Heroin Resurgence in America: Implications for Policy and Practice

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Psychiatry Grand Rounds
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Outline

• Background and Epidemiology
• Understanding Addiction
• Prescribing practices
• Physicians Role in Identification and Referral to treatment
• Treatment
BACKGROUND AND EPIDEMIOLOGY
History of opioids

• Opiate derived from opium
• “Opos” Greek word for “juice
  – Liquid collected from unripe seed capsule of *Papaver somniferum*
    aka Opium Poppy
• Referenced in Sumerian clay tablets in 3000 B.C
• Expanded to Asia and Europe in Middle Ages
• Considered a cure for all ailments
1803: Pharmacy Apprentice
Friedrich Wilhelm Adam
Sertürner Isolated Morphium from the poppy seed

Named Morphine after Morpheus the Greek god of dreams
Morphine in the 1850’s-60’s

- Eliminated severe pain associated with trauma and medical operations
- Eliminated danger of overdose associated with raw poppy juice
- “Wonder drug” with euphoric side effects
- In time, tens of thousands civil war soldiers became morphine addicts
Morphine to heroin

- 1874: Heroin first isolated from morphine and marketed as the safe effective alternative to morphine
- Produced and marketed by Bayer Company
- 1900’s: heroin abuse and addiction common
Drug regulating laws

• Early 1900’s: congress and many states began to pass laws regulating sale and use of cocaine and opiates

• 1906: Pure Food and Drug Act of 1906
  – Requiring OTC meds to label if contents include morphine, cocaine, cannabis or chloral hydrate

• 1914: Harrison Narcotic Act
  – Narcotics and cocaine illegal

• 1956: Federal Narcotics Control Act
  – Minimum mandatory sentences for violation of law

• 1970: Controlled Substances Act
  – schedules drugs according to potential for addiction
America’s heroin history

• Significant majority of American heroin addicts in the mid-1800’s were middle- and upper-class women who bought the drug for their medicine cabinet

• Public perception of opiate addicts: depraved, poor, and foreign

• Harlem jazz scene in 1930-40’s rejuvenated heroin

• Supplied through “French connection” collaboration between gangsters in Marseille and Sicilian Mafia
America’s heroin history

• 1960’s concerns for rampant abuse by Vietnam war servicemen
  • 10-15% addiction rate

• By late 60’s, three-quarters of a million Americans were addicted
  • predominantly young minority urban men

• 1980’s-90’s purity of street heroin led to more effective snorting and smoking

• 1990’s rate increased significantly with south American cartels getting into the heroin game
Heroin today

• Afghanistan
  • 80% of world production
  • 4% of US supply

• Mexico and Colombia
  • Biggest US suppliers (Office of National Drug Control Policy)

• Saturation of heroin on the market has overall impact on lowered global prices
  • Heroin $5/bag vs 1 vicodin $5/pill (Surratt H)
  • Cheap and accessible alternative to prescription opioids!
New Face of Heroin Is Young, White, and Suburban, Study Finds

According to a new study, the demand for heroin is higher among younger, white, and suburban populations. The study found that the drug is increasingly being used by individuals who have not previously been associated with drug use. The findings suggest a shift in the demographics of heroin users, with a growing number of young, white, and suburban individuals turning to the drug.

In Vermont, the rate of overdose deaths from heroin has increased significantly in recent years. The state has seen a rise in the number of young, white, and suburban individuals seeking treatment for opioid addiction. The study highlights the need for targeted interventions to address the growing problem.

The study also notes that the use of heroin is often driven by factors such as stress, anxiety, and social influence. It emphasizes the importance of understanding the underlying causes of heroin use in order to develop effective prevention and treatment programs.

In conclusion, the rising trend of heroin use among young, white, and suburban populations highlights the need for targeted interventions. Further research is needed to understand the underlying factors driving this trend and to develop effective strategies to address the growing problem.
The Problem

- An estimated 22.1 million people aged 12 or older have a diagnosable alcohol or illicit drug use disorder (SAMHSA, 2011)
- Drug overdose was the leading cause of injury death in 2012 – age group 25-64 (CDC, 2014)
- Nearly 15,000 people die every year of overdoses involving prescription painkillers
  - 70% of overdose deaths involve opioids
- 2012 an estimated 600,000 people reported heroin use in the past year, up from 300,000 in 2007 (SAMHSA, 2013)
Cost of Addiction

- 559 Billion USD annually for all substances (NIDA 2011)

- 181B USD for illicit drugs
  - health care, productivity loss, crime, incarceration and drug enforcement

- 72.5B for opioid abuse alone (Volkow 2014)
  - health and economic costs are similar to those associated with other chronic diseases such as asthma and HIV infection
Addiction  Big Pharma  Crime  DEA  Deaths  doctors  doctor shopping  drug  monitoring program  education  FDA  Heroin  hydrocodone  methadone  naloxone  Narcan  narcotics  OP  Opana  opiates  opioid  overdose  overdoses  OXY  oxy-to-heroin  oxycodone  Oxycontin  pain clinics  painkillers  pain medication  Percocet  pharmaceutical  pharmacy  pill mills  pills  pills-to-heroin  polictics  prescription  drug  abuse  prescription  drug monitoring program  prescriptions  Purdue Pharma  roxycodone  Schedule II  Narcotics  Teen deaths  Vicodin  Xanax

UNDERSTANDING ADDICTION
How opioids affect the brain and body

• Mu, Delta, and Kappa receptors in brain, spinal cord, GI, other parts
• When activated: Euphoria, Analgesia, Confusion, Constipation, Respiratory depression
• Hypoxia: short and long term psychological and neurological effects, including coma and permanent brain damage
• Long-term effects of opioid addiction on the brain less clearly known
  ◦ Studies have shown some deterioration of the brain’s white matter due to heroin use
  ◦ May affect decision-making abilities, the ability to regulate behavior, and responses to stressful situations (Wollman et al 2015)
Disease of addiction

- Opioid travels quickly to the brain through the bloodstream
- Converted to morphine
- Morphine binds to opiate receptors within reward pathway
  - VTA, NA, cortex
- Morphine also binds to areas in the pain pathway
  - Thalamus, brainstem, and spinal cord

Receptors up close: NA synapse

Opiates bind to opiate R on the neighboring terminal
Sends signal to DA terminal to release more DA
→ DA surge = pleasure

Relationship between addiction and dependence

- 2 different areas responsible for addiction and dependence
- Addiction: reward pathway
- Dependence: pain pathway
- Possible to be dependent without addiction
- Acute pain control post op is unlikely to lead to addiction

The Addicted Mind

http://www.methadone.us/opioid-dependence/
DSMV: Opiate Use Disorder

- DSM-IV substance abuse and substance dependence now a single disorder measured on a continuum from mild to severe (DSM V 2013)
- A problematic pattern of opioid use leading to clinically significant impairment or distress, as manifested by at least 2/11 criteria within a 12-month period
- Criterion A criteria fit within overarching groups:
  - Impaired control, social impairment, risky use, and pharmacological criteria
PRESCRIBING PRACTICES
Precipitous increase in Opioid Rx

Opioid Prescriptions Dispensed by US Retail Pharmacies 1991-2013

Pain relievers exceed other non medical prescription drug use

Past Month Nonmedical Use of Types of Psychotherapeutic Drugs among Persons Aged 12 or Older: 2002-2012

SAMHSA Results from the 2012 National Survey on Drug Use and Health: Summary of National Findings
Where do the opioids come from?

Source Where Pain Relievers Were Obtained for Most Recent Nonmedical Use among Past Year Users Aged 12 or Older: 2011-2012

SAMHSA Results from the 2012 National Survey on Drug Use and Health: Summary of National Findings
<table>
<thead>
<tr>
<th>Name</th>
<th>Commercial &amp; Street Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Codeine</td>
<td><em>Empirin with Codeine, Fiorinal with Codeine, Robitussin A-C, Tylenol with Codeine</em>; Captain Cody, Cody, schoolboy; (with glutethimide: doors &amp; fours, loads, pancakes and syrup)</td>
</tr>
<tr>
<td>Morphine</td>
<td><em>Roxanol, Duramorph</em>; M, Miss Emma, monkey, white stuff</td>
</tr>
<tr>
<td>Methadone</td>
<td><em>Methadose, Dolophine</em>; fizzes, amidone, (with MDMA: chocolate chip cookies)</td>
</tr>
<tr>
<td>Fentanyl and analogs</td>
<td><em>Actiq, Duragesic, Sublimaze</em>; Apache, China girl, China white, dance fever, friend, goodfella, jackpot, murder 8, TNT, Tango and Cash</td>
</tr>
<tr>
<td>Opioid pain relievers:</td>
<td></td>
</tr>
<tr>
<td>Oxycodone</td>
<td><em>Tylox, Oxycontin, Percodan, Percocet</em>; Oxy, O.C., oxycotton, oxycet, hillbilly heroin, percs</td>
</tr>
<tr>
<td>Hydrocodone</td>
<td><em>Vicodin, Lortab, Lorcet</em>; Vike, Watson-387</td>
</tr>
<tr>
<td>Hydromorphone</td>
<td><em>Dilaudid</em>; juice, smack, D, footballs, dillies</td>
</tr>
<tr>
<td>Oxymorphone</td>
<td><em>Opana, Numporphan, Numorphone</em>; biscuits, blue heaven, blues, Mrs. O, octagons, stop signs, O bomb</td>
</tr>
<tr>
<td>Meperidine</td>
<td><em>Demerol, meperidine hydrochloride</em>; demmies, pain killer</td>
</tr>
<tr>
<td>Propoxyphene</td>
<td><em>Darvon, Darvocet</em></td>
</tr>
</tbody>
</table>
Changes in the drug scene

- Abuse deterrent oxycontin introduced Aug 2010
  - “Tamper deterrent” not crushable
  - Slow acting formulation eliminates euphoria
  - Subsequent decrease in poison control cases was seen

- Increase in state and national efforts to combat prescription abuse
  - Prescription drug monitoring programs (49 states, and DC)
  - Drug diversion control efforts
  - Expanded guidelines for responsible opioid prescribing
  - Feb 2015: Rescheduling of hydrocodone combination drugs from III to II

- Quarterly Opioid Rx rates peaked in 2012 at 62 million, now trending down to 60mil in 4\textsuperscript{th} Q of 2013. (Dart et al 2015)
Unintended consequences

Rx opioid abusers shift to heroin as Rx drugs become less available
Heroin use and mortality on the rise


Has the face of the heroin epidemic changed?

- Quantitative and qualitative survey of 2811 opioid users in drug treatment across 48 states (Cicero et al 2014)
- Compared to heroin users 50 years ago
  - Recent heroin users are older (23 vs 16) white men, women, suburban
  - Introduced to opioids through prescription drugs
  - Using heroin as a cheaper and more accessible alternative to preferred prescription opioid
The Physicians Role
SBIRT

- **Screening Brief Intervention and Referral to Treatment** (Ghitza 2014, Madras 2009)
  - Evidence based early intervention strategy
  - Identify and intervene with at risk and high risk drug and/or alcohol users in clinical setting
  - Goal is to deliver a brief intervention OR
  - Make referral for treatment
SBIRT

• Developed by SAMSHA following IOM recommendation calling for community-based screening for health risk behaviors, including substance use.

• Quick Screening Tools:
  – **NIAA** (National Institute on Alcohol Abuse and Alcoholism) 3 question screen for alcohol
    • Proceed to longer screening tool e.g. AUDIT (Alcohol use disorder Identification test)
  – **NIDA** (National Institute on Drug Abuse)
    • Proceed to longer screening tool e.g. ASSIST (Alcohol Smoking and Substance Involvement Screening Test)
## NIDA Quick Screen

### Quick Screen Question:
In the past year, how often have you used the following?

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Once or twice</th>
<th>Monthly</th>
<th>Weekly</th>
<th>Daily or almost daily</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>For men, 5 or more drinks a day</td>
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<tr>
<td>For women, 4 or more drinks a day</td>
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<tr>
<td>Tobacco Products</td>
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<tr>
<td>Prescription drugs for Non-Medical Reasons</td>
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<tr>
<td>Illegal drugs</td>
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</tr>
</tbody>
</table>

If yes to use of illegal drugs or prescription drugs for non medical reasons proceed to Question 1 of the NIDA modified Assist.
**Question 1 of 8, NIDA Modified ASSIST**

In your *LIFETIME*, which of the following substances have you ever used?

* Note for Physicians: For prescription medications, please report non medical use only.

<table>
<thead>
<tr>
<th>Substance</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cannabis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cocaine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prescription Stimulants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methamphetamine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sedatives or Sleeping pills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hallucinogens</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Street Opioids</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prescription Opioids</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other – Specify</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
NIDA Modified Assist: Risk Stratification

Score
0-3
Low Risk
Provide feedback
Reinforce abstinence
Offer continuing support

Score
4-26
Moderate Risk
Provide feedback
Advise, Assess and Assist
Consider referral based on clinical judgment
Offer continuing support

Score
27+
High Risk
Provide feedback on the screening results
Advise assess and Assist
Arrange referral
Offer continuing support
Other Drug Screening Tools

• DAST: Drug Abuse screening tool
  • 28 questions: Exhibited valid psychometric properties and sensitive screening instrument for drugs other than alcohol (Yudko 2007)
  • Sample questions
    • Have you ever been in trouble at work because of drug abuse?
    • Have you ever been in a hospital for medical problems related to your drug use?
    • Has drug abuse ever created problems between you and your spouse?
CRAFFT: Adolescent Screen

2 positive items is 80% specific and 92% sensitive for dependence (Knight et al 2002)

- **C** Have you ever ridden in a CAR driven by someone (including yourself) who was “high” or had been using alcohol or other drugs?
- **R** Do you ever use alcohol or other drugs to RELAX, feel better about yourself, or fit in?
- **A** Do you ever use alcohol or other drugs while you are ALONE?
- **F** Do you ever FORGET things you did while using alcohol or other drugs?
- **F** Do your family or FRIENDS ever tell you that you should cut down on your drinking or drug use?
- **T** Have you ever gotten into TROUBLE while you were using alcohol or other drugs?
• Brief Intervention
  – Non confrontational encounter between health professional and patient
  – Improve chance that patient will reduce risky drug use behavior
  – *Goes beyond sharing of simple advice*
  – Give the patient tools to change beliefs about their substance use and coping skills for situations that exacerbate use
Brief Intervention

• Advise: Recommend quitting, give specific medical reasons
  – Educate on risk of even small amount of drug use, impaired judgment leading to risky behaviors, and refer or address co-morbid psychiatric conditions

• Assess: *Given what we've talked about, do you want to change your drug use?“*
  – Leave the door open for patients who are not ready

• Assist: Develop a change plan. Prescribe support meds as appropriate. Follow up in 1-2 weeks.
SBIRT

• Brief treatment:
  – moderate to high risk user
  – Emphasizing motivation to change and patient empowerment
  – Limited number of highly focused and structured clinical sessions

• Referral to treatment:
  – High risk user
  – Unable to limit use
  – Specialized treatment for substance use disorder
Does it work?

- NIDA and SAMSHA analysis of 459,599 patients 6 month follow up referred for brief intervention (16%) or treatment (4%) (Madras 2009)

- Decrease in illicit drug use rates by 67.7% ($p < 0.001$)
  - 64% fewer arrests, 45% reduction in homelessness, 31% with fewer emotional problems

- Can be implemented in multiple health setting by various levels of health care providers
Where do we go from here?

- Education at medical school and residency level
- Routine screening and monitoring for substance abuse and mental health problems
- Prescribing opioids only when other treatments have not been effective for pain
- Prescribing only the quantity of painkillers needed based on the expected length of pain
- More robust *national* prescription drug monitoring program
- Expanded access to substance abuse treatment programs and medication assisted therapies
- Expanded access to naloxone to prevent death by overdose
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