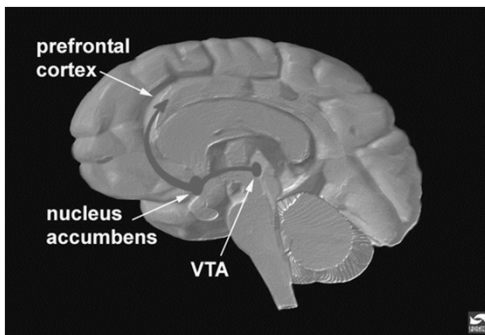


## Opioid Addiction: Addressing the Epidemic

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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

THE ROANOKE TIMES  
 Monday, September 20, 2004



STEPHANIE KLEIN-DAVIS | The Roanoke Times  
 Mellisa Williamson, 35, a Bullitt Avenue resident, worries about the effect on her unborn child from the sound of jackhammers.

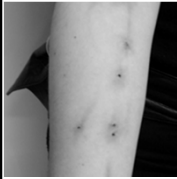
## TRANSITION TO ADDICTION

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
    - Apneic
    - 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

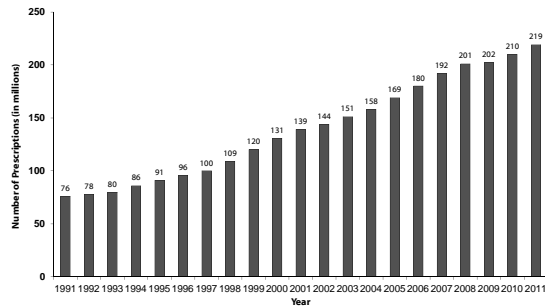
## Withdrawal

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

## Withdrawal Symptoms

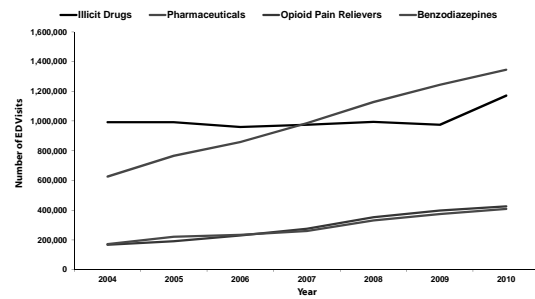
- |                    |               |
|--------------------|---------------|
| • Rhinorrhea       | • Cramps      |
| • Yawning          | • Nausea      |
| • Loss of appetite | • Chills      |
| • Irritability     | • Diaphoresis |
| • Tremors          | • Body aches  |
| • Lacrimation      | • Panic       |

### Opioid Prescriptions Dispensed by Retail Pharmacies—United States, 1991–2011



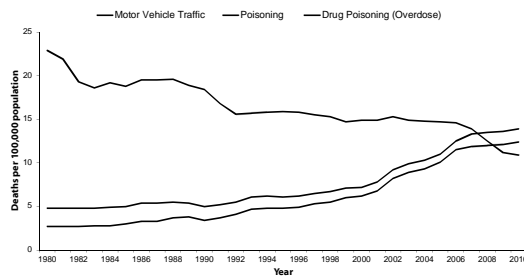
IMS Vector One. From "Prescription Drug Abuse: It's Not what the doctor ordered." Nora Volkow National Prescription Drug Abuse Summit, April 2012. Available at <http://www.slideshare.net/OPINITE/nora-volkow-final-edits>

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



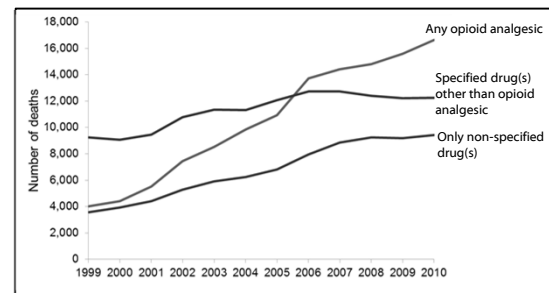
SAMHSA. Highlights of the 2010 Drug Abuse Warning Network (DAWN) Findings on Drug-Related ED Visits, 2011.

### Motor Vehicle Traffic, Poisoning, and Drug Poisoning (Overdose) Death Rates United States, 1980–2010



NCHS Data Brief, December, 2011. Updated with 2009 and 2010 mortality data.

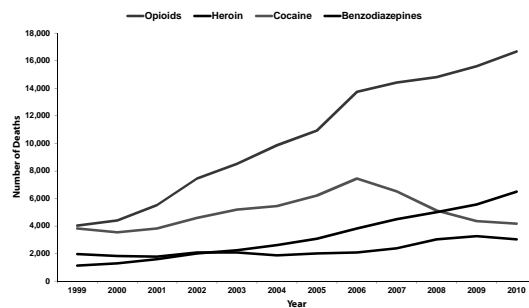
### Number of Drug Overdose Deaths Involving Opioid Pain Relievers and Other Drugs United States, 1999–2010



CDC, National Center for Health Statistics, National Vital Statistics System.

16

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



CDC, National Center for Health Statistics, National Vital Statistics System, CDC Wonder. Updated with 2010 mortality data.

### Economic Costs

- ❑ \$72.5 billion in health care costs<sup>1</sup>
- ❑ Opioid abusers generate, on average, annual direct health care costs 8.7 times higher than nonabusers<sup>2</sup>



1. Coalition Against Insurance Fraud. Prescription for peril: how insurance fraud finances theft and abuse of addictive prescription drugs. Washington, DC: Coalition Against Insurance Fraud; 2007.  
2. White AG, Binbaum HG, Mareva MN, et al. Direct costs of opioid abuse in an insured population in the United States. *J Manag Care Pharm* 2005;11(6):469-479.

## 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

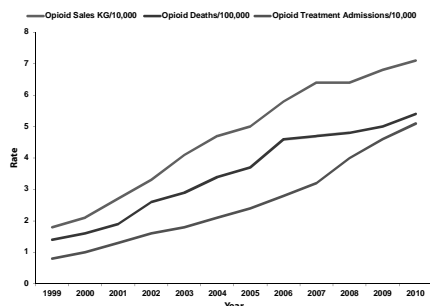
White AG, Birnbaum HG, Schiller M, Tang J, Katz NP. Analytic models to identify patients at risk for prescription opioid abuse. *Am J Managed Care* 2009;15(12):897-906.  
 Hall AJ, Logan JE, Tobin RL, Kaplan JA, Kramer JC, Bivler D, et al. Patterns of abuse among unintentional pharmaceutical overdose fatalities. *JAMA* 2008;300(22):2613-20.  
 Paulozzi LJ, Logan JE, Hall AJ, et al. A comparison of drug overdose deaths involving methadone and other opioid analgesics in West Virginia. *Addiction* 2009;104(9):1541-8.  
 Dunn KM, Saunders KW, Rutter CM, Banta-Green CJ, Merrill JO, Sullivan MD, et al. Opioid prescriptions for chronic pain and overdose: a cohort study. *Ann Intern Med* 2010;152(2):85-92.  
 Bohren AS, Valenstein M, Barr MJ, Ganoczy D, McCarthy JF, Ilgen MA, et al. Association between opioid prescribing patterns and opioid overdose-related deaths. *JAMA* 2011;305(13):1315-1321.

## Other Risk Factors

- Past cocaine use, h/o alcohol or cannabis use<sup>1</sup>
- Lifetime history of substance use disorder<sup>2</sup>
- Family history of substance abuse, a history of legal problems and drug and alcohol abuse<sup>3</sup>
- Heavy tobacco use<sup>4</sup>
- History of severe depression or anxiety<sup>4</sup>
- Many patients with opiate addiction (up to 25% in some surveys), report that their addiction resulted from prescribed opioid analgesics.

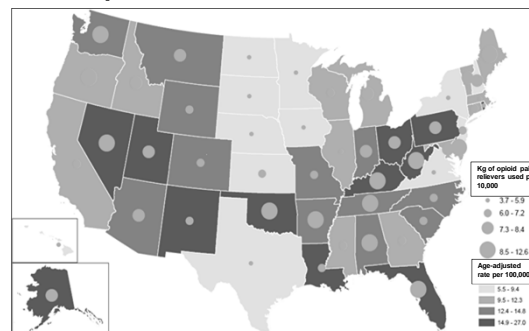
<sup>1</sup> Ives T et al. *BMC Health Services Research* 2006    <sup>2</sup> Reid MC et al *JGIM* 2002  
<sup>3</sup> Michna E et al. *JPSM* 2004    <sup>4</sup> Akbik H et al. *JPSM* 2006

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



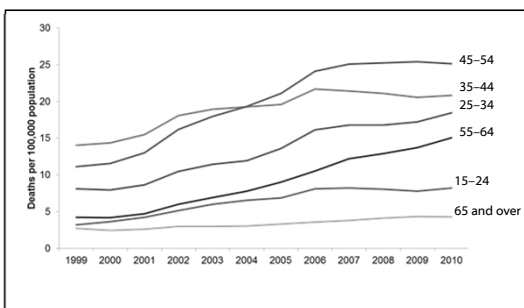
CDC. MMWR 2011; [http://www.cdc.gov/mmwr/preview/mmwrhtml/mm60e1101a1.htm?s\\_cid=mm60e1101a1\\_w](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm60e1101a1.htm?s_cid=mm60e1101a1_w). Updated with 2009 mortality and 2010 treatment admission data.

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



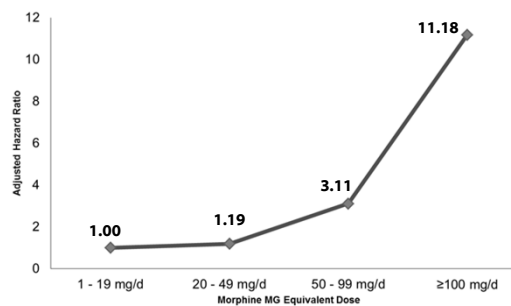
National Vital Statistics System, 2008; Automated Reports Consolidated Orders System, 2010.

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



CDC, NCHS, National Vital Statistics System.

## High Opioid Dose and Overdose Risk



\* Overdose defined as death, hospitalization, unconsciousness, or respiratory failure.

Dunn et al. Opioid prescriptions for chronic pain and overdose. *Ann Int Med* 2010;152:85-92.

### 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 diacetyl-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

## PSEUDOADDICTION

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

**More Likely** to be Suggestive of Addiction

#### Red Flags

- 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

**Less Likely** to be Suggestive of Addiction

#### Yellow Flags

- 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

### Intervention Recommendations

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



### 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**



### 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**



### 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



### 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**





