Substance Abuse in US and Europe

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Supply of Legal Opioid Analgesics

https://ppsg.medicine.wisc.edu/chart
Ever-Expanding List of Drugs of Abuse

- Opioids (heroin, prescription analgesics, loperamide)
- Stimulants (methamphetamine, cocaine, Adderall, Concerta, synthetic cannabinoids)
- Cannabinoids (marijuana)
- Hallucinogens (LSD, peyote, ketamine)
- Antipsychotics (olanzapine)
- Novel psychoactive substances (NPS) “Designer Drugs”
- Any CNS active drug?
  - Gabapentin, pregabalin
  - Nicotine
Risk Factors for Substance Abuse

- **Family history of addiction.** Drug addiction is partially genetic predisposition.
- **Taking a highly addictive drug.** Using multiple drugs. Necessary, but not sufficient to cause addiction alone.
- **Having another mental health disorder.** Depression, attention-deficit/hyperactivity disorder (ADHD) or post-traumatic stress disorder.
- **Anxiety, depression and loneliness.** “Chemical coping” with these painful psychological feelings and can make these problems even worse.
- **Gender**
  - Male = increased risk of drug abuse
  - Female = increased risk of Rx drug abuse. Progression of abuse is faster.
- **Peer pressure.** Particularly for young people.
- **Lack of family involvement.** Difficult family situations or lack of a bond with your parents or siblings may increase the risk of addiction.
Progression of Prescription Drug Abuse

The Balloon

- Person in Pain
- Susceptible Person
- Recreational Abuser
- Abuse of Other Drugs

Intact → Chewed → Crushed

Outcomes
- SUD
- Overdose
- Death
Demographics of Prescription Drug Abuse

- **Who?**
  - Young, expanding into older age groups
  - Young adults at higher risk, but increasing prevalence in all age groups
  - Males more prevalent in recreational
  - Female more prevalent in prescription drug abuse

- **Where?**
  - Rural, Urban
  - High income, low income
  - Role of distribution systems
Magnitude of Drug Abuse
Abuse Problem is Extraordinarily Large and Growing

- ~8% of pain patients x millions = large problem
  - 80,000 per 1 million
  - 50 million pain patients = 4.8 million substance abusers just from pain patients alone
- True fraction of “real” pain patients that develop substance abuse is unknown
- Intermingling of “patients” and “abusers”
  - Common clinical conditions
  - Often mental health component to abuse
  - Movement between drugs opioid-stimulants-novel psychoactive substances-antipsychotic substances
- Important not to pigeonhole
US: Abuse of Illicit Drugs is Exceeds Marijuana

National Survey of Drug Use and Health (NSDUH)
Past 30 day use, 2002-2014

Percent Using in Past Month

Illicit Drugs
Marijuana
Nonmedical Use of Psychotherapeutics
Cocaine
Hallucinogens
Mosaic Surveillance of Prescription Drug Abuse

- Acute Health Events
- Poison Center Program
- Entering Treatment Program
- Survey of Key Informants’ Patients
- Opioid Treatment Program
- Advanced Users/Targeted Investigations
- Researcher & Patients Interacting Directly (RAPID)

- Non-Medical Use
  - Survey of Non-Medical Use of Prescription Drugs (NMURx)

- Drug Transactions
  - Drug Diversion Program

- Illicit Market Price
  - StreetRx Program

- Internet Chatter
  - Web Monitoring Program
US: Lifetime Nonmedical Use (NMU) of Drugs

Prevalence (95% CI)

- Cannabis
- Loperamide
- Heroin
- Benzodiazepines
- Non-pharmaceutical fentanyl
- Gaba-Analogues
Emerging Drugs of Abuse

- 429 patients from detox and rehab units of Addiction Institute of New York, 73 (17%) reported abuse of prescribed atypical antipsychotics with alcohol, opioids, cocaine/crack, methamphetamine, and/or cannabis
- Quetiapine was the most abused (84.9%)
- Other antipsychotics - olanzapine (17.8%), risperidone (24.7%), aripiprazole (20.5%), ziprasidone (8.1%), and asenapine (2.9%)
- Most of the antipsychotics came from friends or family
- Patients listed "getting mellow" or "slowing down" as the leading desired effects from mixing atypical antipsychotics with recreational drugs.
US: Marijuana Use in Past 30 days.

Note: For substate region definitions, see the "2012-2014 National Survey on Drug Use and Health Substate Region Definitions" at [http://www.samhsa.gov/data/](http://www.samhsa.gov/data/).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Surveys on Drug Use and Health (NSDUHs), 2012 to 2014.
US: Use and NMU of Prescription Drugs

3Q 2016

- Opioids
- Benzodiazepines
- Stimulants

Prevalence (95% CI)

- Lifetime Use
- Lifetime NMU
- Last 90 day NMU

NMU
US: Heroin Deaths Are Intertwined With Prescription Opioid Deaths

National Vital Statistics System, Mortality File

Dart et al, NEJM, 2015
National Trends in Opioid Abuse and Diversion, United States

Prescriptions of Opioid Analgesics

RADARS Drug Diversion Program

RADARS Poison Center Program

RADARS Opioid Treatment Program
Europe
Europe: Top 10 Drugs In Emergency Department Presentations, 2014

Drug identifications

Heroin: 1400
Cocaine: 1200
Cannabis: 1000
GHB/GEL: 800
Amphetamine: 600
MDMA: 400
Clonazepam (benzodiazepine): 200
Methadone: 100

NB: Results from 5,409 emergency presentations in 16 sentinel sites in 10 European countries. Source: European Drug Emergencies Network (Euro-DEN).
Number of Seizures, EU Member States

Number of seizures of new psychoactive substances reported to the EU Early Warning System: trends and distribution by category in 2015

- **Cathinones**: 33%
- **Cannabinoids**: 29%
- **Benzodiazepines**: 11%
  - Phenethylamines: 6%
  - Piperazines: 6%
  - Others: 5%
  - Arylalkylamines: 4%
  - Arylcyclohexylamines: 2%
  - Tryptamines: 1%
  - Piperidines and pyrrolidines: 1%
  - Opioids: 1%

NB: Data for EU Member States, Turkey and Norway.
Burden of Drug Abuse
Drugged Driving Automobile Accidents Rising

'Drugged driving' surpasses drunken driving among drivers killed in crashes, report finds

By Robert Jimison, CNN
Updated 11:05 AM ET, Fri April 28, 2017
Cannabis Impaired Driving

Risk of More Serious ED Outcome is Increased When Drug Are Combined

**Table 2. Predicted risk (in percent) of a more serious outcome from emergency department (ED) visits involving benzodiazepines alone or in combination with opioids or alcohol,** **2005 through 2011, by drug combination and age (patients aged 12 and older)**

<table>
<thead>
<tr>
<th>Drug combination</th>
<th>Aged 12 to 34</th>
<th>Aged 35 to 44</th>
<th>Aged 45 to 64</th>
<th>Aged 65 or older</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzodiazepines alone</td>
<td>28%</td>
<td>30%</td>
<td>37%</td>
<td>39%</td>
</tr>
<tr>
<td>Benzodiazepines and opioids</td>
<td>37%</td>
<td>43%</td>
<td>47%</td>
<td>59%</td>
</tr>
<tr>
<td>Benzodiazepines and alcohol</td>
<td>35%</td>
<td>43%</td>
<td>51%</td>
<td>55%</td>
</tr>
<tr>
<td>Benzodiazepines, opioids, and alcohol</td>
<td>39%</td>
<td>47%</td>
<td>57%</td>
<td>70%</td>
</tr>
</tbody>
</table>

National Overdose Deaths
Number of Deaths from Prescription Opioid Pain Relievers (excluding non-methadone synthetics)

Source: National Center for Health Statistics, CDC Wonder
National Overdose Deaths
Number of Deaths from Benzodiazepines

Source: National Center for Health Statistics, CDC Wonder
## Costs of Substance Abuse: National Institute on Drug Abuse

<table>
<thead>
<tr>
<th>Substance</th>
<th>Health Care</th>
<th>Overall</th>
<th>Year Estimate Based On</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco</td>
<td>$168 billion</td>
<td>$300 billion</td>
<td>2010</td>
</tr>
<tr>
<td>Alcohol</td>
<td>$27 billion</td>
<td>$249 billion</td>
<td>2010</td>
</tr>
<tr>
<td>Illicit Drugs</td>
<td>$11 billion</td>
<td>$193 billion</td>
<td>2007</td>
</tr>
<tr>
<td>Prescription Opioids</td>
<td>$26 billion</td>
<td>$78.5 billion</td>
<td>2013</td>
</tr>
</tbody>
</table>

**Total - Over $800 billion**

https://www.drugabuse.gov/related-topics/trends-statistics
Presenteemism

Drug Abuse Costs Employers $81 Billion Per Year

Occupational health associations studying impact of drugs on the workplace. Drugs cost business $81 billion. Most drug users are employed. Recent changes to marijuana laws have employers concerned.

http://www.ehstoday.com/health/drug-abuse-costs-employers-81-billion-year
Europe Trends in Overdose Deaths

Characteristics

Mean age at death

Deaths with opioids present

22%  78%

38  82%

Age at death

<25  9%

25–39  42%

40–64  45%

>64  4%

Trends in overdose deaths

- Turkey
- Spain
- Sweden
- Germany
- United Kingdom
- Other countries


0  1000  2000  3000  4000  5000  6000  7000  8000  9000
Europe New HIV From IV Drug Injection, 2016

Newly diagnosed HIV cases related to injecting drug use: overall and selected trends and most recent data

Cases in the European Union

Cases per million population

Estonia, Latvia, Luxembourg, Lithuania, Greece, Romania, Bulgaria, Ireland, Portugal

NB: Data for 2014 (source: ECDC).
Summary

- Overall substance abuse in US is rising, primarily due to novel psychoactives and heroin
  - Prescription drug abuse is actually decreasing
  - Both genders, all age groups, all income brackets
- Substance abuse in Europe is probably increasing, but more difficult to measure than US
- Leading drugs of use/abuse in both US and Europe are alcohol and cannabis.
  - Leading opioid in both US and Europe is heroin.
- The costs in terms of human suffering as well as economic costs are staggering.
- In US, massive efforts underway to address the problem.
End