Opioid Addiction: Addressing the Epidemic

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Neurobiology of Addiction

Addiction and the Brain

Addiction: The 5 C’s

1) Continued use despite adverse consequences
2) Chronic
3) Control, loss of
4) Compulsive
5) Craving

Facts About Addiction

• Addiction affects 25 million Americans
• 75% of addicts are in the workforce
• Only 9% of Americans who need treatment receive it
• New medications can help control craving
• Relapse is a normal part of the disease
• Treatment can work
TRANSITION TO ADDICTION

Taking drugs may begin as a voluntary choice to seek a pleasant stimulus, but for addicts, that choice is no longer volitional, even in the face of terrible personal consequences.

Opioids

• If dependence develops, drug procurement often dominates the individual's life and often leads to criminal behavior.

Heroin

• Heroin use is on the rise!
• Has a “city drug” stigma, however many suburban departments are seeing huge increases of the drug in higher socioeconomic areas
• Pennsylvania has the highest heroin/opiate overdose death rate in the nation.
• Highly pure drug available

Heroin Overdose

• Symptoms:
  - Airways and lungs
    - Apnea
    - Shallow breathing
    - Slow and labored breathing
  - Eyes, ears, nose, and throat
    - Dry mouth
    - Extremely small pupils, sometimes as small as the head of a pin ("pinpoint pupils")
    - Tongue discoloration
  - Cardiac
    - Hypotension
    - Weak pulse
    - Bradycardia
  - Skin
    - Cyanosis
    - Notable track marks/difficulty establishing an IV
  - Stomach and intestines
    - Constipation
    - Spasms of the stomach and intestinal tract
  - Nervous system
    - Coma
    - Delirium
    - Disorientation
    - Drowsiness
    - Muscle spasticity

Withdrawal

• Symptoms start within 2 to 6 hours of last use
• Abrupt withdrawal of short-acting opiates causes prompt and severe withdrawal symptoms

Withdrawal Symptoms

• Rhinorrhea
• Yawning
• Loss of appetite
• Irritability
• Tremors
• Lacrimation
• Cramps
• Nausea
• Chills
• Diaphoresis
• Body aches
• Panic
**Opioid Prescriptions Dispensed by Retail Pharmacies—United States, 1991–2011**

- Number of prescriptions (in millions)
- Chart shows a consistent increase over time.

**Emergency Department Visits Related to Drug Misuse or Abuse—United States, 2004–2010**

- Number of ED visits (in millions)
- Chart shows a decrease over time.


- Deaths per 100,000 population
- Chart shows a decrease over time.

**Number of Drug Overdose Deaths Involving Opioid Pain Relievers and Other Drugs—United States, 1999–2010**

- Number of deaths
- Chart shows an increase over time.

**Drug Overdose Deaths by Major Drug Type, United States, 1999–2010**

- Type: Opioids, Heroin, Cocaine, Benzodiazepines
- Chart shows a decrease in opioid deaths.

**Economic Costs**

- $72.5 billion in health care costs
- Opioid abusers generate, on average, annual direct health care costs 8.7 times higher than nonabusers

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High Risk Populations

- People taking high daily doses of opioids
- People who "doctor shop"
- People using multiple abuseable substances like opioids, benzodiazepines, other CNS depressants, illicit drugs
- Low-income people and those living in rural areas
- Medicaid populations
- People with substance abuse or other mental health issues

Other Risk Factors

- Past cocaine use, h/o alcohol or cannabis use
- Lifetime history of substance use disorder
- Family history of substance abuse, a history of legal problems and drug and alcohol abuse
- Heavy tobacco use
- History of severe depression or anxiety
- Many patients with opiate addiction (up to 25% in some surveys), report that their addiction resulted from prescribed opioid analgesics.

Rates of Opioid Overdose Deaths, Sales, and Treatment Admissions, United States, 1999–2010

Drug Overdose Death Rate, 2008, and Opioid Pain Reliever Sales Rate, 2010

Drug Overdose Death Rates by Age—United States, 1999–2010

High Opioid Dose and Overdose Risk

1. Ives T et al. BMC Health Services Research 2006
2. Rain MC et al JGIM 2002
3. Midha E et al JPSM 2004
4. Akbik H et al. JPSM 2006

* Overdose defined as death, hospitalization, unconsciousness, or respiratory failure.
Conversion Chart
Equivalent of Morphine 10mg IV

- Codeine - 120 mg*
- Fentanyl - 0.1 mg
- Sufentanil - 0.014 mg
- Hydromorphone - 1.5 mg
- Levorphanol - 2 mg
- Meperidine - 75 mg
- Methadone - 10 mg
- Heroin - 6 mg† (a bag of heroin is about 100mg)
- Oxycodone - 20 mg
- Oxymorphone - 1 mg
- Buprenorphine - 0.3 mg

* only IM/SC route; IV codeine is lethal
† this is a pharmaceutical grade heroin dose (morphine diacetate or also known as di-acetyl-morphine); street heroin varies in potency and purity, so use with caution.

PAIN & ITS MANAGEMENT
IN ADDICTIVE POPULATIONS

Medical Perspectives

- Persons with addictive disorders often do not receive regular health care.
  - Medical care for acute and chronic conditions can be fragmented and inefficient
  - They miss opportunities to receive preventive health care
  - In addition to the direct effects of intoxication, overdose and withdrawal, abused substances can affect every body system

Pain Treatment: The 4 A's of Assessment

1) Analgesic?
2) Adverse Effects?
3) Activities of Daily Life?
4) Aberrant Behaviors?/Predictors of Opioid Misuse

Care During Hospitalization

- Three areas of attention:
  - Management of the drug withdrawal
  - Pain management
  - Common comorbidities

Management of Withdrawal

- When a history of drug/alcohol dependence and recent use is obtained, withdrawal should be anticipated.
  - Persons not yet symptomatic with withdrawal but with past alcohol-related seizures or concomitant acute medical conditions (which increase the risk of withdrawal) should be treated with a benzodiazepine.
  - Because symptoms of withdrawal may not be distinguishable from systemic symptoms of infection, heart disease or neurologic conditions, treatment for withdrawal should proceed while investigations to identify other disorders continues.
Management of Overdose

Narcan (naloxone)

- Opioid antagonist
- Counters the effects of opiate overdoses:
  - Heroin
  - Morphine
  - Vicodin
  - Codeine
  - Oxycodone
  - Fentanyl
  - Methadone

Narcan (naloxone)

- May be administered intranasally (ALS or BLS)
- IV & IM are all ALS administration routes for Narcan
- Given in 2mg increments every five minutes, up to 6mg
- Opioid withdrawal syndrome may occur in some patients given large doses of Narcan.
- Severe side effects of Narcan:
  - Emesis and aspiration, agitation, hypo- and hypertension, cardiac arrhythmias, dyspnea, pulmonary edema, encephalopathy, seizures, coma, and death.
  - Narcan reduces constipation, and in repeat doses can cause explosive diarrhea.

Management of Pain

- Pain management often becomes an issue.
  - Fear of causing or worsening addiction
    - This management style generally results in inadequate pain management and frustration for patient and provider.
  - With opiate dependence, pain control can be achieved only with substantially higher doses of opiates
    - Once a dose is determined, pain meds should be given on a regular schedule rather than as needed.

Types of Pain

- Objective
  - Biological
  - Nociception
  - Pain
- Subjective
  - Psychological
  - Suffering
- “Pain is mandatory, suffering is optional.”
  - Dalai Lama

Biological Pain Signals

- Aching
- Sore
- Burning
- Sharp
- Tingling
- Cramping
- Pounding

Psychological Pain Signals

- Awful
- Agonizing
- Torturing
- Dreadful
- Distressing
- Excruciating
- Grueling
SIGNS OF ADDICTION IN PAIN PATIENTS:
“ABERRANT BEHAVIORS”
• Lost or stolen Rx
• Escalating doses, early renewals
• Obtaining medication from other sources
• Use of pain medications for psychic effects, e.g. to relieve anxiety, increase energy, or for euphoria
• Unwillingness to try non-opioid medications
• Deterioration in function

PSEUDOADDICATION
Behaviors that resemble addiction that occur when pain is under-treated.
• “Watching the clock” for pain medications in hospital
• “Drug seeking” and “doctor shopping”
• Asking for specific medications by name
• Hoarding of medications
• Unsanctioned escalation in dose
These behaviors resolve when the pain is adequately treated.

Aberrant Medication-Taking Behavior
Red Flags
More Likely to be Suggestive of Addiction
• Deterioration in functioning at work or socially
• Illegal activities – selling, forging, buying from nonmedical sources
• Injection or snorting medication
• Multiple episodes of “lost” or “stolen” scripts
• Resistance to change therapy despite adverse effects
• Refusal to comply with random drug screens
• Concurrent abuse of alcohol or illicit drugs
• Use of multiple physicians and pharmacies

Aberrant Medication-Taking Behavior
Yellow Flags
Less Likely to be Suggestive of Addiction
• Complaints about need for more medication
• Drug hoarding
• Requesting specific pain medications
• Openly acquiring similar medications from other providers
• Occasional unsanctioned dose escalation
• Nonadherence to other recommendations for pain therapy

Focus areas
I. Education
II. Monitoring
III. Disposal
IV. Enforcement

Government Strategic Focus Areas
• Enhance surveillance
• Inform policy
• Improve clinical practice
**Intervention Points**

- Pill mills
- Problem prescribing
- General prescribing
- EDs and hospitals
- Pharmacies

- Insurer and pharmacy benefit managers
- General patients & the public
- People at high risk of overdose

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**Intervention Recommendations**

- Prescription drug monitoring programs
- Patient review and restriction programs
- Laws/regulations/policies
- Insurers and pharmacy benefit managers mechanisms
- Clinical guidelines

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**Prescription Drug Monitoring Programs (PDMPs)**

- Operational in 42 states
- Focus PDMPs on
  - Patients at highest risk of abuse and overdose
  - Prescribers who clearly deviate from accepted medical practice
- Implement PDMP best practices

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**Patient Review and Restriction Programs (aka “Lock-In” Programs)**

- Applies to patients with inappropriate use of controlled substances
- 1 prescriber and 1 pharmacy for controlled substances
- Improve coordination of care and ensure appropriate access for patients at high risk for overdose
- Evaluations show cost savings as well as reductions in ED visits and numbers of providers and pharmacies

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**Laws/Regulations/Policies**

- Some states have enacted laws and policies aimed at reducing diversion, abuse, and overdose
- Policies can strengthen health care provider accountability
- Safeguard access to treatment when implementing policies
- Rigorous evaluations to determine effectiveness and identify model aspects

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**Insurer/Pharmacy Benefit Manager (PBM) Mechanisms**

- Reimbursement incentives/disincentives
- Formulary development
- Quantity limits
- Step therapies/prior authorization
- Real-time claims analysis
- Retrospective claims review programs
Clinical Guidelines

- Improve prescribing and treatment
- Basis for standard of accepted medical practice for purposes of licensure board actions
- Several consensus guidelines available
- Common themes among guidelines

Additional Information

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6126a5.htm?s_cid=mm6126a5_w
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6043a4.htm

The findings and conclusions in this presentation are those of the author and do not necessarily represent the views of the Centers for Disease Control and Prevention.

Thank you

Questions & Comments