The Escalating Problem of Substance Abuse:
What Your Kids and Patients Aren’t Telling You

Ann Eshenaur Spolarich, RDH, PhD
Professor and Director of Research
Arizona School of Dentistry and Oral Health
A.T. Still University
Adolescent Risk

- Activities contribute to risk and have long-term consequences
- Difficulty controlling impulses
- Poor decision-making
- Outcomes may be severe
- Risky behaviors threaten the health of teens and may continue to threaten their health as they become adults
What do you see?
• National study in its 40th year
• Surveys 40,000 to 50,000 students in 400 U.S. secondary schools
  • 8th, 10th, 12th grades
Trends in Children

- Kids with high anxiety seek “downers”
- Kids with low self esteem seek “uppers”
- Appear drunk or intoxicated
Top Drugs among 8th and 12th Graders, Past Year Use

8th Graders

- Marijuana/Hashish: 11.7%
- Inhalants: 5.3%
- Synthetic Marijuana: 3.3%
- Cough Medicine: 2.0%
- Tranquilizers: 1.7%
- Adderall: 1.3%
- Hallucinogens: 1.3%
- OxyContin: 1.0%
- Vicodin: 1.0%
- Cocaine (any form): 1.0%
- MDMA (Ecstasy): 0.9%
- Ritalin: 0.9%

12th Graders

- Marijuana/Hashish: 35.1%
- Adderall: 6.8%
- Synthetic Marijuana: 5.8%
- Vicodin: 4.8%
- Tranquilizers: 4.7%
- Cough Medicine: 4.1%
- Sedatives: 4.3%
- Hallucinogens: 4.0%
- MDMA (Ecstasy): 3.6%
- OxyContin: 3.3%
- Cocaine (any form): 2.6%
- Inhalants: 1.9%
- Salvia: 1.8%
- Ritalin: 1.8%

* Only 12th graders surveyed about sedatives use

Source: University of Michigan, 2014 Monitoring the Future Study
Past-Year Use of Various Drugs (All Grades Combined), 1991–2013

SOURCE: University of Michigan, 2013 Monitoring the Future Study
PRESCRIPTION/OVER-THE-COUNTER VS. ILLICIT DRUGS*

*The percentage of 12th graders who have used these drugs in the past year.

- Adderall: 7.6%
- Vicodin: 7.5%
- Cold Medicines: 5.6%
- Tranquilizers: 5.3%
- OxyContin: 4.3%
- Ritalin: 2.6%
- Methaqualone/Quaaludes: 0.4%
- Marijuana: 36.4%
- Powder Cocaine: 2.7%
- Crack: 1.2%
- Methamphetamine: 1.1%
- Heroin: 0.6%

After marijuana, prescription and over-the-counter medications account for most of the top drugs abused by 12th graders in the past year.

The National Institute on Drug Abuse is a component of the National Institutes of Health, U.S. Department of Health and Human Services. NIDA supports most of the world’s research on the health aspects of drug abuse and addiction. Fact sheets on the health effects of drugs of abuse and information on NIDA research and other activities can be found at www.drugabuse.gov.
Prescription/Over-the-Counter Drugs Account for 8 out of 14 of the Most Frequently Abused Drugs

Prevalence of Past Year Drug Use Among 12th Graders

Source: The Monitoring the Future study, University of Michigan
After Marijuana, Prescription and Over-the-Counter Medications\(^1\) Account for Most of the Commonly Abused Drugs Among High School Seniors\(^2\)

About 1 in 9 youth

or 11.4 percent of young people aged 12 to 25 used prescription drugs nonmedically within the past year.\(^3\)

\(^1\)Past Year Use
\(^2\) Monitoring the Future Survey, 2011
\(^3\) National Survey on Drug Use and Health, 2010
What’s Trending?

- **20%**: Kids who learn about the risks of drugs from their parents are significantly less likely to use drugs, yet 20 percent report not getting that benefit.
  
  *PATS 2013*

- **0**: When forced to choose, a majority of parents identify the number one place where it should be permissible to advertise marijuana as "nowhere."
  
  *Drugfree Marijuana Survey*

- **40%**: "Heavy" use of marijuana among teens is up 40 percent since 2008.
  
  *PATS 2013*

- **78%**: 78 percent of teens say they have friends who use marijuana regularly.
  
  *PATS 2013*

- **10M**: 10 million young people (12 to 29 year olds) in America are in current need of treatment for substance abuse and addiction.
  
  *NSDUH 2012*
Trends in Children

- 7 million Americans are abusing prescription drugs
- **More children are abusing** prescription drugs **than** cocaine, heroin, hallucinogens and Ecstasy combined
  - “Pharming”
- Children use:
  - Alcohol
  - Tobacco
  - Marijuana
  - Prescription drugs
    - Hydrocodone with acetaminophen = most abused prescription drug by teenagers
    - Inhalants – use peaks in 8th grade
- **Opiates cause more overdoses in adolescents than cocaine and heroin combined**

What’s in the medicine cabinet?

- Access to stored medications at home:
  - contributing factor to prescription medication abuse
  - especially problematic for children and teenagers
  - a leading cause of visits to the ER due to accidental or intentional overdose

90% of addictions start in the teenage years.

1 in 6 teens have used medicine to get high.

27% of teens and 16% of parents believe that using prescription drugs to get high is safer than using street drugs to get high.
Of all the classes of drugs abused, the following three are the most commonly abused prescription drugs:

1. Narcotic Pain Killers
2. Opioids
3. Central Nervous System Depressants
4. Stimulants
Use of prescription drugs (only reported by 12th graders):

- Report that these drugs are increasingly difficult to obtain
- 14% used one or more within past year
- Narcotics (except heroin) = 6%
- Oxycontin:
  - 8th grade = 1%
  - 10th grade = 3%
  - 12th grade = 3.2%
Percent Reporting Narcotics Other Than Heroin as ‘Fairly Easy’ or ‘Very Easy’ to Obtain, by Grade

SOURCE: University of Michigan, 2015 Monitoring the Future Study
TABLE 5
Source of Prescription Drugs a
among Those Who Used in Last Year
Grade 12, 2007–2014
(Entries are percentages.)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bought on Internet</td>
<td>4.6</td>
<td>5.5</td>
<td>2.4</td>
<td>4.5</td>
<td>2.3</td>
<td>1.4</td>
</tr>
<tr>
<td>Took from friend/relative without asking</td>
<td>19.6</td>
<td>9.6</td>
<td>21.1</td>
<td>18.6</td>
<td>24.2</td>
<td>19.6</td>
</tr>
<tr>
<td>Took from a friend</td>
<td>—</td>
<td>4.1</td>
<td>—</td>
<td>4.7</td>
<td>—</td>
<td>4.0</td>
</tr>
<tr>
<td>Took from a relative</td>
<td>—</td>
<td>7.7</td>
<td>—</td>
<td>16.5</td>
<td>—</td>
<td>18.0</td>
</tr>
<tr>
<td>Given for free by friend or relative</td>
<td>58.2</td>
<td>59.6</td>
<td>59.8</td>
<td>64.4</td>
<td>50.5</td>
<td>56.9</td>
</tr>
<tr>
<td>Given for free by a friend</td>
<td>—</td>
<td>55.9</td>
<td>—</td>
<td>53.7</td>
<td>—</td>
<td>49.9</td>
</tr>
<tr>
<td>Given for free by a relative</td>
<td>—</td>
<td>9.0</td>
<td>—</td>
<td>20.1</td>
<td>—</td>
<td>15.0</td>
</tr>
<tr>
<td>Bought from friend or relative</td>
<td>45.0</td>
<td>42.8</td>
<td>44.1</td>
<td>37.4</td>
<td>37.1</td>
<td>32.3</td>
</tr>
<tr>
<td>Bought from a friend</td>
<td>—</td>
<td>42.3</td>
<td>—</td>
<td>36.5</td>
<td>—</td>
<td>31.7</td>
</tr>
<tr>
<td>Bought from a relative</td>
<td>—</td>
<td>2.1</td>
<td>—</td>
<td>4.6</td>
<td>—</td>
<td>3.6</td>
</tr>
<tr>
<td>From a prescription I had</td>
<td>15.1</td>
<td>14.3</td>
<td>18.4</td>
<td>13.8</td>
<td>40.2</td>
<td>35.1</td>
</tr>
<tr>
<td>Bought from drug dealer/stranger</td>
<td>26.7</td>
<td>19.6</td>
<td>24.2</td>
<td>22.6</td>
<td>18.6</td>
<td>17.1</td>
</tr>
<tr>
<td>Other method</td>
<td>17.8</td>
<td>12.5</td>
<td>7.5</td>
<td>9.0</td>
<td>8.5</td>
<td>10.1</td>
</tr>
</tbody>
</table>

Weighted N = 261

Source. The Monitoring the Future study, the University of Michigan.

Note. ' — ' indicates data not available.

aIn 2009, the response categories were expanded to differentiate between friends and relatives.
PRESCRIPTION DRUG ABUSE

symptoms of
WITHDRAWAL

EARLY SYMPTOMS
Begin 8-12 hours after last use

AGITATION

ANXIETY

MUSCLE ACHES

WATERY EYES

INSOMNIA

RUNNY NOSE

SWEATING

FATIGUE

LATE SYMPTOMS
Begin 48-72 hours after last use

ABDOMINAL CRAMPING

DIARRHEA

DILATED PUPILS

GOOSE BUMPS

NAUSEA

VOMITING

Sources:
Inhalants

- Easiest to abuse
  - “huffing” – directly out of can
  - Sniffing or “bagging” (out of plastic bag)

- Readily accessible
  - many household products, white board markers, correction fluid, model paints (gold and silver), aerosol keyboard cleaners

- Manufacturers of difluoroethane add “bitterants” to discourage use
Inhalants

- Difluoroethane
  - Contains halogenated hydrocarbons
  - *Increases heart muscle sensitivity to epinephrine*
  - Can lead to sudden death

Hal Crossley, DDS, ADA Annual Session, 2011

SNIFFING CORRECTION FLUID CAN STOP YOUR HEART.
If you sniff to get high, you're inhaling poisons that do definite damage. So stop. Before your heart does.

National Inhalant Prevention Coalition
http://www.inhalants.org/
Other Inhalants

- Amyl and butyl nitrite
  - poppers, snappers, etc.
- Nitrous oxide
  - Whippets = used for whipped cream
  - “grocery store high”
Signs of Inhalant Use

- Occur within minutes
- Produce similar effects as anesthetics
- Intoxication
- Slurred speech
- Inability to coordinate movements
- Euphoria
- Dizziness
Inhalants

- Causes of death
  - Suffocation
  - Respiratory depression
  - Hepatotoxicity = cumulative damage
  - Sudden sniffing death
Other OTC Drugs Abused by Children

- Cough medications containing dextromethorphan (DXM) (e.g. Robitussin)
  - Low dose DXM = antitussive
  - High dose = hallucinogenic
  - "Robotripping"
    - Drink 4 oz, hold as long as possible, nausea, vomit, hallucinate
- Coricidin HBP (formulations without acetaminophen)
  - Take 20 tabs for DXM dose to get high
- Energy and diet drinks

Hal Crossley, DDS, ADA Annual Session, 2011
Coricidin: “Triple C” “Skittles”

Alcohol
Where Do Kids Drink?

- Party—No parents: 71%
- Friend’s Home—No parents: 61%
- Party in Remote Location: 48%
- Party—Parents home: 43%
- Events: 34%
- Home: 31%
- Bar/Club: 27%
- Car: 23%
- Parking Lot: 22%
- Other: 40%

Source: TRU Study-Wave 42, 2003
Youth (ages 12–17):

In 2014, an estimated 679,000 adolescents ages 12–17\(^1\) (2.7% of this age group\(^2\)) had an Alcohol Use Disorder

- 367,000 females\(^1\) (3% of females in this age group\(^2\))
- 311,000 males\(^1\) (2.5% of males in this age group\(^2\)).

An estimated 55,000 adolescents (18,000 males and 37,000 females) received treatment for an alcohol problem in a specialized facility in 2014\(^3\)

---

1. Substance Abuse and Mental Health Services Administration (SAMHSA). 2014 National Survey on Drug Use and Health (NSDUH). Table 5.5A—Substance dependence or abuse in the past year among persons aged 12 to 17, by demographic characteristics: Numbers in thousands, 2013 and 2014; 2. Substance Abuse and Mental Health Services Administration (SAMHSA). 2014 National Survey on Drug Use and Health (NSDUH). Table 5.5B—Substance dependence or abuse in the past year among persons aged 12 to 17, by demographic characteristics: Percentages, 2013 and 2014; 3. Substance Abuse and Mental Health Services Administration (SAMHSA). 2014 National Survey on Drug Use and Health (NSDUH). Table 5.29A—Received substance use treatment at a specialty facility in the past year among persons aged 12 to 17, by demographic characteristics: Numbers in thousands, 2013 and 2014.
Prevalence of Drinking:
- 34.7% of 15-year-olds report that they have had at least 1 drink in their lives\(^1\)
- About 8.7 million people ages 12–20\(^2\) (22.8%\(^3\)) reported drinking alcohol in the past month
  - 23% of males and 22.5% of females\(^4\)

Prevalence of Binge Drinking:
- 5.3 million people\(^5\) (about 13.8%\(^3\)) ages 12–20 were binge drinkers
  - 15.8% males and 12.4% of females\(^4\)

Prevalence of Heavy Drinking:
- 1.3 million people\(^5\) (about 3.4%\(^3\)) ages 12–20 were heavy drinkers
  - 4.6% of males and 2.7% of females\(^4\)

---
\(^1\)Substance Abuse and Mental Health Services Administration (SAMHSA). 2014 National Survey on Drug Use and Health (NSDUH). Table 2.15B—Alcohol use in lifetime, past year, and past month, by detailed age category: Percentages, 2013 and 2014; \(^2\) Substance Abuse and Mental Health Services Administration (SAMHSA). Behavioral Health Trends in the United States: Results from the 2014 National Survey on Drug Use and Health; \(^3\) Substance Abuse and Mental Health Services Administration (SAMHSA). Results from the 2013 National Survey on Drug Use and Health: Summary of national findings. (Section 3.2); \(^4\) Substance Abuse and Mental Health Services Administration (SAMHSA). 2014 National Survey on Drug Use and Health (NSDUH). Table 2.16A—Alcohol use, binge alcohol use, and heavy alcohol use in the past month, by detailed age category: Numbers in thousands, 2013 and 2014; \(^5\) National Institute on Alcohol Abuse and Alcoholism (NIAAA). Alcohol Alert, No. 67 "Underage Drinking," 2006. Available at: http://pubs.niaaa.nih.gov/publications/AA67/AA67.htm
Consequences of Underage Alcohol Use

Alcohol use during the teenage years:

- interferes with normal adolescent brain development
- increases the risk of developing an AUD
- contributes to acute consequences: injuries, sexual assaults, and deaths—including those from car crashes

CONSEQUENCES
OF ALCOHOL

LONG-TERM EFFECTS

Alcohol Dependence
Health Problems
Increased Risk for Certain Cancers

SLURRED SPEECH
BREATHING PROBLEMS
CONCENTRATION PROBLEMS
COMA
DEATH
REDUCED INHIBITIONS
CONFUSION
MEMORY PROBLEMS
MOTOR IMPAIRMENT

Alcohol's effects are well known: Slurred speech, reduced inhibitions and motor impairment, just to name a few. As serious as those consequences are, the long-term effects of alcohol abuse are worse, including dependence, increased risk for cancers and other health problems. Remember that when you take your next drink.
The Effects Of Alcohol

Brain Damage, Addiction, Stroke.

Blurred Vision.

Slurred Speech.

Bleeding Throat, Vomiting, &/or Esophageal Cancer.

Asphyxiation caused by heart failure or choking on vomit.

Liver Failure &/or Cirrhosis of the liver.

Impotence for men & Infertility for women.

Osteoporosis.

Nerve Damage &/or Muscle Weakness.
The grownups in your life have probably told you that you aren't allowed to have alcoholic drinks, such as beer or wine. But what do kids think about this issue? KidsHealth wanted to know, so we asked 690 kids ages 9 to 13.

Most kids said teens who drink alcohol are not cool. More than 90% of the kids said they are very uncool (86%) or uncool (6%). And 89% of kids said that drinking alcohol at their age (9 to 13) was never OK. That shows that a lot of kids are pretty smart about the dangers of alcohol. They probably know that it’s risky for kids to drink alcohol because:
Most kids said teens who drink alcohol are not cool. More than 90% of the kids said they are very uncool (86%) or uncool (6%). And 89% of kids said that drinking alcohol at their age (9 to 13) was never OK. That shows that a lot of kids are pretty smart about the dangers of alcohol. They probably know that it's risky for kids to drink alcohol because:

- It can make them sick (like making them throw up, pass out, or worse).
- It can hurt their ability to make good decisions.
- It can make them do things that are embarrassing.
- It can get them into trouble (with parents or police).
- It can be addictive, meaning that the person might start needing alcohol to feel good.

But what about the kids who didn't agree? Three percent of kids said, at their age, it was always OK to drink alcohol. And although 90% of kids said they never tried alcohol, or only tried it once, 6% of kids said they often drink more than a sip — every week or every month.

Young kids who drink might be kids who don't have common sense, take risks without realizing danger, or don't listen to adults. Kids like this often have other problems, such as being disrespectful to people or property. They also might fight, lie, steal, or bully.
LIFETIME UNDERAGE DRINKING DOWN ACROSS 8TH, 10TH AND 12TH GRADERS

(Numbers in Percentage)

<table>
<thead>
<tr>
<th>Year</th>
<th>8TH</th>
<th>10TH</th>
<th>12TH</th>
</tr>
</thead>
<tbody>
<tr>
<td>'05</td>
<td>63</td>
<td>75</td>
<td>41</td>
</tr>
<tr>
<td>'06</td>
<td>62</td>
<td>73</td>
<td>41</td>
</tr>
<tr>
<td>'07</td>
<td>62</td>
<td>72</td>
<td>39</td>
</tr>
<tr>
<td>'08</td>
<td>58</td>
<td>72</td>
<td>39</td>
</tr>
<tr>
<td>'09</td>
<td>59</td>
<td>72</td>
<td>37</td>
</tr>
<tr>
<td>'10</td>
<td>58</td>
<td>71</td>
<td>36</td>
</tr>
<tr>
<td>'11</td>
<td>56</td>
<td>70</td>
<td>33</td>
</tr>
<tr>
<td>'12</td>
<td>54</td>
<td>69</td>
<td>30</td>
</tr>
<tr>
<td>'13</td>
<td>52</td>
<td>68</td>
<td>28</td>
</tr>
<tr>
<td>'14</td>
<td>49</td>
<td>66</td>
<td>27</td>
</tr>
</tbody>
</table>

8TH GRADERS 35%  
10TH GRADERS 22%  
12TH GRADERS 12%

SOURCE: NIAA, National Survey Results on Drug Use from the 2014 Monitoring the Future Study, W. J. Johnston Ls, .et al, U. of Michigan, 12/14
CURRENT UNDERAGE DRINKING DOWN ACROSS 8TH, 10TH AND 12TH GRADERS

(Numbers in Percentage)

- 8TH GRADERS: 47%
- 10TH GRADERS: 29%
- 12TH GRADERS: 20%

Alcohol Use: From Childhood Through Adolescence

Travis “Pete” Lewis, RN, PhD • , Carol Hession, RN, MSN

Alcohol use is often overlooked and more importantly unsuspected in young children 3–11 years of age. Alcohol use in preteens is commonly overlooked when there is growing evidence to suggest that the age at which one begins drinking can be predictive of future problem drinking and other substance abuse. There is a need for health care professionals and elementary school educators to be aware of the real and growing problem of alcohol use from childhood through adolescence. It is sometimes difficult to recognize because many of the effects of alcohol mimic routine presentations seen in children. This article focuses on the significance, contributing factors, effects on the body, comorbidities, and social and psychological effects of alcohol use on children through adolescence. It also examines diagnostic screening for alcohol use in adolescence and the detrimental role of the nurse in assisting with identifying and preventing the problem of alcohol use in childhood through adolescence.
Alcohol use continues to decline (41% use)

Binge drinking declined (12% binge)

- 1 in 5 (19%) 12th graders reported binge drinking in previous 2 weeks
- Some drink heavily: extreme binge drinking
  - 10+ (7%) or 15+ (4%) drinks in a row on at least one occasion within previous 2 weeks
- Peer disapproval is rising

Percent of Students Reporting 5+ Drinks in a Row in Last 2 Weeks, by Grade

Denotes significant difference between 2014 and 2015

SOURCE: University of Michigan, 2015 Monitoring the Future Study
Binge Drinking
Lorena Siqueira, Vincent C. Smith and COMMITTEE ON SUBSTANCE ABUSE
Pediatrics 2015;136:e718; originally published online August 31, 2015;
DOI: 10.1542/peds.2015-2337

The online version of this article, along with updated information and services, is
located on the World Wide Web at:
http://pediatrics.aappublications.org/content/136/3/e718.full.html
From the American Academy of Pediatrics

Clinical Report

Binge Drinking

Lorena Siqueira, MD, MSPH, FAAP, Vincent C. Smith, MD, MPH, FAAP, COMMITTEE ON SUBSTANCE ABUSE

ABSTRACT

Alcohol is the substance most frequently abused by children and adolescents in the United States, and its use is associated with the leading causes of death and serious injury at this age (i.e., motor vehicle accidents, homicides, and suicides). Among youth who drink, the proportion who drink heavily is higher than among adult drinkers, increasing from approximately 50% in those 12 to 14 years of age to 72% among those 18 to 20 years of age. In this clinical report, the definition, epidemiology, and risk factors for binge drinking; the neurobiology of intoxication, blackouts, and hangovers; genetic considerations; and adverse outcomes are discussed. The report offers guidance for the pediatrician. As with any high-risk behavior, prevention plays a more important role than later intervention and has been shown to be more effective. In the pediatric office setting, it is important to ask every adolescent about alcohol use.

Copyright © 2015 by the American Academy of Pediatrics

Responses to this article

What Constitutes One Drink?
Thomas R Simpson
**Binge Drinking**

Lorena Siqueira, MD, MSPH, FAAP, Vincent C. Smith, MD, MPH, FAAP; COMMITTEE ON SUBSTANCE ABUSE

**abstract**

Alcohol is the substance most frequently abused by children and adolescents in the United States, and its use is associated with the leading causes of death and serious injury at this age (i.e., motor vehicle accidents, homicides, and suicides). Among youth who drink, the proportion who drink heavily is higher than among adult drinkers, increasing from approximately 50% in those 12 to 14 years of age to 72% among those 18 to 20 years of age. In this clinical report, the definition, epidemiology, and risk factors for binge drinking; the neurobiology of intoxication, blackouts, and hangovers; genetic considerations; and adverse outcomes are discussed. The report offers guidance for the pediatrician. As with any high-risk behavior, prevention plays a more important role than later intervention and has been shown to be more effective. In the pediatric office setting, it is important to ask every adolescent about alcohol use.

Adolescence is a time of exploration and limit testing; therefore, it is no coincidence that this is the chief period for initiating substance use. Alcohol is the substance most frequently used by children and adolescents in the United States, and its use in youth is associated with the leading causes of death and serious injury at this age (i.e., motor vehicle accidents, homicides, and suicides). Drinking levels that may cause little or no problem for adults may be dangerous for adolescents. Recent studies indicate that alcohol use during this period of growth may interrupt key
Smoking
Monitoring the Future Study

- Cigarette use reached historical lows in 2014
  - For all grades combined, 8% reported smoking in prior month
- Reduction in # of students who report that cigarettes are easy to get
- Increasing peer disapproval
- Increased perception that smoking carries “great risk” to users

CIGARETTE USE
1976–2013

Percentages of students who smoked cigarettes during the last 30 days.

African American Teenagers

'70s 18%  '80s 12%  '90s 11%  '00s 10%

White American Teenagers

'70s 37%  '80s 32%  '90s 37%  '00s 28%  '10s 21%

Dec. 16, 2014
Contacts: Jared Wadley, (734) 936-7819, jwadley@umich.edu
Ariel Bronson (734) 647-1083, mttinformation@umich.edu

EMBARGOED FOR RELEASE AT 12:01 A.M. ET, TUESDAY, DEC. 16, 2014

Note: Video explaining the results is available at http://youtu.be/9lpJO7j3k8U

E-cigarettes surpass tobacco cigarettes among teens

ANN ARBOR—In 2014, more teens use e-cigarettes than traditional, tobacco cigarettes or any other tobacco product—the first time a U.S. national study shows that teen use of e-cigarettes surpasses use of tobacco cigarettes.

These findings come from the University of Michigan's Monitoring the Future study, which tracks trends in substance use among students in 8th, 10th and 12th grades. Each year the national study, now in its 40th year, surveys 40,000 to 50,000 students in about 400 secondary schools throughout the United States.

"As one of the newest smoking-type products in recent years, e-cigarettes have made rapid inroads into the lives of American adolescents," said Richard Miech, a senior investigator of the study.

The survey asked students whether they had used an e-cigarette or a tobacco cigarette in the past 30 days. More than twice as many 8th- and 10th-graders reported using e-cigarettes as reported using tobacco cigarettes.

Specifically, 9 percent of 8th-graders reported using an e-cigarette in the past 30 days, while only 4 percent reported using a tobacco cigarette. In 10th grade, 16 percent reported using an e-cigarette and 7 percent reported using a tobacco cigarette. Among 12th-graders, 17 percent reported e-cigarette use and 14 percent reported use of a tobacco cigarette.
E-Cigarette Use within past 30 days

More teens use e-cigarettes than traditional cigarettes

<table>
<thead>
<tr>
<th>Grade</th>
<th>E-Cigarette</th>
<th>Cigarette</th>
</tr>
</thead>
<tbody>
<tr>
<td>8th</td>
<td>9%</td>
<td>4%</td>
</tr>
<tr>
<td>10th</td>
<td>16%</td>
<td>7%</td>
</tr>
<tr>
<td>12th</td>
<td>17%</td>
<td>14%</td>
</tr>
</tbody>
</table>

Teens using e-cigs more than regular cigarettes... but is that a good thing?
Monitoring the Future Study

- 1998 = 56% of students had ever tried tobacco cigarettes
- 2014 = 23%
  - Concern is that use of e-cigarettes will reverse decline in tobacco use = “gateway” to tobacco use
- % of 8th graders perceived great risk of harm:
  - 15% = with regular use of e-cigarettes
  - 62% = smoking one or more packs of tobacco cigarettes per day

TEENS ARE MORE LIKELY TO USE E-CIGARETTES THAN CIGARETTES

Past month use

8th grade: 4.0%, 8.7%
10th grade: 7.2%, 16.2%
12th grade: 13.6%, 17.1%

Only 14.2% of 12th graders view e-cigarette use as harmful, which is less than 5 students in the average class.

The National Institute on Drug Abuse is a component of the National Institutes of Health, U.S. Department of Health and Human Services. NIDA supports most of the world’s research on the health aspects of drug abuse and addiction. Fact sheets on the health effects of drugs of abuse and information on NIDA research and other activities can be found at www.drugabuse.gov.
TEENS ARE MORE LIKELY TO USE E-CIGARETTES THAN CIGARETTES

*Past-month use

- 8th grade: 3.6%
- 10th grade: 6.3%
- 12th grade: 14.0%

64.7% of 12th graders reported vaporizing “just flavoring” in their last e-cigarette; some didn’t know what they inhaled. E-cigs are unregulated so flavored liquid might actually contain nicotine.

- Flavoring: 64.7%
- Nicotine: 22.2%
- Marijuana or hash oil: 6.1%
- Don't know: 6.3%

www.drugabuse.gov
Percent of Students Reporting Daily Marijuana, Daily Cigarette Use in Past Month, by Grade

SOURCE: University of Michigan, 2015 Monitoring the Future Study
Marijuana
Monitoring the Future Study

Marijuana

- 24% use across all 3 grades
- Belief that regular use is harmful is declining
- Personal disapproval for use is declining
- 1 in 17 (5.8%) high school seniors is a current daily or near-daily user

MARIJUANA: AS PERCEIVED HARM DROPS, USE GOES UP

- **1993**
  - Using: 26.0%
  - Perceived Harm: 35.6%

- **2003**
  - Using: 26.6%
  - Perceived Harm: 34.9%

- **2013**
  - Using: 19.5%
  - Perceived Harm: 36.4%

*Past-year use in 12th graders.*

- Using
- Perceived Harm
  (saw great risk in smoking marijuana occasionally)
High school pot use holds steady

Percent reporting marijuana use in the past year

12th graders

10th graders

8th graders

Source: 2015 Monitoring the Future Survey
Percentage of U.S. 12 Grade Students Reporting Daily Marijuana Use vs. Perceived Risk of Regular Marijuana Use

Source: The Monitoring the Future study, the University of Michigan
A third of high school seniors in medical marijuana states report getting marijuana from someone else’s prescription.

Source of Marijuana among 12th Graders in 2012 and 2013, by State Policy *

*Categories not mutually exclusive
**Statistically significant difference

SOURCE: University of Michigan, 2013 Monitoring the Future Study
Short-term Effects of Marijuana

- Problems with memory and learning
- Distorted perception
- Difficulty in thinking and problem-solving
- Loss of coordination

- **Long-term chronic use** leads to physical dependence and withdrawal and psychological dependence and addiction
Other Risks

- Association between marijuana use and 
  - increased risk for depression 
  - increased for and earlier onset of schizophrenia 
  - other psychotic disorders 

- Risk is greater in teens with genetic predisposition
Monitoring the Future Study

- Illicit drug use declined

- Greatest decline: *synthetic marijuana* (K-2, Spice)
  - 6% of 12th graders used within last year
  - Synthetic chemical components of marijuana sprayed onto shredded plant material (smoked)
  - Very potent, unpredictable
  - Severe side effects: acute psychosis, MI

- Most students do not recognize synthetic marijuana as a dangerous class of drugs

How alcohol and marijuana affected teen users

- Led to regrettable behavior
- Hurt relationship with significant other
- Hurt relationships with teachers and supervisors
- Led to less energy
- Caused unsafe driving
- Caused none of the problems in the survey

Source: "Adverse psychosocial outcomes associated with drug use among US high school seniors: a comparison of alcohol and marijuana"
Monitoring the Future Study

- Use of other hallucinogens has also declined:
  - Ecstasy (MDMA)
  - Salvia
  - Mushrooms (Psilocybin “shrooms”)

Methylenedioxymethamphetamine = MDMA (Ecstasy)

- First used as appetite suppressant
- **Stimulant psychedelic drug** = drug of abuse
- *Induces euphoria*
- Alters serotonin and dopamine neurotransmission
  - Ecstasy users have decreased 5-HIAA (a metabolite of 5-HT) indicated decreased 5-HT function and loss of 5-HT neurons
- **Enhances self-awareness and ability to communicate**
- Duration of action = 4-6 hours
Ecstasy

Popular NickNames for Ecstasy:
Adam; XTC; Go; Disco Biscuit; Cristal; X; Hug Drug
Side Effects of Ecstasy

- Anorexia
- Nausea
- **Trismus and bruxism**
- Muscle stiffness
- Ataxia
- Sweating
- Tachycardia, hypertension
Side Effects of Ecstasy

- Later effects = fatigue and insomnia
- **Tolerance** occurs = requires increased dosage
- **Hepatotoxic**
- Long-term psychiatric problems
- **Fatal** side effects = cardiovascular toxicity (hypertension/stroke), seizures, hyperthermia, coagulopathy
Ecstasy Use

The chart shows the percentage of individuals who used ecstasy at different grades:

- **Lifetime**
  - 8th Grade: 3%
  - 10th Grade: 5%
  - 12th Grade: 6%

- **Annual**
  - 8th Grade: 2%
  - 10th Grade: 4%
  - 12th Grade: 5%
Monitoring the Future Study

- Use of other illicit drugs remains unchanged:
  - Heroin
  - Crack
  - Methamphetamine
  - Crystal methamphetamine
  - Ritalin and Adderall
  - LSD
  - Inhalants
  - Powder cocaine
  - Tranquilizers
  - Sedatives
  - Anabolic steroids

Stimulants

- Focalin
- Adderall
- Ritalin
- Concerta
Youth Stimulant Use Trends Upward

Stimulant use in the U.S. population age 18 or younger increased overall from 1996 to 2008, with an estimated 2.8 million children and adolescents receiving stimulant medication in 2008.

Source: Samuel Zuvekas, Ph.D., Benedetto Vitiello, M.D., AJP in Advance, September 28, 2011
Use of Adderall and Perceived Risk of Harm by 12th Graders

*Significant increase from 2009
^Significant decrease from previous year

Source: The Monitoring the Future study, the University of Michigan
Figure 1. Parents’ Perceptions of their Teens’ “Study Drug” Use Compared with Teens’ Self-Reported Use

1 in 100 parents think their teens have used “study drugs” *

1 in 8 high school seniors report using “study drugs” **

*Source: C.S. Mott Children Hospital National Poll on Children's Health, 2013 data among parents with teens 13-17.
**Source: Monitoring the Future Study, 2012 data regarding 12th graders
Almost 90 Percent of Teens Who Abuse ADHD Drugs Use Someone Else’s Medication

BY JOIN TOGETHER STAFF

March 9th, 2016 / 0

A study of teens finds almost 90 percent of those who abuse medications for attention deficit hyperactivity disorder (ADHD) say they used someone else’s medication.

The study included more than 11,000 American children and teens ages 10 to 18, who were interviewed between 2008 and 2011. The researchers found 7 percent said they had used a prescription stimulant drug in the past month, and more than half said their use of the drug was non-medical, HealthDay reports. Non-medical use included taking more pills than prescribed by their doctor, using someone else’s medication, or smoking, snorting or sniffing the medication instead of taking it orally.

Using someone else’s medication was the most frequently reported form of misuse, at 88 percent, the researchers wrote in Drug and Alcohol Dependence. The study found 39 percent took more medication than prescribed.

“It is so important for physicians and parents to counsel youth who have prescription stimulants to never share their medications,” said co-author Linda B. Cottler, PhD, MPH, of the University of Florida in a news release.
**STIMULANTS**

2013 Monitoring the Future Survey Results Past-Year Use

**ADDERALL**
Use of Adderall without medical supervision was somewhat higher for college students than for non-college respondents in 2013.

- College Student Group: 10.7%
- Non-College Group: 6.8%

**RITALIN**
Use of Ritalin was also slightly higher among college students in 2013 than among their non-college peer group.

- College Student Group: 3.6%
- Non-College Group: 2.3%

Amphetamine use, such as ADDERALL & RITALIN use, nearly doubled between 2008 and 2013

Source: Monitoring the Future Data, http://www.monitoringthefuture.org

Stimulants (Ritalin, Adderall) Act like Cocaine Directly in the Dopamine Cells

Distribution in the Human Brain of Cocaine and Ritalin

Cocaine and Ritalin Act on the Same Sites in Brain

Volkow, et al. (BNL)
Dental Implications of Stimulants

- Sympathomimetics
- Increase heart rate, pulse rate and blood pressure
- Caution with epinephrine
What are Predatory Drugs?

"Predatory Drugs" is a term used to identify drugs that can be used to facilitate sexual assault. In the late 1990s, law enforcement noticed a new, disturbing trend of rape cases that involved the drugging of victims with chemicals such as rohypnol, GHB, and ketamine.

Ecstasy

Gamma Hydroxy-Butyrate

Ketamine

Rohypnol
Rohypnol

- **flunitrazepam** – benzodiazepine not approved for use in the US
- “date rape drug”
- When mixed with alcohol, incapacitates victim and prevents them from resisting sexual assault
  - Muscle relaxation, amnesia, sedative hypnotic
- Lethal when mixed with alcohol or other depressants
- Nicknames: roofies, roach, rope
GHB
(gamma hydroxy-butyrate)

- **sodium oxybate (Xyrem)** – CNS depressant
  - Analogues to GHB found in industrial solvents and cleaners = not detected in tox screen
- Mixed as liquid
- **Euphoric, sedative, anabolic** (body building)
- Associated with sexual assault cases
  - Coma and seizures may occur when abused or taken with methamphetamine
  - Risk of seizure, difficulty breathing; death from overdose
  - Withdrawal effects: insomnia, anxiety, tremors, sweating
- Nicknames: liquid ecstasy, somatomax, scoop, Georgia Home Boy, grievous bodily harm
Ketamine

- CNS depressant
- Date rape drug
- **Sedative hypnotic drug, analgesic and hallucinogenic**
  - Similar to PCP (phencyclidine) but more rapid onset and is less potent
  - Feelings of pleasant weightlessness to full-fledged out-of-body or near-death experiences
- Generally snorted
- **Used as general anesthetic (also in veterinary medicine)**
- Nicknames: Special K, Jet, Super Acid, Honey Oil, Green, K, Cat Valium, Super C
TECH & SCIENCE

CONTROVERSY OVER STUDENT NAIL VARNISH DATE RAPE DRUG DETECTOR

BY NATALIE ILSLEY ON 8/28/14 AT 5:44 AM

The Undercover Colors team.

TWITTER
Nail Polish That Detects Date Rape Drugs
Is there any good news?
I pledge to safeguard my medicines and to talk with my family about medicine abuse.

First Name  Email  TAKE THE PLEDGE  ABOUT THE PLEDGE
Prescription Drug Abuse

The Medicine Abuse Project is a five-year action campaign that aims to prevent half a million teens from abusing medicine by the year 2017. The campaign provides comprehensive resources for parents and caregivers, law enforcement officials, health care providers, educators and others so that everyone can take a stand and help end medicine abuse. The Medicine Abuse Project website includes information about prevention of prescription drug abuse, painkiller addiction, and over-the-counter (OTC) medicine abuse. It provides information about how to dispose of medicine and how to safeguard the medicine in your home, as well as lists medicine abuse facts and includes comprehensive information about the most abused prescription drugs.

The Medicine Abuse Project aims to prevent half a million teens from starting to abuse medicine.
Health Care Providers

One in six teenagers has used a prescription medicine to get high. Health care providers are in a powerful position to prevent this growing and devastating problem. The Medicine Abuse Project includes information for you to use with your teenage patients and their parents, as well as any patients for whom you may prescribe medicine. Providers of all specialties will find useful tools and resources below to help make this sensitive issue easier to bring up and discuss with patients. By learning more about how to reduce the supply of medicine available for diversion, screening your patients for substance abuse and advising your patients to monitor, safeguard and properly dispose of unused medicine, you can play an important role in preventing medicine abuse. Below is a wide variety of useful materials about medicine abuse for you and your patients.
Health Care Providers

Best Practices and Association Guidance

Commentary: A Simple Checklist May Reduce Prescription Opiate Overdose

A. Thomas McLellan, PhD, CEO, Treatment Research Institute, discusses using a 5-step checklist as part of responsible opioid prescribing and...
Read Full Article

Management of Opioid Therapy for Chronic Pain

These 2010 guidelines (74 pages) come from the Department of Veterans Affairs and The Department of Defense.
Read Full Article

NYC Department of Health and Mental Hygiene: Preventing Misuse of Prescription Opioid Drugs

Rich resource with practical information for providers on pain management therapy, prescribing opioids and related assessment tools. Includes additional resources...
Read Full Article

American Academy of Family Physicians

Read Full Article

American College of Emergency Physicians

Read Full Article

American Dental Association: Prevention of Prescription Opioid Abuse- the Role of the Dentist.

All providers can apply the critical information and concepts covered in this article to their practice, including use of SBIRT.
Read Full Article

The American College of Preventive Medicine (ACPM): October 12th Webinar

ACPM
Key Messages from Today
8 Ways to Talk With Your Teen about Drugs and Alcohol

Talking to your teen about substance abuse doesn’t have to be difficult. References to drugs and alcohol appear in headlines, sitcoms, movies and advertisements. Take advantage of these opportunities to start a conversation with your child.

1. **Use blocks of time** such as after dinner, before bedtime, before school or on the drive to or from school and extracurricular activities to talk about drugs and why they’re harmful.

2. **Take advantage of everyday “teachable moments.”** Teachable moments refer to using every day events in your life to point out things you’d like your child to know about.
Tips to Talk to Kids About Drug and Alcohol use

- Use blocks of time
- Take advantage of everyday “teachable moments”
- Point out alcohol, tobacco and drug-related situations
- Use newspaper headlines or TV news stories as a conversation starter
Tips to Talk to Kids About Drug and Alcohol use

- Watch TV with your kids and ask them what they think
- Ask open-ended questions
- Share stories of people in recovery
- View the Partnership for Drug-Free Kids drug guide

http://www.drugfree.org/resources/8-ways-to-talk-with-your-teen-about-drugs-and-alcohol/#at_pco=tst-1.0&at_si=57424549a41f625e&at_ab=per-2&at_pos=0&at_tot=2
BREAKING POINTS, directed by Tucker Capps, is a 30-minute documentary intended for adults that explores the stress and pressures our teens face every day, as well as the unhealthy ways that many of them cope, including abusing prescription stimulants.