Controlled Substances
Evidence-based Tips for Improved Workflow: Diagnosis, Screening & Drug Testing

Mississippi Primary Health Care Association
Pearl, MS
March 7, 2018
No Disclosures

• Todays speaker has no disclosure of real or apparent conflict related to the content of this presentation.
Objectives:

1. Discuss epidemiology and diagnosis of substance use disorders
2. Discuss screening techniques
3. Discuss toxicology testing
Opioid Epidemic: Economic Impact

- 2015: $504 billion; 2.8% GDP
- “Previous studies and estimates fail to fully account for the lives lost to overdose.”

(https://www.whitehouse.gov/)
Misuse: Definition

• “use in any way not directed by a doctor, including use without a prescription of one's own; use in greater amounts, more often, or longer than told to take a drug; or use in any other way not directed by a doctor.”

(SAMHSA 2016 NSDUH)
Prescription Opioids: Better Than Heroin!!!

“Reinforcing effects of Oxycodone better than heroin... 

Without the “bad” effects of heroin
Fentanyl: Game Changer

- 20,000 deaths in 2016
- 540% increase in 3 years
- 50X potency heroin
- 100X potency morphine
- Carfentanil = 10,000X potency morphine

(health.mo.gov/emergencies/ert/alertsadvisories/pdf/cdc-update82616.pdf)
Drugs Involved in U.S. Overdose Deaths, 2000 to 2016

- Synthetic Opioids other than Methadone, 20,145
- Heroin, 15,446
- Natural and semi-synthetic opioids, 14,427
- Cocaine, 10,619
- Methamphetamine, 7,663
- Methadone, 3,314

Opioid Trends: 2010-2016

Dispensed Opioid Prescriptions in Millions
- 12.4% Decline

Current Prescription Opioid Misusers in Millions
- 35% Decline

Current Heroin Users in Thousands
- 99% Increase

(Pezzlo et al., Journal of Pain Research, 2016)

© www.MSPHP.com
Decrease in Supply: Is this the Reason for $\uparrow$ Deaths & $\uparrow$ Heroin Use?

- Nonmedical use of prescription opioids is a risk factor for heroin use
  - We know that the number of prescription opioid misusers is decreasing
  - How do you explain the increase in heroin use?
- Is the decreased supply of prescription opioids causing the overdose deaths?
What is Driving the Increase in Heroin Use & Deaths?

- “A key factor is... low cost and high purity of heroin.”
- Cost of one ounce:
  - 1982: $2,690
  - 2012: $465
Florida Interventions: 2010-2011

• Major policy changes in 2010-2011
• Decreased supply
• OD death rate *decreased* 27% between 2010-2012
Changing Face of Heroin & Opioid Addiction

- 1960s:
  - Inner-city problem among minority populations
  - 83% male
  - 50% minorities
  - Age at first use: 16
  - Heroin first opioid used: 80%

July 2014

The Changing Face of Heroin Use in the United States
A Retrospective Analysis of the Past 50 Years

Theodore J. Cicero, PhD¹; Matthew S. Ellis, MPE¹; Hilary L. Surratt, PhD²; et al

Author Affiliations | Article Information

Changing Face of Heroin & Opioid Addiction

- **2000s:**
  - Males=females
  - 90% Caucasian
  - Nonurban 75%
  - Age at first use: 23
  - Prescription opioid First opioid used: 75% in 2010 (now trending lower)
Heroin Initiation: US Veterans

- “Receipt of a short-term opioid prescription was independently associated with an increased hazard of heroin initiation”

- Strong correlation between therapeutic exposure to opioid analgesics and their abuse
• “Without treatment or engagement in recovery activities, addiction is progressive and can result in disability or premature death.”

(ASAM Public Policy Statement, 2011)
Reward Pathways: Promote Survival

Neocortex
Limbic System
Reptilian Brain
• Injecting oral / transdermal medications
• Obtaining drugs on the street/theft
• Prescription forgery/diversion / selling
• Concurrent alcohol / illicit drugs
• Failed drug tests
• Unsanctioned use or dose escalation
• Doctor shopping

(Ries et al., 2014)
Risk Factors for Addiction

- Genetics: 40-60% heritable risk
- Mental illness
- Environment
- Poverty
- Poor parental support
- Community with high drug availability
- Use of substance at early age
- Chronic pain

(SAMHSA, TIP 54)
Abuse and dependence combined into a single disorder: “Substance Use Disorder”

- Continuum from mild to severe
  - 0-1 criteria = no disorder
  - 2-3 criteria = mild disorder
  - 4-5 criteria = moderate disorder
  - 6 or more criteria = severe disorder

(DSM V)
• **Impaired control over substance use**

1. Taking larger amounts, or over a longer period than intended.
2. Persistent desire or unsuccessful efforts to cut down or control use.
3. Great deal of time spent in activity necessary to obtain, use or recover from effects.
4. Craving, or strong desire or urge to use.

*(DSM V)*
• Social Impairment
5. Recurrent use resulting in failure to fulfill major role obligations at work, school or home.
6. Continued use despite having persistent or recurrent social or interpersonal problems caused by or exacerbated by the effects of the substance.
7. Important social, occupational or recreational activities are given up or reduced because of substance use.

(DSM V)
• **Risky use of the substance**

8. Recurrent use in situations in which it is physically hazardous.

9. Continued use despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance.

(NDT V)
• **Pharmacological:**
  10. Tolerance, defined by either:
      Requiring markedly increased dose of substance to achieve intoxication/desired effect **or** a markedly diminished effect with continued use of same amount.
  11. Withdrawal, manifested by either:
      Characteristic withdrawal syndrome **or** use to relieve or avoid withdrawal symptoms.

Note: 10 and 11 do not apply to individuals taking opioids solely under appropriate medical supervision. (DSM V)
Use CDC Guidelines

• 12 Guidelines for prescribing opioids for chronic pain in primary care setting

• Excludes treatment of
  ➢ Active cancer
  ➢ Palliative care
  ➢ End-of-life care

(https://www.cdc.gov/drugoverdose/prescribing/resources.html)
Screening: General Tips

- Harmful therapy
- High risk patients
- Controlled substances for chronic conditions
  - Opioids
  - Benzodiazepines

(CDC Guidelines, 2016)
Use PDMP to Identify:

• MME/day
• “Doctor shoppers”: treatment first, if possible
• Dangerous combinations
• Those at highest risk of overdose
• [https://mississippi.pmpaware.net/login](https://mississippi.pmpaware.net/login)
**RECENT REQUESTS**

<table>
<thead>
<tr>
<th>Patient Name</th>
<th>DOB</th>
<th>Status</th>
<th>Request Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>jordan ellis</td>
<td>02/22/1989</td>
<td>Complete</td>
<td>02/05/2018 4:27 PM</td>
</tr>
<tr>
<td>jordan ellis</td>
<td>02/05/2018</td>
<td>Complete</td>
<td>02/05/2018 4:26 PM</td>
</tr>
<tr>
<td>brent cheeks</td>
<td>09/11/1985</td>
<td>Complete</td>
<td>02/05/2018 4:24 PM</td>
</tr>
<tr>
<td>jerry mosley</td>
<td>04/20/1974</td>
<td>Complete</td>
<td>02/05/2018 4:21 PM</td>
</tr>
<tr>
<td>misty gilmer</td>
<td>07/03/1980</td>
<td>Complete</td>
<td>02/02/2018 1:46 PM</td>
</tr>
</tbody>
</table>
### PMP Interconnect Search

To search in other states as well as your home state for patient information, select the states you wish to include in your search.

<table>
<thead>
<tr>
<th>A</th>
<th>Alabama</th>
<th>Arizona</th>
<th>Arkansas</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Idaho</td>
<td>Illinois</td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>Kansas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>Louisiana</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>Maine</td>
<td>Massachusetts</td>
<td>Michigan</td>
</tr>
<tr>
<td>N</td>
<td>New Mexico</td>
<td>New York</td>
<td>North Carolina</td>
</tr>
<tr>
<td>R</td>
<td>Rhode Island</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>South Carolina</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>Tennessee</td>
<td>Texas</td>
<td>Virginia</td>
</tr>
</tbody>
</table>

- I agree to the terms of the acknowledgement.

[Search]
Patient Request

Patient Info

First Name* [Field]

Last Name* [Field]

Date of Birth* [MM/DD/YYYY]

Phone Number

Social Security Number

Drivers License Number

State

[Select State]
### Prescriptions

<table>
<thead>
<tr>
<th>Date</th>
<th>Prescriber(s)</th>
<th>MME/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>03/10/2017</td>
<td></td>
<td>460.0</td>
</tr>
<tr>
<td>02/22/2017</td>
<td></td>
<td>50.0</td>
</tr>
<tr>
<td>02/09/2017</td>
<td></td>
<td>60.0</td>
</tr>
<tr>
<td>01/30/2017</td>
<td></td>
<td>45.0</td>
</tr>
<tr>
<td>01/09/2017</td>
<td></td>
<td>40.0</td>
</tr>
<tr>
<td>12/20/2016</td>
<td></td>
<td>40.0</td>
</tr>
<tr>
<td>12/07/2016</td>
<td></td>
<td>45.0</td>
</tr>
<tr>
<td>12/02/2016</td>
<td></td>
<td>45.0</td>
</tr>
<tr>
<td>11/02/2016</td>
<td></td>
<td>80.0</td>
</tr>
<tr>
<td>10/05/2016</td>
<td></td>
<td>160.0</td>
</tr>
<tr>
<td>09/10/2016</td>
<td></td>
<td>160.0</td>
</tr>
<tr>
<td>07/27/2016</td>
<td></td>
<td>200.0</td>
</tr>
<tr>
<td>07/22/2016</td>
<td></td>
<td>240.0</td>
</tr>
<tr>
<td>07/12/2016</td>
<td></td>
<td>9.0</td>
</tr>
</tbody>
</table>

*Pharmacy is created using a combination of pharmacy name and the last four digits of the pharmacy license number.*

- **Date filled**: 3 months
- **5 different prescribers in 3 months**
CAGE (CAGE-AID) Screen:
4 Questions

1. Have you ever felt that you should **cut** down on your alcohol use?
2. Have people **annoyed** you by asking about or criticizing your alcohol use?
3. Have you felt **guilty** about your alcohol use?
4. Have you ever had an **eye-opener** first thing in the morning to steady your nerves or get rid of a hangover?

(Ries et al., 2014)
Screening for SUD: Single Question

• “How many times in the past year have you used an illegal drug or used a prescription medication for nonmedical reasons?”

• 100% sensitive

• 73.5% Specific

(Smith PC, et al., 2010)
Screening for Effectiveness: PEG Scale

• To determine effectiveness of treatment
• 3 questions: 0 = none; 10 = maximum
  ➢ Pain intensity (P)
  ➢ Pain interference with Enjoyment of Life (E)
  ➢ Pain interference with General Activity (G)

• Validated
• Add total and divide by 3: score should decrease over time (Krebbbs, et al., 2009)
Clinical Value of Drug Testing

1. Therapeutic tool
2. Assessment
3. Monitoring

(ASAM Consensus Document, 2017)
Urine Drug Testing (UDT): Negative Results

- Negative test does NOT:
  - R/O substance use
  - R/O out SUD

- Negative test DOES mean:
  - Targeted substance has not been used in detection window
  - Possible use below cut off level

(ASAM Consensus Document, 2017)
Presumptive vs Definitive Testing

**Presumptive Tests**
- Preliminary
- Immunoassay
- Screening
- POS/in-office
- Varying sensitivity/specificity

**Definitive Tests**
- Confirmatory
- GC/MS
- Confirmation
- Laboratory
- Highly sensitive/specific

(ASAM Consensus Document, 2017)
Point of Service UDT

- 12 panel + Temperature
- Cost: $2.50
<table>
<thead>
<tr>
<th>Drug Name</th>
<th>Abbreviation</th>
<th>Cutoff Level</th>
<th>Estimated Detection Time in Urine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amphetamine</td>
<td>AMP</td>
<td>300 ng/ml</td>
<td>2-4 Days</td>
</tr>
<tr>
<td>Amphetamine</td>
<td>AMP</td>
<td>1000 ng/ml</td>
<td>2-4 Days</td>
</tr>
<tr>
<td>Barbiturates</td>
<td>BAR</td>
<td>300 ng/ml</td>
<td>3-6 Days</td>
</tr>
<tr>
<td>Benzodiazepines</td>
<td>BZO</td>
<td>300 ng/ml</td>
<td>3-7 Days</td>
</tr>
<tr>
<td>Buprenorphine</td>
<td>BUP</td>
<td>10 ng/ml</td>
<td>2-3 Days</td>
</tr>
<tr>
<td>Cocaine</td>
<td>COC</td>
<td>150 ng/ml</td>
<td>2-4 Days</td>
</tr>
<tr>
<td>Cocaine</td>
<td>COC</td>
<td>300 ng/ml</td>
<td>2-4 Days</td>
</tr>
<tr>
<td>Ecstasy</td>
<td>MDMA</td>
<td>500 ng/ml</td>
<td>1-3 Days</td>
</tr>
<tr>
<td>Marijuana</td>
<td>THC</td>
<td>50 ng/ml</td>
<td>5-30 Days</td>
</tr>
<tr>
<td>Methadone</td>
<td>MTD</td>
<td>50 ng/ml</td>
<td>3-5 Days</td>
</tr>
<tr>
<td>Methamphetamine</td>
<td>MAMP</td>
<td>10000 ng/ml</td>
<td>3-5 Days</td>
</tr>
<tr>
<td>Morphine</td>
<td>MOP</td>
<td>300 ng/ml</td>
<td>2-4 Days</td>
</tr>
<tr>
<td>Opiates</td>
<td>OPI</td>
<td>20000 ng/ml</td>
<td>2-4 Days</td>
</tr>
<tr>
<td>Oxycodone</td>
<td>OXY</td>
<td>100 ng/ml</td>
<td>2-4 Days</td>
</tr>
<tr>
<td>Phencyclidine</td>
<td>PCP</td>
<td>25 ng/ml</td>
<td>5-10 Days</td>
</tr>
<tr>
<td>Tricyclic Antidepressants</td>
<td>TCA</td>
<td>10000 ng/ml</td>
<td>3-6 Days</td>
</tr>
<tr>
<td>Propoxyphene</td>
<td>PPX</td>
<td>300 ng/ml</td>
<td>1-2 Days</td>
</tr>
</tbody>
</table>

(Ries et al., 2014)
(Ries et al., 2014)
Benzodiazepine Metabolism

(Ries et al., 2014)
<table>
<thead>
<tr>
<th>Test Drug</th>
<th>Common Drugs That May Cause False Positive Immunoassay Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amphetamines</td>
<td>Amantadine, bupropion, chlorpromazine, desipramine, fluoxetine, L-methamphetamine (nasal decongestants), labetalol, methylphenidate, phentermine, phenylephrine, phenylpropanolamine, promethazine, pseudoephedrine, ranitidine, thioridazine, trazodone</td>
</tr>
<tr>
<td>Benzodiazepines</td>
<td>Oxaprozin (Daypro), sertraline (Zoloft)</td>
</tr>
<tr>
<td>Cocaine</td>
<td>Topical anesthetics containing cocaine</td>
</tr>
<tr>
<td>Opiates</td>
<td>Dextromethorphan, diphenhydramine, fluoroquinolones, poppy seeds, quinine, rifampin, verapamil</td>
</tr>
<tr>
<td>Phencyclidine</td>
<td>Dextromethorphan, diphenhydramine, ibuprofen, imipramine, ketamine, meperidine, thioridazine, tramadol, venlafaxine</td>
</tr>
<tr>
<td>THC</td>
<td>Dronabinol, NSAIDS, proton pump inhibitors [Protonix])</td>
</tr>
</tbody>
</table>
Specimen Validity Testing

• Verifies integrity of urine specimen
• Part of definitive testing; includes:
  ➢ Creatinine concentration (normal): >20mg/dL or <300mg/dL
  ➢ Specific Gravity: 1.003-1.030
  ➢ pH level: 4.5-8.0

(Ries et al., 2014)
• Thank You!!!
References:

References:


References:


References:

References: