

Agenda

- I. Introduction and Background
- II. Substances and Trends
- III. Substance Use Disorder (SUD)
- IV. Approaches to SUD
- V. UTHealth Model

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Presented By:

- Meredith O'Neal
- Research Coordinator for UTHealth's Center for Health Systems Analytics
- From Houston
- Undergrad from Texas Christian University (TCU).
- Masters in Medical Anthropology.
- Currently pursuing MBA at the University of Houston.
- 3.5 years @ UTHealth



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Introduction and Background

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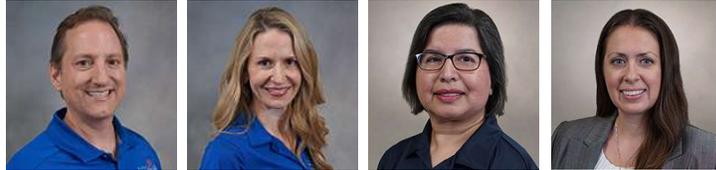
The Center for Health Systems Analytics (CHSA)

- CHSA uses **health informatics** to provide solutions for public health emergencies
- Group of **interdisciplinary researchers** led by James Langabeer, Ph.D.
- **Grant-funded** research provides evidence-based treatments at no cost to participants.
- **Based in academia** – Based at UTHealth Houston (School of Biomedical Informatics) in the Texas Medical Center.



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Leadership



- Director - James Langabeer, Ph.D., EdD, MBA, EMT, FAHA, FACHE
- Assistant Director - Tiffany Champagne-Langabeer, Ph.D., MBA, RD
- Senior Program Manager - Karima Lalani, Ph.D., MBA, FACHE, RHIA
- Associate Director - Andrea Yatsco, Ph.D., CADC, LCDC

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Research Niche

“Seeking Innovative and Community-based Solutions to Emergency Public Health Challenges”

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 - **Emergency Medicine & Public Health**
Prehospital EMS and hospital ED
First Responders
Major public health epidemics (substance use, mental health, HIV)
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 - **Community-Based**
Focused on collaborative, pragmatic solutions
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 - **Behavioral & Mental Health**
Psychological, social, cultural, and cognitive processes
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 - **Informatics**
Use IT to deliver care and facilitate research. E.g., Telemedicine, Mobile Health, GIS, etc.
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 - **Outcomes Research**
Focused on generating outcomes and informing policy

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Current Projects

- **Houston ER Opioid Engagement System (HEROES)**
 - Adult Outpatient for Substance Use Disorders (SUD)
 - High-Risk Populations
 - Innovative Community Model
- **Young Heroes**
 - Adolescent Outpatient for SUD
- **Heroes Helpline & Educational Campaign**
 - Toll-free helpline for first responders
 - Statewide partnership with Texas Office of EMS
 - Free Online Training
- **Project Integra***
 - HIV + Mobile Outreach
 - Mobile-based telecare
 - *In partnership with McGovern Medical School Department of Internal Medicine



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Substance Use Among Adolescents

Substances of choice among youth and use trends

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What are substances?

- Chemical compounds that impact how your mind and body function.
- Obtained over-the-counter (OTC), by prescription, or illegally manufactured, grown, and purchased.
- Also called drugs or medication.
- Different methods of classification (by effect, by legal status, by chemical compound)

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Top Substances Used by Youth

1. Tobacco
2. Alcohol
3. Marijuana
4. Inhalants
5. Stimulants – amphetamines
6. Depressants – benzodiazepines and opioids

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Alcohol, Tobacco, and Marijuana

- Alcohol, marijuana, and tobacco are substances most commonly used by adolescents.
- By 12th grade, about two-thirds of students have tried alcohol.
- About half of high school students have used marijuana at least once.
- 40% of high school students have tried cigarettes.

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Inhalants

- Inhalable substances that produce physical, behavioral, or psychological effects when ingested.
- Typically not intended for human consumption.
- Less addictive but can cause serious physical harm with a single use.
- Easily accessible.
- Examples include glues, aerosols, nitrous oxide, and ammonia.



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Inhalants

- Routes of administration:

- Bag – spraying substance into a paper or plastic bag before inhaling
- Cloth – soaking the substance into a cloth before inhaling
- Direct – spray or pour substance directly into the nose

Short-Term Risks

- Hallucinations
- Lightheadedness
- Loss of consciousness
- Loss of self-control

Long-Term Risks

- Organ damage
- Nerve damage
- Hearing loss
- Delayed behavioral development
- Increased risk of leukemia

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Amphetamines (Stimulant)

- Treat attention deficit hyperactivity disorder (ADHD), narcolepsy, and sometimes obesity.
- Lower doses: increase alertness, attention, and energy; a rush of euphoria from dopamine, and enhanced focus
- Higher doses: dangerously high body temperature, irregular heartbeat, heart failure, and seizures.
- Legal prescription amphetamine examples include Adderall, Ritalin, Dexedrine, and Concerta.
- Illegal forms include methamphetamine or crystal meth and Ecstasy or MDMA.
- Route of administration includes oral, nasal, smoke, and injection.

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Benzodiazepines (Depressant)

- Also called “benzos.”
- Developed to treat anxiety, panic attacks, and sometimes epileptic seizures.
- First exposure often via prescription
- Lower doses: relaxation, drowsiness
- Higher doses: low heart rate, apnea
- Often combined with other substances, such as alcohol or opioids, producing toxic/fatal effects.
- Route of administration is most often oral tablets.
- Examples: alprazolam (Xanax), clonazepam (Klonopin), lorazepam (Ativan)

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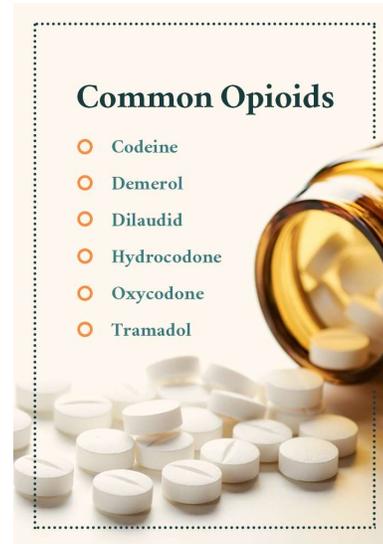
Which pill is counterfeit?



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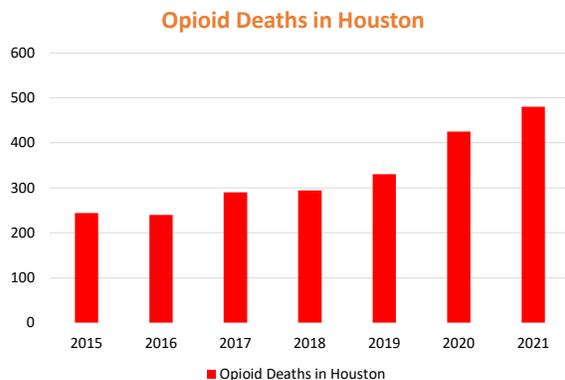
Opioids (Depressant)

- Derived from the opium plant.
- Medically used for pain relief.
- Route of administration includes oral, nasal, and injection.
- Lower doses: sleepiness, pain relief
- Higher doses: euphoria, low heart rate, apnea



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Opioids (Depressant)



- Feelings of pleasure from taking an opioid can encourage repeated use.
- Prolonged use necessitates a higher dose to achieve the effect (tolerance).
- Withdrawal occurs after prolonged use and is manageable with medication.

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Fentanyl

- Synthetic opioid
- 80-100 times stronger than morphine.
- Accessible via sold/stolen supplies or illegal manufacturing.
- Added to street drugs because it is cheap and potent.
- Harder to revive when poisoning occurs (several doses naloxone).



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Substance Use Trends Among Youth

- Teens **misuse stimulants** to increase athletic and academic performance.
- **87,000** new opioid use disorder diagnoses were made among **children ages 12-17** in 2019.
- Nearly **60,000 pediatric visits** to the ED from 2014 to 2017 **involved opioids.**
- Studies suggest that up to **16.1% of eighth graders use inhalants.**
- **2 in 10** 12th graders reported **using prescription medicine without a prescription.**
- OD risk for kids is **3x higher** than 10 years ago.

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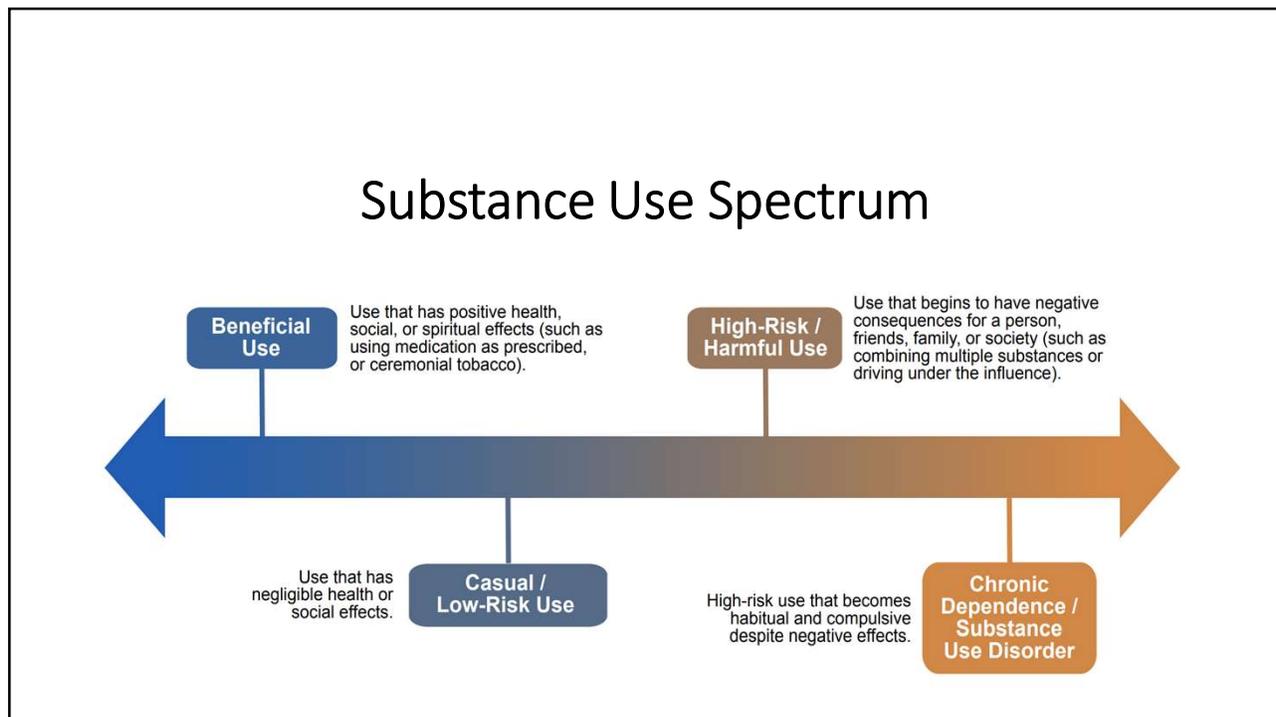
Substance Use Trends

- **61.5% increase** in fatal **fentanyl** poisonings in Harris County (HIDA).
- **15% (50 million)** of Americans **have benzos** in their medicine cabinet.
- The most common opioid misused is **hydrocodone**.
- **20%** of 12th graders have used **prescription medicine without a prescription**.

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Substance Use Disorder

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Substance Use Disorder

- Substance Use Disorder is a disease that requires medical treatment.
- National Institute on Drug Abuse, American Society of Addiction Medicine, American Medical Association, amongst others:
Addiction is a chronic, relapsing disease that affects the brain and causes compulsive drug seeking and use despite harmful consequences.
- Substance use changes the brain's structure and function
 - The initial decision to use may be voluntary however repeated use affects a person's self-control and ability to make decisions.
 - Chronic and relapsing

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