic predisposition
- Mental health disorders
  - Depression
  - Attention deficit hyperactivity disorder
- Family dysfunction
  - Parental substance use
  - Family or community violence
  - Physical, sexual, emotional abuse
How Can We Prevent Substance Use and Addiction?

Causes - Genetic predispositions and environments
Effective prevention needs to address both!
Environmental interventions that impact **access** biggest impact for adolescents
Teaching them to understand their risk can also help them make better choices
VFHY’s METHOD

- Comprehensive Approach
- Evidence-based practices
- Research, Data Collection, Evaluation
- Collective Impact
- Targeted Messaging
- Agency & Community Collaboration
- Regional Advisory Boards
- Dedicated Grants Staff
In 2001, teen smoking in Virginia was above national average.

A decade later, high school smoking in Virginia is down by more than 70%.

Middle school smoking in Virginia is down nearly 85%.
Substance-Use Prevention Instruction

VFHY provides classroom-based substance-use prevention instruction to 42,000 youth across Virginia.
Effectiveness of a Selective, Personality-Targeted Prevention Program for Adolescent Alcohol Use and Misuse

A Cluster Randomized Controlled Trial

Patricia J. Conrod, PhD; Maeve O’Leary-Barrett, BA; Nicola Newton, PhD; Lauren Topper, MSc; Natalie Castellanos-Ryan, PhD; Clare Mackie, PhD; Alain Girard, MSc

**Context:** Selective school-based alcohol prevention programs targeting youth with personality risk factors for addiction and mental health problems have been found to reduce substance use and misuse in those with elevated personality profiles.

**Objectives:** To report 24-month outcomes of the Teacher-Delivered Personality-Targeted Interventions for Substance Misuse Trial (Adventure trial) in which school staff were trained to provide interventions to students with 1 of 4 high-risk (HR) profiles: anxiety sensitivity, hopelessness, externalizing, or substance use.

**Results:** Two-part latent growth models indicated long-term effects of the intervention on drinking rates ($\beta = -0.320$, SE = 0.145, $P = .03$) and binge drinking rates ($\beta = -0.400$, SE = 0.197, $P = .03$) and growth in binge drinking ($\beta = -0.716$, SE = 0.274, $P = .009$) and problem drinking ($\beta = -0.432$, SE = 0.193, $P = .02$) for HR youth. The HR youth were also found to benefit from the interventions during the 24-month follow-up on drinking quantity ($\beta = -0.098$, SE = 0.047, $P = .04$), growth in drinking quantity ($\beta = -0.176$, SE = 0.073, $P = .02$), and growth in binge drinking ($\beta = -0.214$, SE = 0.077, $P = .001$).
PreVenture

- PreVenture focuses on personality testing that can identify children at high risk of substance use before risky traits can cause problems.
- School-based, teacher-trained intervention
- 9th graders
- 4 personality dimensions: Anxiety sensitivity, hopelessness, impulsivity, and sensation seeking

Those have these personality dimensions consider high risk (HR) are enrolled in intervention groups.

- Two 90 minute sessions for students based on personality inventory results
- Focus on identifying and challenging personality-specific cognitive distortions that lead to personality-specific behaviors. For example, panic or avoidance if anxiety sensitivity, or aggression in case of impulsivity.
PreVenture

Results

- Control schools received standard drug abuse education
- Reduction in substance use in both HR and LR students at intervention schools
- Of note, low risk students (who did not receive intervention) at the schools where HR students had training ALSO decreased use. “Herd immunity”

Figure 4. Estimated probability of reporting problem drinking symptoms × severity of problem drinking symptoms in high-risk (HR) and low-risk (LR) youth attending intervention and control schools. T2 indicates 6 months after intervention; T3, 12 months after intervention; T4, 18 months after intervention; and T5, 24 months after intervention.
Segmentation

The process of classifying a market into distinct segments that behave in similar ways or have similar needs
Common Teen Peer Crowds

- Mainstream
- Preppy
- Hip Hop
- Alternative
- Country
Peer Crowd Messaging

Sample public ads that were focused on specific peer crowds

Aired in different parts of Virginia during our media campaigns
Peer Crowd Messaging
Virginia Youth Survey: Alcohol Use

Alcohol Use

Currently drank alcohol

- State average: 21.8%
- Preppy: 28.0%
- Mainstream: 11.7%
- Hip Hop: 34.1%
- Country: 22.4%
- Alternative: 31.4%

Drank five or more drinks of alcohol in a row

- State average: 11.2%
- Preppy: 14.0%
- Mainstream: 3.2%
- Hip Hop: 17.2%
- Country: 11.4%
- Alternative: 14.0%
Virginia Youth Survey: Substance Abuse

Drug Use

Currently used marijuana

- State average: 15.8%
- Preppy: 15.3%
- Mainstream: 5.9%
- Hip Hop: 34.2%
- Country: 6.2%
- Alternative: 15.0%

Currently took a prescription drug without a doctor’s prescription

- State average: 7.5%
- Preppy: 7.0%
- Mainstream: 1.8%
- Hip Hop: 14.7%
- Country: 7.7%
- Alternative: 11.2%

2015 Virginia Youth Survey
Virginia Youth Survey: Substance Abuse

**Heroin Use**

**Ever used heroin**
- State average: 1.4%
- Preppy: 1.0%
- Mainstream: 0.2%
- Hip Hop: 3.1%
- Country: 1.4%
- Alternative: 2.8%

**Currently used heroin**
- State average: 1.2%
- Preppy: 0.8%
- Mainstream: 0.0%
- Hip Hop: 2.4%
- Country: 1.3%
- Alternative: 2.1%

2015 Virginia Youth Survey
Virginia Youth Survey: Substance Abuse

Other drug use

**Ever used cocaine**
- State average: 3.5%
- Preppy: 3.2%
- Mainstream: 1.1%
- Hip Hop: 7.7%
- Country: 2.6%
- Alternative: 4.2%

**Currently used methamphetamines**
- State average: 1.9%
- Preppy: 1.0%
- Mainstream: 0.2%
- Hip Hop: 3.1%
- Country: 1.4%
- Alternative: 2.8%

2015 Virginia Youth Survey
Other drug use (cont)

Ever used ecstasy

- State average: 3.7%
- Preppy: 2.3%
- Mainstream: 0.7%
- Hip Hop: 10.5%
- Country: 2.5%
- Alternative: 7.0%

Currently took over-the-counter drugs to get high

- State average: 4.2%
- Preppy: 2.8%
- Mainstream: 0.6%
- Hip Hop: 10.6%
- Country: 2.5%
- Alternative: 11.6%

2015 Virginia Youth Survey
Academic Achievement and Substance Use

![Bar graph showing the percentage of students with different school performances among nondrinkers, current drinkers who did not binge, and current drinkers who binge drink.](image)
% of students engaged in each behavior by grades earned in school

<table>
<thead>
<tr>
<th></th>
<th>A's</th>
<th>B's</th>
<th>C's</th>
<th>D's/F's</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>18</td>
<td>25</td>
<td>31</td>
<td>48</td>
</tr>
<tr>
<td>Marijuana</td>
<td>8</td>
<td>18</td>
<td>27</td>
<td>47</td>
</tr>
<tr>
<td>Tobacco</td>
<td>14</td>
<td>22</td>
<td>53</td>
<td></td>
</tr>
</tbody>
</table>
% of students engaged in each behavior by grades earned in school

- Heroin:
  - A's: 0.9
  - B's: 0.8
  - C's: 1.9

- Prescription Drug Abuse:
  - A's: 15.8
  - B's: 5.1
  - C's: 6.9
  - D's/F's: 11.9

- Over the Counter:
  - A's: 2.4
  - B's: 3.5
  - C's: 8.6
  - D's/F's: 24.1
  - Non-Graded: 24.4
How Do Teens Get Access to Opioids?

- Many teenagers borrow medication from friends or family members.
- Nearly 34% of opioids for nonmedical use by adolescents are obtained by family members and 17% from friends.
- 25% of children reported giving away their own opioid prescriptions.
- 10% of children have reported trading their opioid prescriptions. More likely to be secondary to self-medicating for pain relief than recreational use.

Even appropriate opioid use to treat pain may slightly increase risk of later opioid misuse.

Contraindication, alerting that codeine and tramadol should not be used to treat pain in children younger than 12 years, and codeine should not be used to relieve cough in these children.

Contraindication to tramadol use in children younger than 18 years to treat pain after a tonsillectomy and/or adenoidectomy.

Warning to the drug labels of codeine and tramadol to recommend against their use in adolescents between 12 and 18 years who are obese or have conditions such as obstructive sleep apnea or compromised respiratory function, that may increase the risk of serious breathing problems.

Warning to patients that breastfeeding is not recommended during treatment with codeine or tramadol due to the potential for serious adverse reactions in a breastfed infant, such as excess sedation, respiratory depression, and death.
AAP recommends:

- Substance-use screening (i.e. CRAFFT)
- Non-opioid pain management techniques
- Return practices to safely dispose of prescription medications
- Reduce amount of opioids prescribed for acute use

What can you do?
Treatment for Addiction

- AAP recommends pediatricians consider medication-assisted treatments (MAT) for patients addicted to opioids or discuss referrals to other providers.

- Buprenorphine, methadone and naltrexone treat opioids addiction. MAT can suppress withdrawal symptoms, decrease cravings and cut relapse risk.

- Local CSB’s (Community Services Board)


Medication-Assisted Treatment of Adolescents With Opioid Use Disorders
COMMITTEE ON SUBSTANCE USE AND PREVENTION
Thank You for Your Attention!

Questions?

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