

# Fentanyl and Emerging Trends



Presented by:

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Quality Innovation Network -  
Quality Improvement Organizations  
CENTER FOR MEDICARE & MEDICAID SERVICES  
QUALITY IMPROVEMENT & INNOVATION GROUP

# Tanya Vadala, PharmD

## MEDICATION SAFETY PHARMACIST

Tanya is an IPRO pharmacist with 20 years of clinical pharmacy, community pharmacy, academia, quality improvement and medication safety experience. Before joining IPRO, she worked at various community pharmacies and taught at Albany College of Pharmacy and Health Sciences in Albany, N.Y. She specializes in Medication Therapy Management (MTM), medication reconciliation, opioids, immunizations, and patient self-care. Her formal teaching experience includes courses in pharmacy practice and clinical experiential teaching.

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# Brian Winbigler, PharmD, MBA

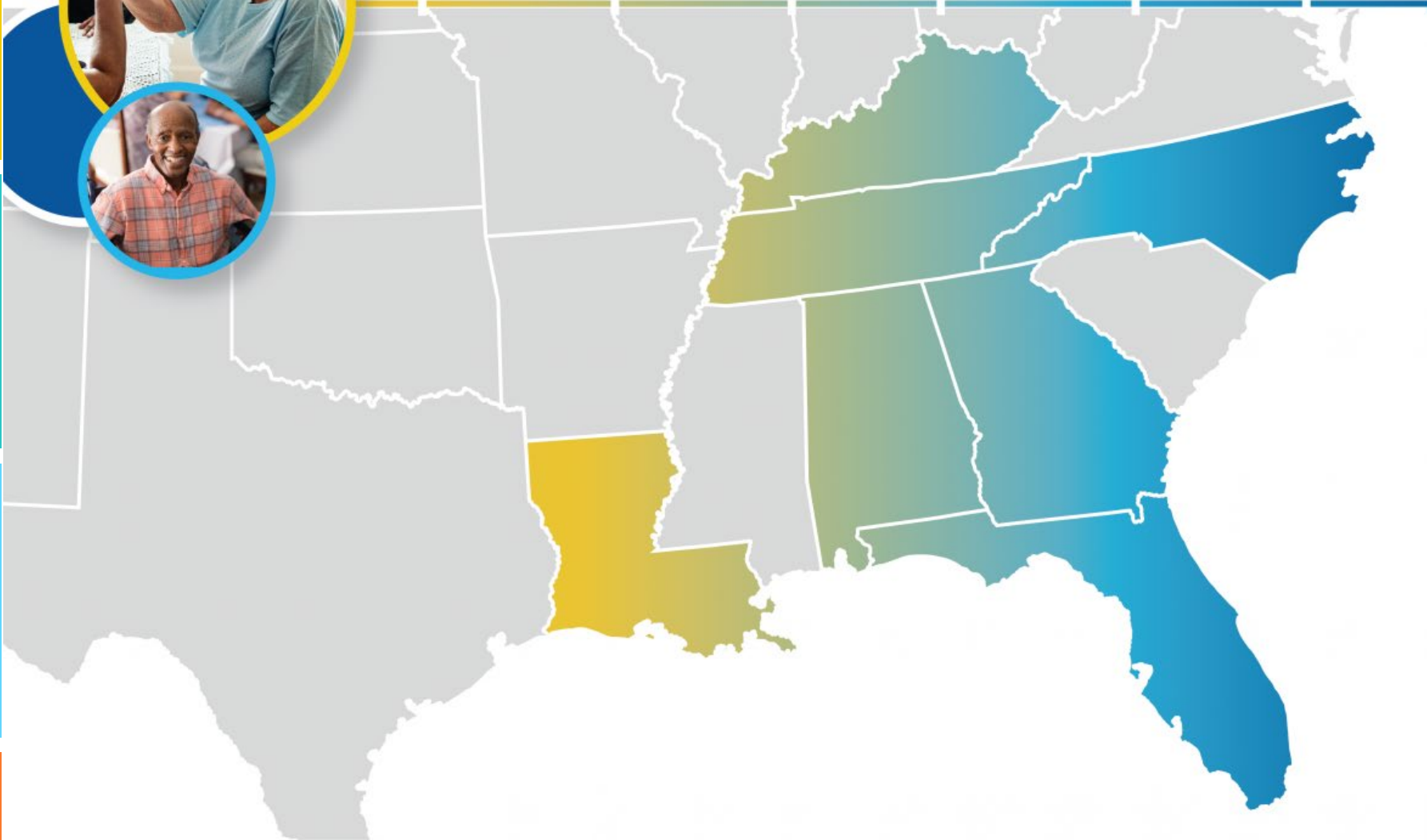
Dr. Brian Winbigler, site manager at Alliance for Multispecialty Research-Knoxville, has a master's degree in business administration, a Doctor of Pharmacy degree (PharmD), and completed a community pharmacy residency.

Prior to his current position, Dr. Winbigler was an assistant professor in the clinical pharmacy and translational science department at the University of Tennessee College of Pharmacy. Dr. Winbigler directed the substance use disorders (SUDs) elective and the substance abuse, GI, and nutrition module. In addition, he has received state and federal funding for SUD-related research.



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# Making Health Care Better *Together*



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Department of

**Mental Health &  
Substance Abuse Services**

## Fentanyl Training

Brian Winbigler, PharmD, MBA  
Alliance for Multispecialty Research

# Why This Presentation?

- National study examining fentanyl information in public
  - News articles (national, state, local) shared through social media
- Misinformation about fentanyl is shared more widely than correct or partially correct information
  - 92% of articles included misinformation, including 37 published by national news agencies
  - Shared 450,011 times with potential views of 69m
  - Shared 29,652 times with potential views of 4m

Source: Baletsky, et al. International Journal of Drug Policy, 2020

# Why This Presentation?

*...“Most mainstream media content on casual exposure-linked overdose fails to include the voices of scientific experts, public health officials, and people with lived experience. The DEA and other government agencies have been slow to counter and remedy misleading statements...”*

- Implications of “fentanyl panic”
  - Delayed or less effective intervention
  - Unnecessary stress and other mental health issues
  - Furthers counterproductive policies
    - Punitive responses, consequences
    - Unnecessary resource expenditures

Source: Baletsky, et al. International Journal of Drug Policy, 2020

# Presenter

Brian Winbigler, PharmD, MBA

Alliance for Multispecialty Research



<https://amrknoxville.com/>





# Training Agenda

## 1. Fentanyl Basics

- History, what it is, how it is used and physical properties
- Medical and illicit fentanyl

## 2. Fentanyl as an Illicit Substance

- How it is made and where it comes from
- What it looks like and how to tell if something is or contains fentanyl

## 3. Exposure Risks and How to Respond

- Using fentanyl
- Exposure to fentanyl

## 4. What's Next

- Treatment/recovery
- Education as a means for harm reduction



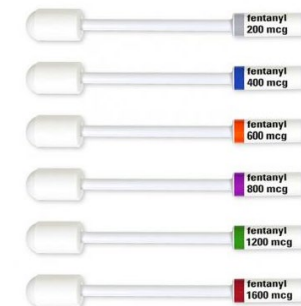
# Fentanyl Basics – What Is It?

- **Fentanyl is a powerful pain medication**
  - First developed in 1959 for use as an anesthetic and pain reliever in the hospital setting.
- **It is an opioid, like morphine, codeine, hydrocodone, and oxycodone.**
  - Unlike those listed above, Fentanyl is completely synthetic (man-made).
- **Fentanyl is often prescribed (by a doctor) as a slow-release patch to people with long-term, severe pain (cancer pain). When used in this way, it can be very **effective** and **safe**.**
  - The first transdermal (absorbed through the skin) fentanyl products were developed in the early 1990s.

Source: National Institute on Drug Abuse

# Medical Fentanyl – What Does It Look Like?

- **Transdermal patches** (Duragesic®):
  - Patch that goes directly on the skin and includes a gel form of fentanyl.
  - The patches slowly release fentanyl into the skin and then the bloodstream over 48 to 72 hours.
- **Dissolving Tablets/Films**
  - **Buccal tablets** (Fentora®): Check tablets dissolve in the mouth.
  - **Sublingual tablets/sprays** (Abstral®), (Subsys®): Film or spray placed under the tongue.
- **Nasal spray** (Lazanda®)
- **Lozenges and lollipops** (Actiq®):
  - Fentanyl lozenges are similar in their makeup to the lollipop versions of fentanyl, and they are for opioid-tolerant individuals, particularly for the treatment of breakthrough cancer pain and, in some cases, for pain not related to cancer.



# Illicit Fentanyl

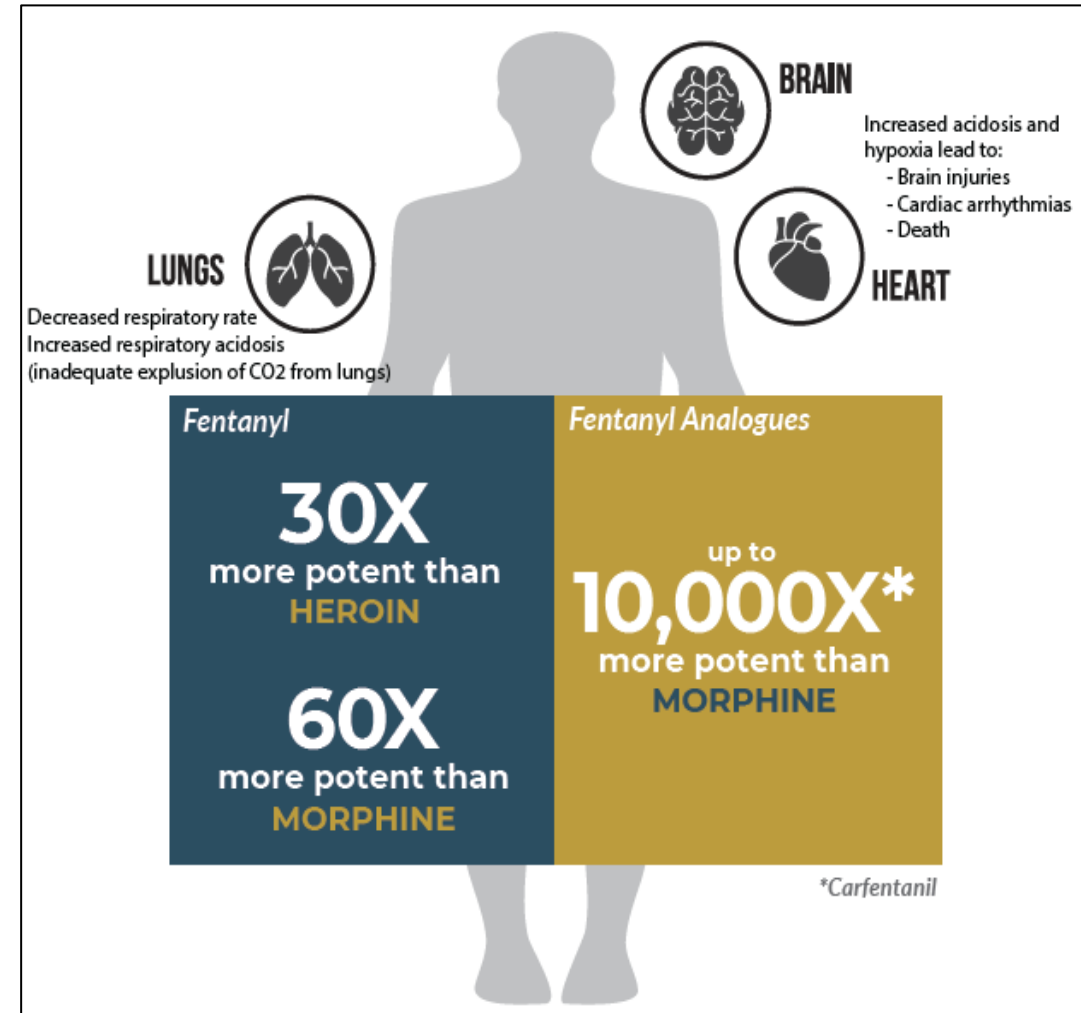
- Illegal fentanyl, primarily manufactured in foreign clandestine labs and smuggled into the United States through Mexico, is being distributed across the country and sold on the illegal drug market. It is sold in the following forms:
  - Powder
  - Dropped on blotter paper like small candies
  - In eye droppers or nasal sprays
  - Pills that look like real prescription opioids



Source: National Institute on Drug Abuse

# Illicit Fentanyl – Analogues

- Fentanyl analogs are illicit (and often deadly) alterations of the medically prescribed drug fentanyl.
  - Examples include: acetylfentanyl, furanylfentanyl, and carfentanil
    - Similar chemical structure to fentanyl but not routinely detected because specialized toxicology testing is required.
- Carfentanil, the most potent fentanyl analog detected in the United States, is estimated to be 10,000 times more potent than morphine.



# Fentanyl Basics – What Makes It Different?

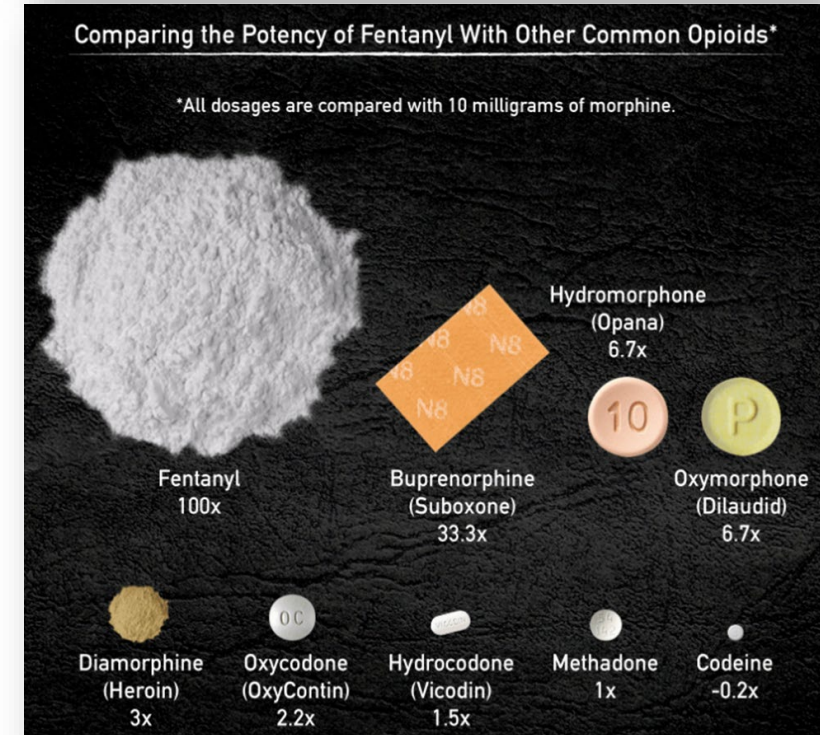
- **Strength/Potency**

- It is approximately 100 times more potent than morphine and 50 times more potent than heroin as an analgesic.



**Fentanyl is a synthetic opioid that is up to**

**50x** stronger than heroin      **100x** stronger than morphine



# Fentanyl Basics – Other Properties

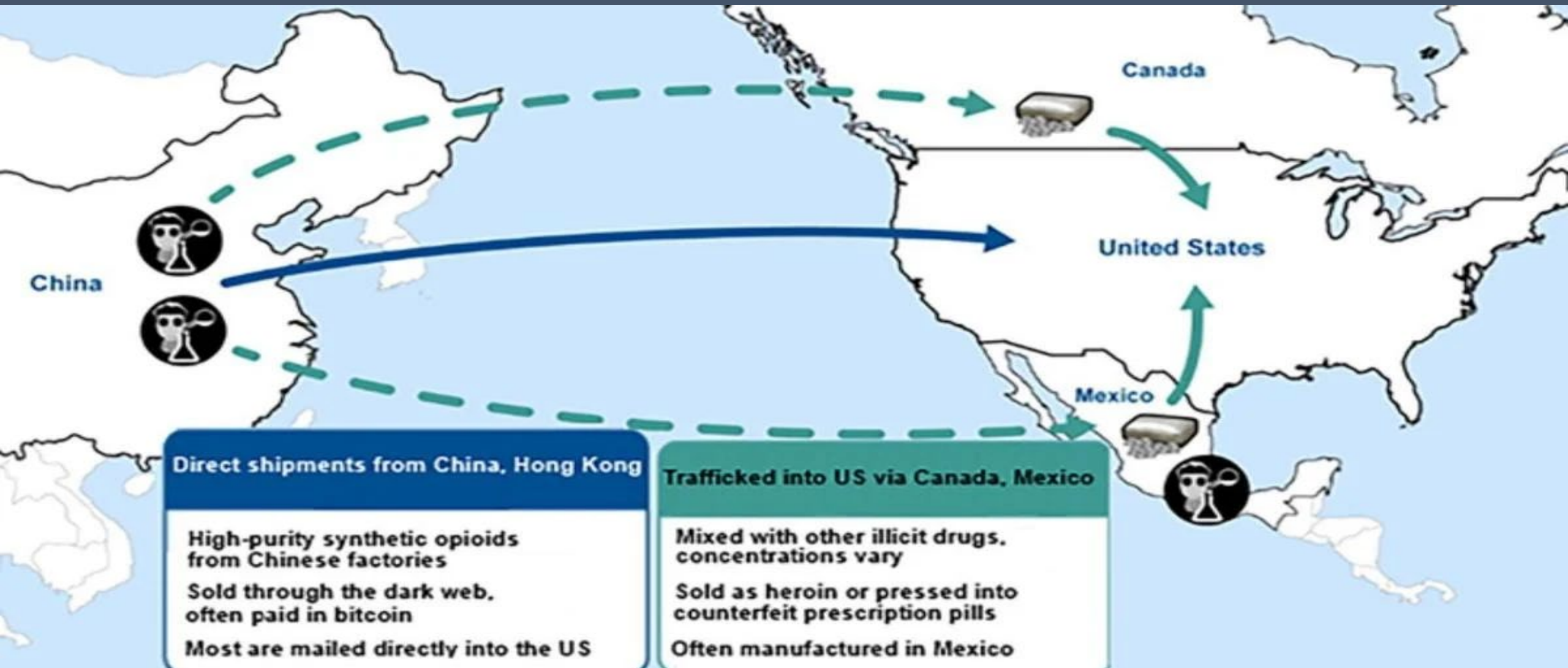
- **Taste**

- None. There is no guaranteed way to identify fentanyl by taste.
- A study of active users claimed the ability to identify fentanyl-laced heroin by taste, stating that fentanyl tastes sweet, while heroin is very bitter. **THIS IS ANECDOTAL AND NOT A RELIABLE WAY TO IDENTIFY THE DRUG.**



- **Smell:** None. Fentanyl has no unique smell.
- **Color:** White, in pure form.
  - Can be off-white, tan or brown, depending on what it is mixed with.

# Fentanyl Basics – Where Does It Come From?



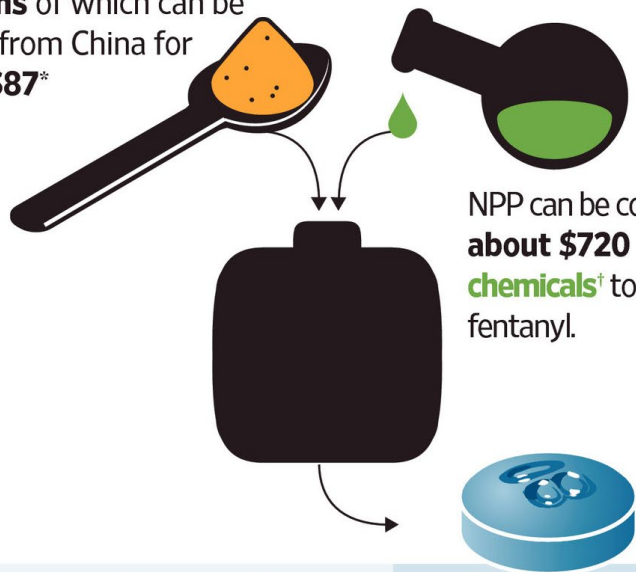


# Fentanyl Basics – Where Does It Come From?

## Criminal Chemistry

Traffickers manufacturing fentanyl often purchase the key ingredient from China, which doesn't regulate its sale. Here's how the chemical building blocks become a highly profitable street drug.

The key ingredient is **NPP**, **25 grams** of which can be bought from China for about **\$87\***



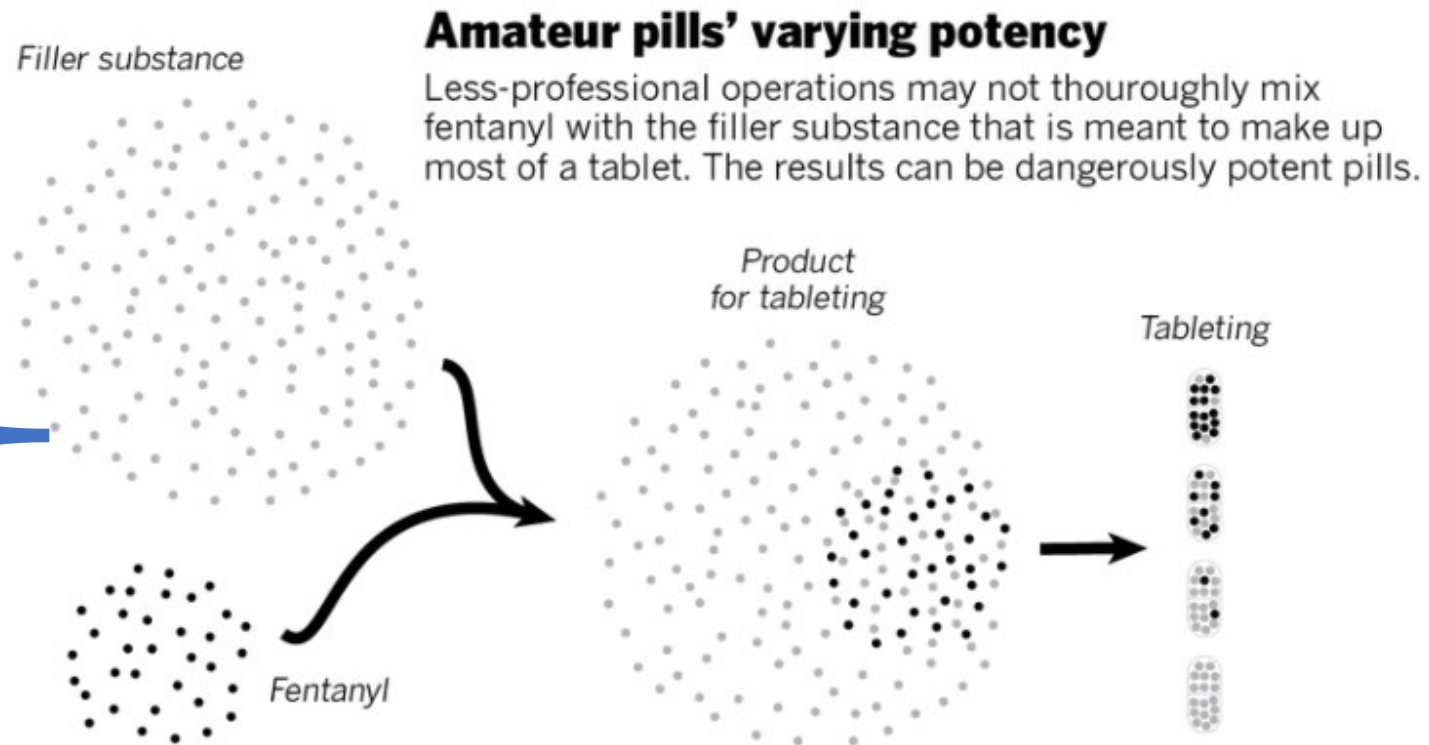
NPP can be combined with about **\$720** of **other chemicals†** to produce fentanyl.

The resulting 25 grams of fentanyl cost about **\$810** to produce...

...and are equivalent to up to **\$800,000** of pills on the black market.

\*Average current price from Chinese suppliers    †Prices from U.S. suppliers  
Sources: NES Inc.; Drug Enforcement Administration; Calgary Police

THE WALL STREET JOURNAL.



Source: United Nations Office on Drugs and Crime

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# Illicit Fentanyl – Risk of an Overdose

- Two milligrams of fentanyl can be lethal, depending on a person's body size, tolerance and past usage.
- DEA analysis has found counterfeit pills ranging from .02 to 5.1 milligrams.
  - 42% of pills tested for fentanyl contained at least 2 mg of fentanyl, considered a potentially lethal dose.
- Drug trafficking organizations typically distribute fentanyl by the kilogram.
  - One kilogram of fentanyl has the potential to kill 500,000 people.
- It is possible for someone to take a pill without knowing it contains fentanyl.
  - It is also possible to take a pill knowing it contains fentanyl but with no way of knowing if it contains a lethal dose.

Source: Drug Enforcement Agency

# Fentanyl Basics – Testing and Identification

- It's challenging to identify fentanyl since it does not have unique characteristics (color, smell, taste, etc.), which is one reason why it's so dangerous for people when they buy heroin and other drugs laced with it.
- Fentanyl Test Strips (FTS): Small strips of paper that can help detect the presence of fentanyl in any drug batch, which can be lifesaving.



Hold the strip by the blue end

One line = FENTANYL

Don't dip past this line



Two lines = Negative



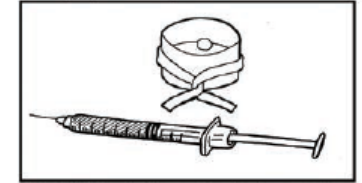
# Fentanyl Basics – Testing and Identification

## • Fentanyl Test Strips

- Most FTS on the market cost one dollar per strip and are 96%-100% accurate in detecting the presence of fentanyl.
  - The strips can detect at least 10 fentanyl analogs.
- FTS are a useful tool in the fight against overdoses and can lead to changes in an individual's drug use and provide an opportunity to engage individuals in recovery, extend life-saving interventions and offer social service support.
  - 89% of individuals who use substances agreed that using FTS would make them feel better about protecting them from an overdose.

### Directions

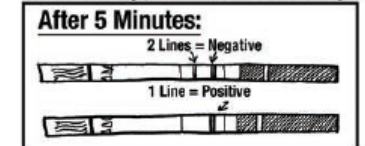
1. Prepare drugs in a fresh, clean cooker
2. Set prepared drugs aside:



3. Add 1/4 inch clean water to drug residue
4. Dip end of test strip in water for 15 seconds



5. Check the strip after 5 minutes. One line means fentanyl, 2 lines means no fentanyl



- \*Test may also be used with baggie residue.
- \*Check any street drug, benzos, crack, meth, etc, as well as all opioids.
- \*If test doesn't result in 1 or 2 lines it's invalid



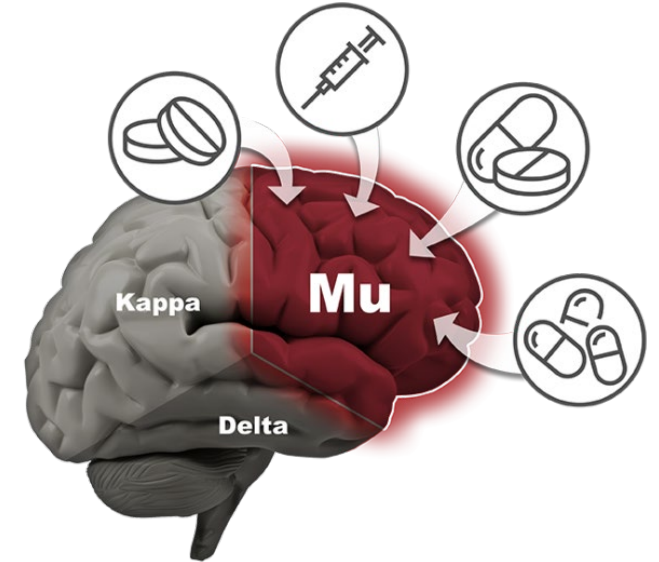
Source: Sherman (2018), Johns Hopkins Bloomberg School of Public Health

# Illicit Fentanyl – Am I at Risk if Exposed?!?

- **Fentanyl must enter your bloodstream to travel to your brain.**

- Routes of exposure (ways into your brain) include:

- Ingestion – swallowing, chewing, eating
- Direct mucous membrane contact in the eyes, nose, or mouth
  - Touching eyes, nose, or mouth with contaminated hands or gloves
- Inhalation or breathing



# Illicit Fentanyl – Am I at Risk if Exposed?!?

- **Contact with skin**

- **The only form of fentanyl that can go through your skin is fentanyl patches.**
  - If you touch or come in direct contact with a fentanyl patch, you could overdose
    - It takes 3-13 hours for fentanyl patches to deliver enough drug to produce a noticeable effect and 35 hours for full effect.
    - Children and pets are at greatest risk following ingestion of fentanyl patches.
- **Crystalline (powder) fentanyl can not pass through your skin.**
  - If you touch or come in direct contact with fentanyl powder, it is virtually impossible for someone to absorb enough Fentanyl through their skin to cause a serious overdose simply by touching it.
  - Wash hands with soap and water to remove fentanyl. **DO NOT** use alcohol-based hand cleaners/sanitizers.
    - Alcohol-based cleaners do not remove the fentanyl and can decrease the skin's ability to keep the fentanyl out.



# Illicit Fentanyl – Am I at Risk if Exposed?!?

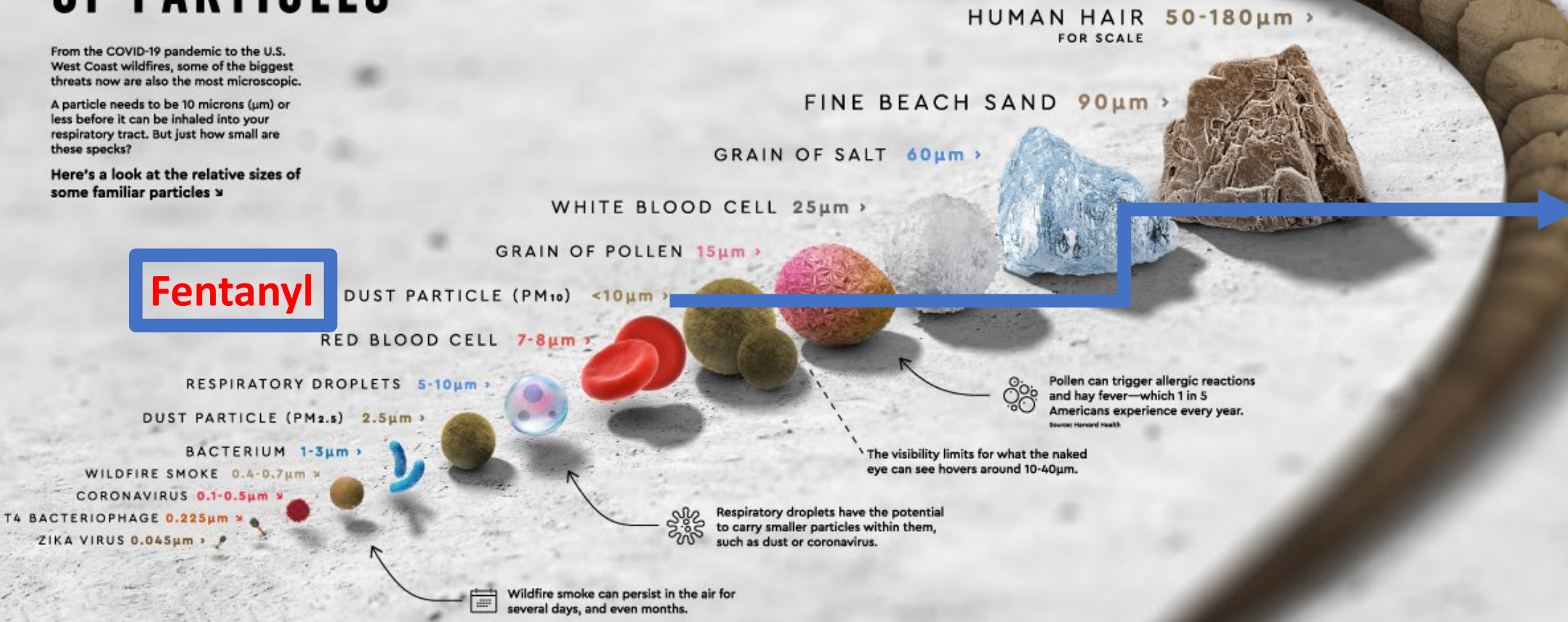
## THE RELATIVE SIZE OF PARTICLES

From the COVID-19 pandemic to the U.S. West Coast wildfires, some of the biggest threats now are also the most microscopic.

A particle needs to be 10 microns ( $\mu\text{m}$ ) or less before it can be inhaled into your respiratory tract. But just how small are these specks?

Here's a look at the relative sizes of some familiar particles

**Fentanyl**



Fentanyl powders range in size from 10-100 $\mu\text{m}$ . Our skin protects from things much smaller, like bacteria and coronavirus.

# Illicit Fentanyl – Am I at Risk if Exposed?!?

- **Inhalation or Breathing Fentanyl**

- Fentanyl is known to evaporate and aerosolize **very poorly**.
  - Fentanyl powder on carpets or hard surfaces should not get into the air to a level where it could be harmful.
  - To prevent airborne fentanyl, do not use a vacuum, blow a fan on, or otherwise disturb an area that may contain fentanyl.

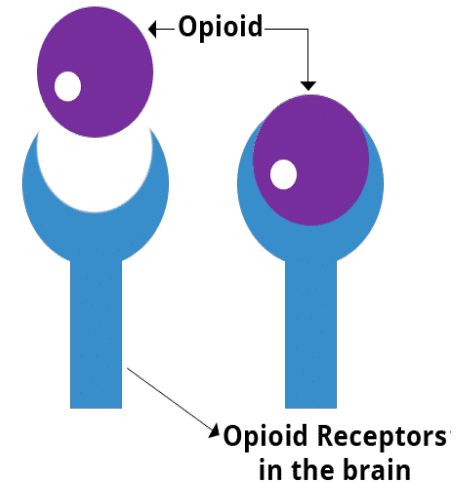


Source: Centers for Disease Control and Prevention



# Opioid Overdoses: Signs and Symptoms

- Opioids, including fentanyl, are substances that bind to the opioid receptors in the brain. These receptors affect the brain's regulation of breathing.
- Opioids are a depressant which slows down the body's functions. An opioid overdose occurs when too many opioids attach and cause breathing to stop.
- Symptoms that indicate the body is speeding up, such as increased heart rate or hyperventilation, are not typically signs of an opioid overdose.



## Signs of an opioid overdose include:

- Unresponsive to stimulus (unconscious)
- Breathing is very slow and shallow, erratic or has stopped
- Choking sounds or snore-like gurgling noise
- Face is pale or clammy
- Vomiting
- Body is limp
- Fingernails and lips turn blue/purplish black
- Pulse is slow, erratic or undetectable

# Responding to Potential Fentanyl Exposure

- Avoid performing tasks or operations that may cause illicit drugs to become airborne.
- Do not touch the eyes, nose or mouth after touching a surface that may be contaminated, even if wearing gloves.
- Wash hands with soap and water after working in an area that may be contaminated, even if gloves were worn.
- Going to the hospital following a known exposure is a good idea, just in case fentanyl got into their system.
  - Although overdosing from exposure is rare, someone may have had a much larger exposure than they realize and need medical attention.

Source: Centers for Disease Control and Prevention

# Illicit Fentanyl – Treatment/Recovery

- **Fentanyl misuse, dependence and addiction**
  - Overcoming any opioid use disorder is difficult, and treatments are similar regardless of the opioid involved.
  - The length of time (months, years) an opioid has been used, the frequency (times per day, week), and potency (strength) all play a role in determining how to address treatment needs.
  - Fentanyl is very potent, and many people who use heroin laced with fentanyl will need to start treatment with a Medication for Opioid Use Disorder (MOUD).
    - Methadone is a potent MOUD that is commonly used.
    - Buprenorphine (Suboxone) can also be used but may not be strong enough for some people who inject drugs laced with fentanyl.

Source: National Institute on Drug Abuse

# Illicit Fentanyl – Pregnancy

- **Fentanyl misuse, dependence and addiction during pregnancy**
- Opioid exposure during pregnancy has been linked to poor health effects for both mothers and their babies.
- For mothers, opioid use disorder (OUD) is linked to maternal death.

For babies, maternal OUD or long-term opioid use has been linked to:

- Poor fetal growth
- Preterm birth
- Stillbirth
- Birth defects
- Neonatal abstinence syndrome

**There are evidence-based treatments for pregnant women with OUD**, including Medication-Assisted Treatment/Medication for Opioid Use Disorder and programs in Tennessee that specifically work with this population.



# Emerging Drug Trends

- Nitazenes
  - Synthetic Opioids
- Xylazine
  - Non opioid tranquilizer

# Emerging Opioid Trend: Nitazenes

- Very powerful synthetic (lab-made) opioid
  - Most common nitazenes
    - Metonitazene (similar potency to fentanyl)
    - Isotonitazene
    - Protonitazene
    - Etonitazene
- } Much more potent than fentanyl
- Responds to naloxone but may take more doses

# Emerging Trend: Xylazine

- Xylazine
  - Non-opioid veterinary tranquilizer
  - Not FDA-approved for human use
  - Does not respond to naloxone
  - Commonly found with other substances, including fentanyl, methamphetamine, cocaine and benzodiazepines (such as Xanax)
- DEA Report-Lab samples in 2022
  - 23% of fentanyl powder
  - 7% of fentanyl pills seized

# Xylazine-Wounds and Necrosis

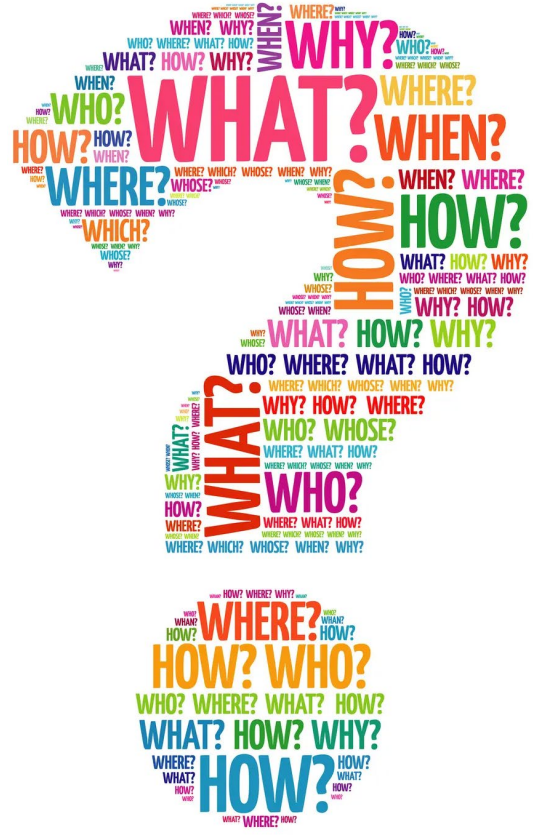
- Abscesses, ulcers, wounds and necrosis
- Wound care
- Blood-borne infections/prevention strategies



# Public Health Alerts

- FDA Alert for Healthcare Professionals (11/2022)
- DEA Info/Alert (11/2022)
- TDH Xylazine in TN (11/2022)
- Office of National Drug Control Policy (1/2023)

# Questions?



# Nursing Home and Partnership for Community Health: CMS 12th SOW GOALS



## OPIOID UTILIZATION AND MISUSE

- Promote opioid best practices
- Reduce opioid adverse drug events in all settings



## PATIENT SAFETY

- Reduce hospitalizations due to c. diff
- Reduce adverse drug events
- Reduce facility acquired infections



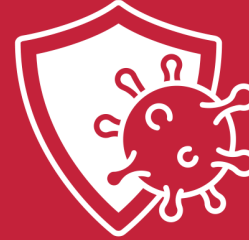
## CHRONIC DISEASE SELF-MANAGEMENT

- Increase instances of adequately diagnosed and controlled hypertension
- Increase use of cardiac rehabilitation programs
- Reduce instances of uncontrolled diabetes
- Identify patients at high-risk for kidney disease and improve outcomes



## CARE COORDINATION

- Convene community coalitions
- Reduce avoidable readmissions, admissions to hospitals and preventable emergency department visits
- Identify and promote optimal care for super utilizers



## COVID-19

- Support nursing homes by establishing a safe visitor policy and cohort plan
- Provide virtual events to support infection control and prevention
- Support nursing homes and community coalitions with emergency preparedness plans



## IMMUNIZATION

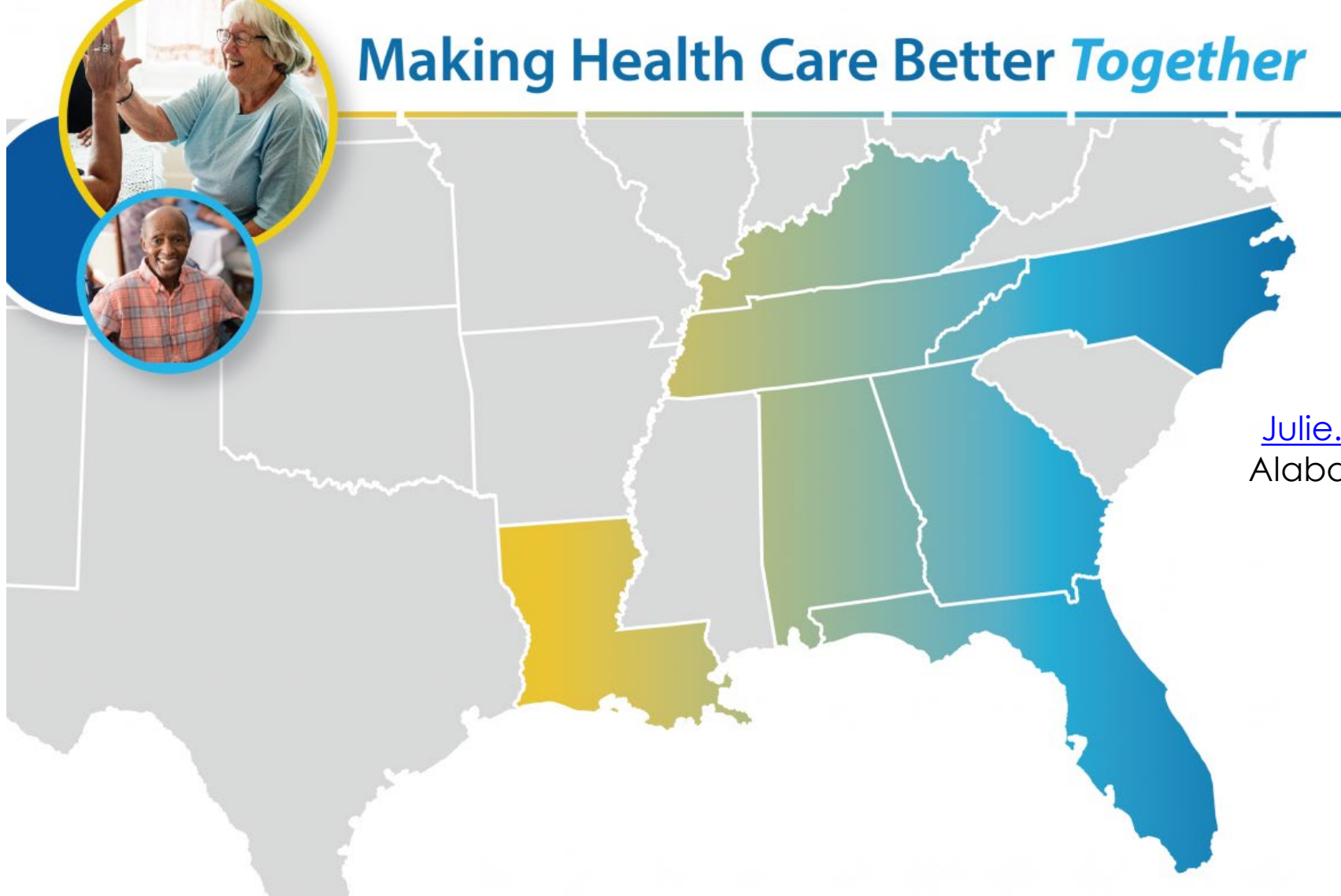
- Increase influenza, pneumococcal, and COVID-19 vaccination rates



## TRAINING

- Encourage completion of infection control and prevention trainings by front line clinical and management staff

# Making Health Care Better *Together*



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# Making Health Care Better Together



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