Content warning:
This webinar recording and webinar slides contain graphic images depicting the effects of Xylazine on the human body.

Pacific Southwest
RURAL OPIOID TECHNICAL
ASSISTANCE REGIONAL CENTER

Emerging Drug Trends and Their Impact on Rural Communities: A Focus on Fentanyl and Xylazine

(Part 1, August 2023 Webinar Series)

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What Do We Hope You Learn Today?

- Fentanyl crisis impacting non-metropolitan rural communities
- Emerging issue of xylazine – mechanism of action and acute/chronic physical health problems
- Harm reduction approaches
- Strategies for overcoming barriers to treatment and harm reduction services in rural areas

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- This presentation contains **images of drugs and wounds** that may cause discomfort to the viewer. Please do what you need to do to take care of yourself as the images are featured.

Let’s begin with Fentanyl

Recent History of US Street Opioid Supply

1991-2013: Mexican black tar heroin west of Mississippi River; Colombian powder heroin east of the Mississippi; mixed supply in Midwestern cities like Chicago *(Ciccarone & Bourgois 2003)*

2013-2019: Mexican powder heroin displaces Colombian heroin from East Coast markets and fentanyl enters opioi d supply chains primarily on the East Coast *(Ciccarone 2021)*

2017: Xylazine becomes increasingly prevalent in Rustbelt region, beginning in Philadelphia *(Friedman, Montero, Bourgois et al. 2022),* as fentanyl begins to spread west *(Shover et al. 2020)*

2020-present: Opioid supply on East Coast increasingly becomes a mix of **fentanyl** and **xylazine ("tranq")** as heroin disappears; Mexican methamphetamine enters East Coast/Rust Belt street markets formerly dominated by heroin and cocaine *(Montero et al. 2022)*

The 2023 Drug Market

1. Cocaine (with fentanyl)
2. More potent methamphetamine (with/without fentanyl)
3. Fentanyl and analogues
4. Benzimidazole, metonitazene, isotonitazene (opioids)
5. Xylazine (non-opioid)
6. Gabapentin

Fentanyl's Uneven Spread

- Fentanyl's spread has been conditioned by pre-existing geographic distribution of heroin formulations (powder vs. black tar)
- Fentanyl prevalence on West Coast is increasing substantially but is still far below East Coast/Midwest levels *(Shover et al. 2020)*
- Most of the fentanyl entering the country now crosses Southwestern border points with purity levels around 1.5 - 10% *(DEA PFD 2020:8)*

Fentanyl Beyond “Potency”

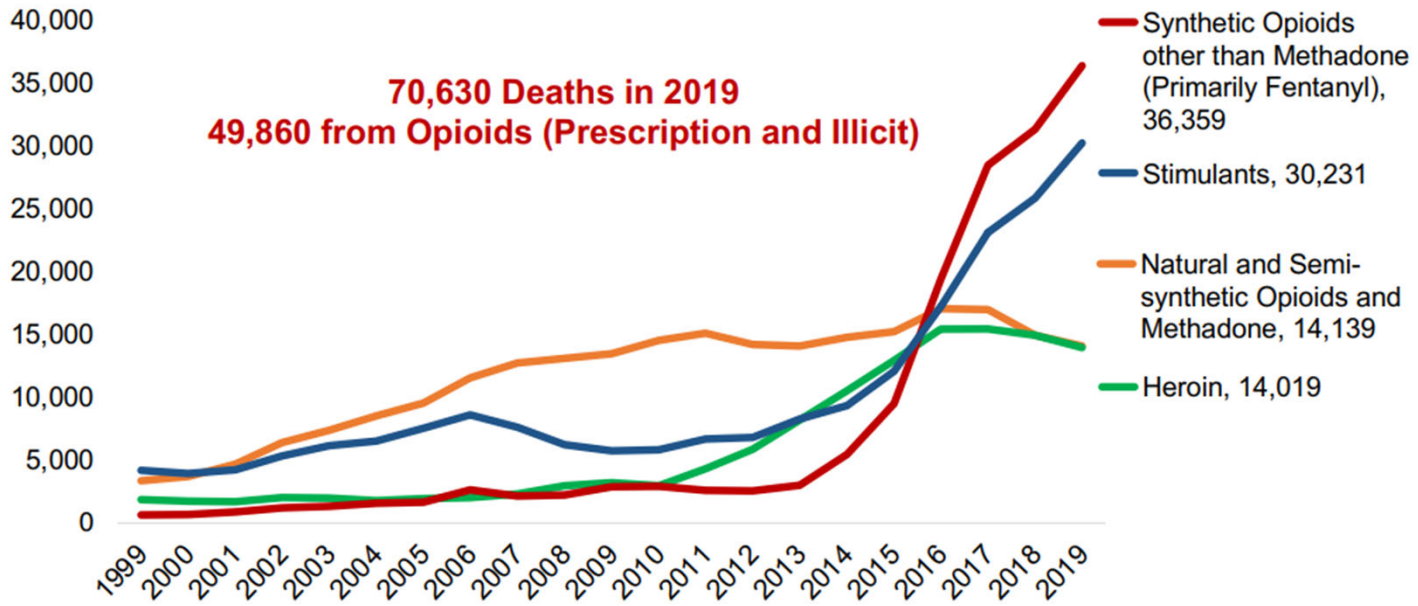
Experience of fentanyl consumption (vs. heroin)

- Duration of effect / withdrawal symptoms / frequency of injection

- Quality of “high” *(Montero et al. 2022; Ciccarone, Ondocsin, and Mars 2017)*
  - Fentanyl shapes later changes as its deficiencies open space for new additives and substances (xylazine, meth)

Evolution of Drivers of Overdose Deaths, All Ages

Analgesics ➡ Heroin ➡ Fentanyl ➡ Stimulants



Source: The Multiple Cause of Death data are produced by the Division of Vital Statistics, National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention (CDC), United States Department of Health and Human Services (US DHHS).

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Steep Rise in Stimulant/Opioid Mortality Rates

- Combination of cocaine/opioid mortality from 2007-2019 increased 184% among White people but 575% among Black people
- Combination of methamphetamine/opioid mortality during this period rose 3200% among White people and an astounding 16,200% among Black people
- Cocaine/opioid mortality rates also rose sharply among Latino/a people and Asian-Americans during this period

Drug Overdose Deaths* Continue to Increase in 2021

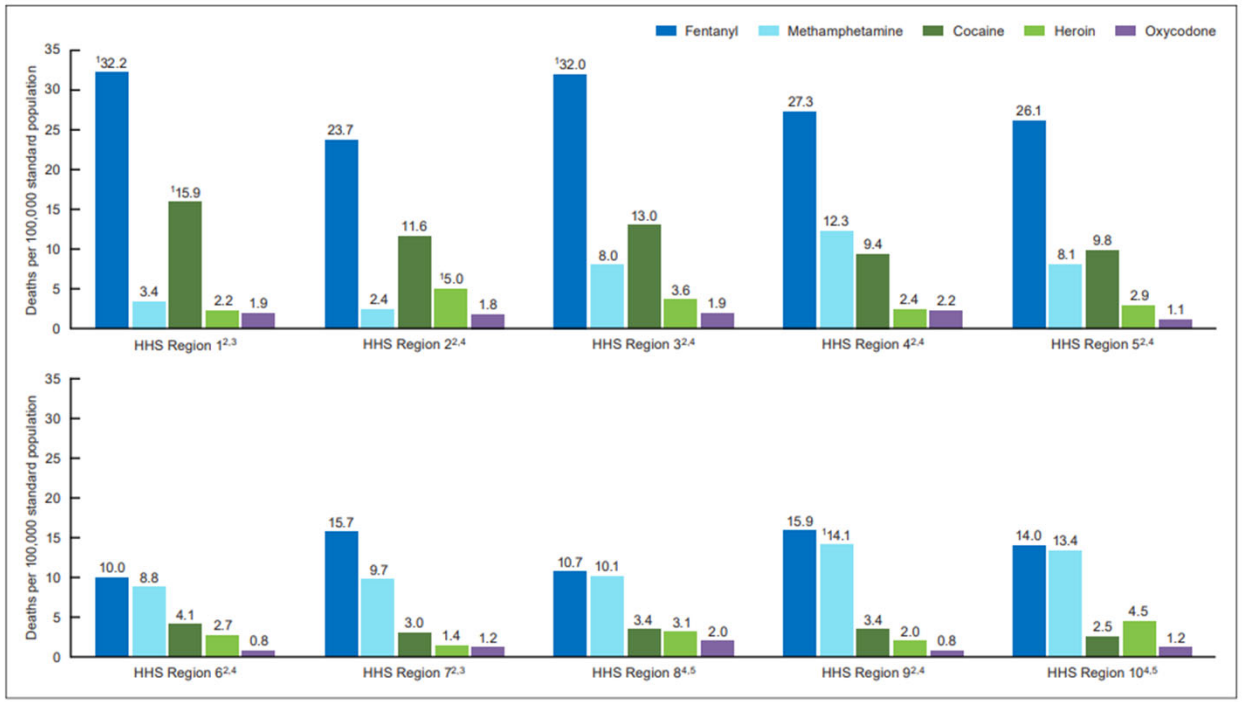
	ALL DRUGS	HEROIN	NAT & SEMI SYNTHETIC	METHADONE	SYNTHETIC OPIOIDS (mainly illicit fentanyl)	COCAINE	OTHER PSYCHO-STIMULANTS (mainly meth)
11/2020*	92,366	13,698	13,667	3,593	56,595	19,953	23,894
5/2021	101,075	11,633	13,909	3,802	64,871	21,235	28,890
11/2021*	106,854	9,504	13,643	3,619	70,420	23,908	32,476
Percent Change 11/20-11/21	**15.7%**	**-30.6%**	**-0.2%**	**0.7%**	**24.4%**	**19.8%**	**36.0%**

*NCHS Provisional drug-involved overdose death counts are PREDICTED VALUES, 12 months ending in select months.

Overdose Rates by Substance and HHS Region

Vital Statistics Surveillance Report

Figure 5. Age-adjusted rates of drug overdose deaths, by selected drugs and public health region: United States, 2021



[1]Rate of deaths involving this drug is significantly higher than all other regions ($p < 0.05$).
[2]Rate of deaths involving fentanyl was highest compared with the rate of deaths involving methamphetamine, cocaine, heroin, and oxycodone ($p < 0.05$).
[3]Rate of deaths involving oxycodone was lowest compared with the rate of deaths involving fentanyl, methamphetamine, and cocaine ($p < 0.05$).
[4]Rate of deaths involving oxycodone was lowest compared with the rate of deaths involving fentanyl, methamphetamine, cocaine, and heroin ($p < 0.05$).
[5]Rate of deaths involving fentanyl was highest compared with the rate of deaths involving cocaine, heroin, and oxycodone ($p < 0.05$).
NOTES: The 10 U.S. Department of Health and Human Services (HHS) public health regions are: Region 1 (CT, MA, ME, NH, RI, and VT); Region 2 (NJ and NY); Region 3 (DC, DE, MD, PA, VA, and WV); Region 4 (AL, FL, GA, KY, MS, NC, SC, and TN); Region 5 (IL, IN, MI, MN, OH, and WI); Region 6 (AR, LA, NM, OK, and TX); Region 7 (IA, KS, MO, and NE); Region 8 (CO, MT, ND, SD, UT, and WY); Region 9 (AZ, CA, HI, and NV); and Region 10 (AK, ID, OR, and WA). Drug overdose deaths are identified using *International Classification of Diseases, 10th Revision* (ICD–10) underlying cause-of-death codes X40–X44, X60–X64, X85, and Y10–Y14. Deaths may involve other drugs in addition to the referent drug (that is, the one listed). Deaths involving more than one drug (for example, a death involving both heroin and cocaine) are included in both totals. Age-adjusted death rates were calculated using the direct method and the U.S. 2000 standard population.

The rate of deaths involving psychostimulants with abuse potential was **31%** higher in rural counties- The rate of deaths involving natural and semisynthetic opioids was nearly **13%** higher in rural counties

Figure 3. Age-adjusted rates of drug overdose deaths, by type of drug and urban–rural status: United States, 2020

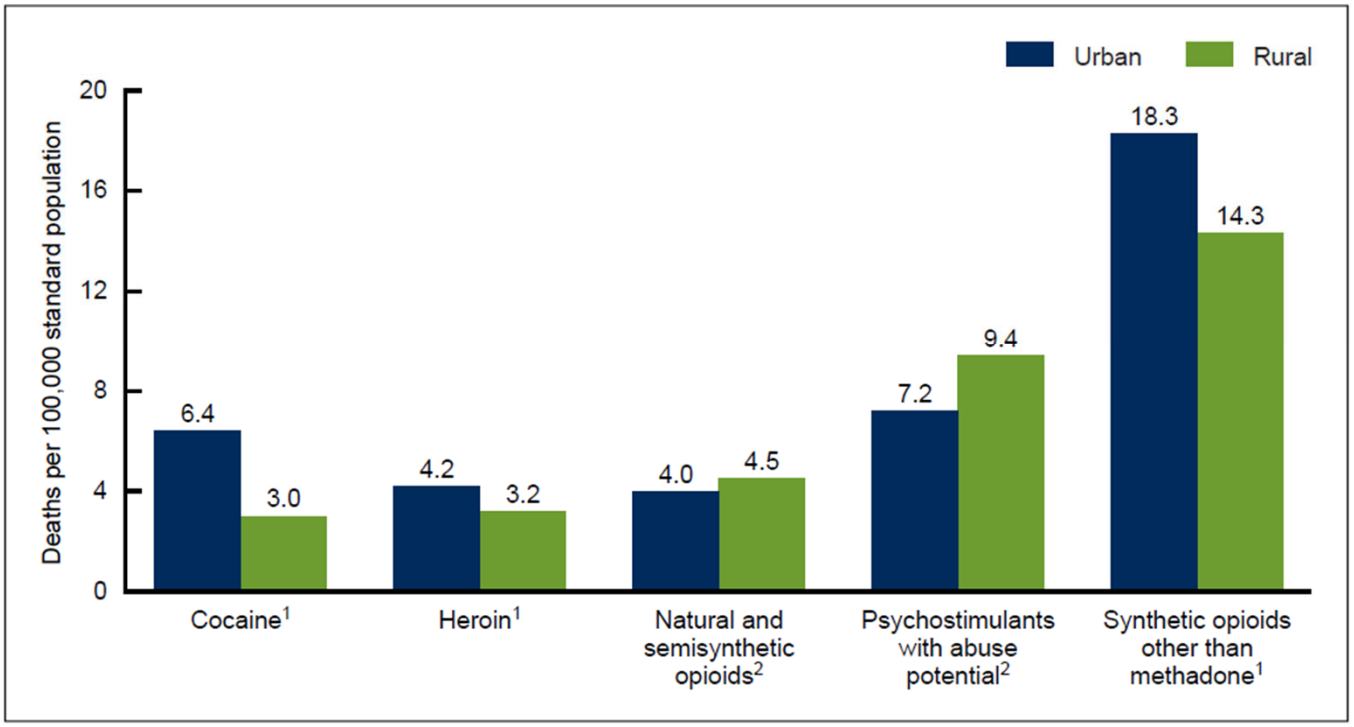
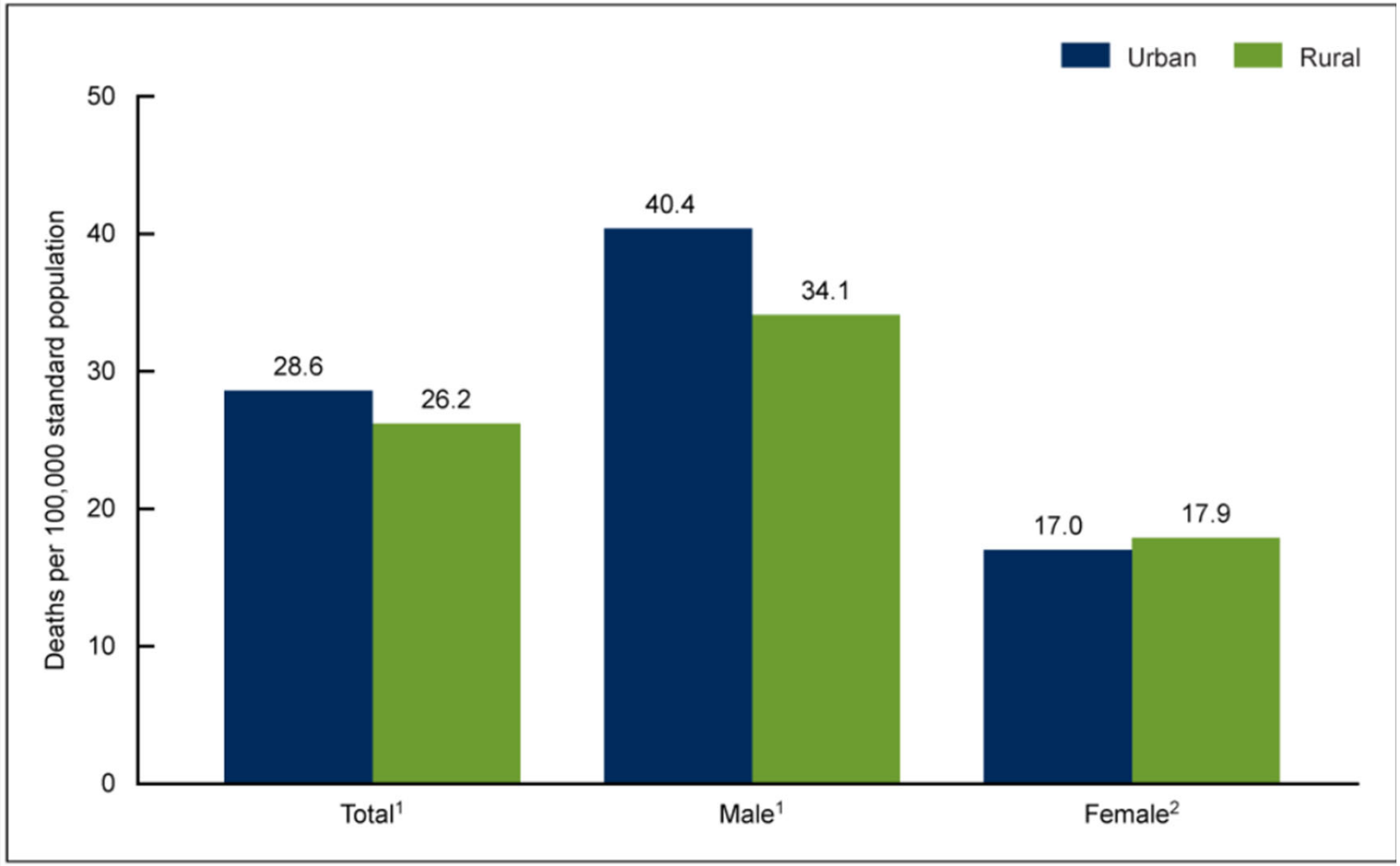
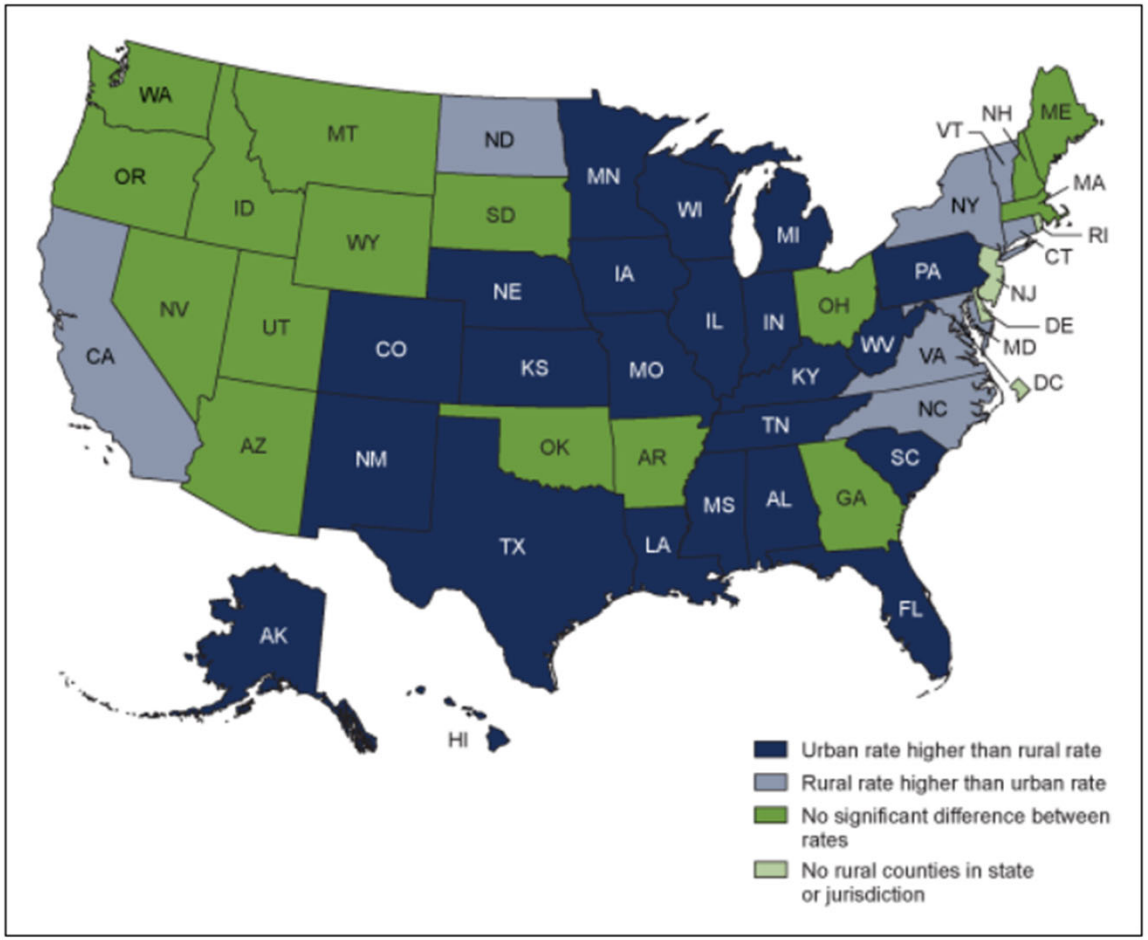


Figure 1. Age-adjusted rates of drug overdose deaths, by sex and urban–rural status: United States, 2020



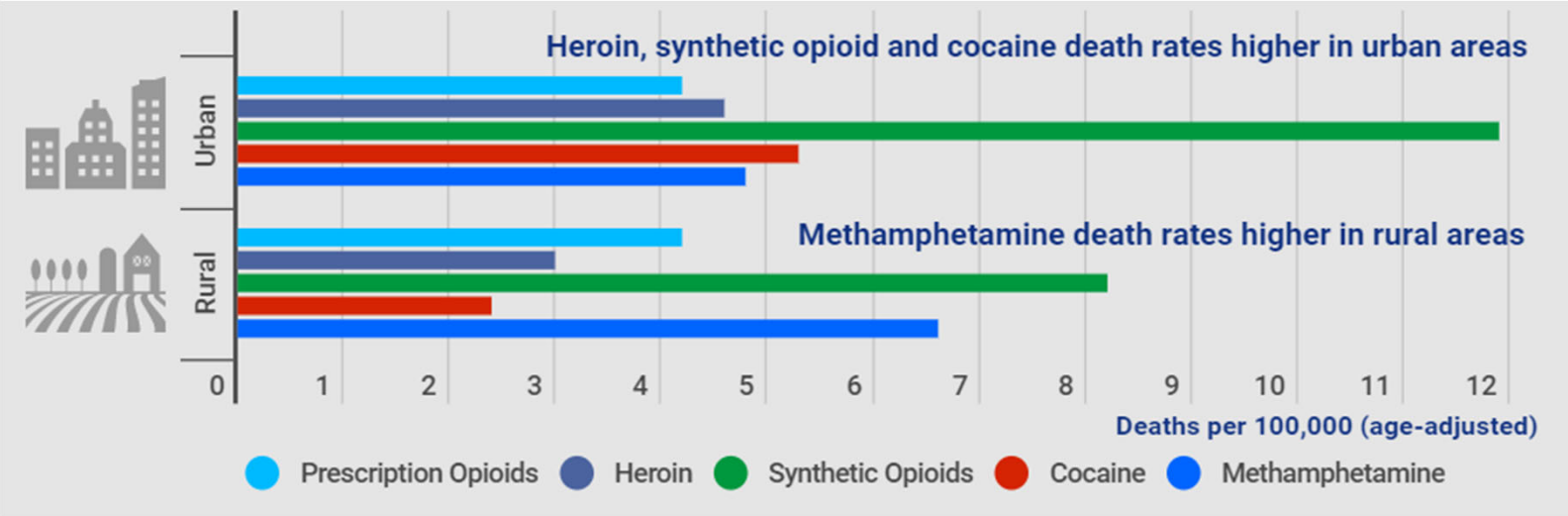
[1]Rate higher in urban counties than in rural counties ($p < 0.05$).
[2]Rate lower in urban counties than in rural counties ($p < 0.05$).
NOTES: Drug overdose deaths were identified using *International Classification of Diseases, 10th Revision* underlying cause-of-death codes X40–X44, X60–X64, X85, and Y10–Y14. Age-adjusted death rates were calculated using the direct method and the 2000 U.S. standard population. Decedent's county of residence was classified as urban or rural based on the 2013 NCHS Urban–Rural Classification Scheme for Counties. Access data table for Figure 1 at: https://www.cdc.gov/nchs/data/databriefs/db440-tables.pdf#1.
SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

Figure 4. Urban–rural differences in age-adjusted rates of drug overdose deaths, by jurisdiction of residence: United States, 2020



Spencer MR, Garnett MF, Miniño AM. Urban–rural differences in drug overdose death rates, 2020. NCHS Data Brief, no 440. Hyattsville, MD: National Center for Health Statistics. 2022

Differential Drug-Related Death Rates in Rural vs. Urban Areas



NIHCMF, 2021

What's the Deal with Fentanyl?

- **Fentanyl gets mixed with other drugs – e.g. heroin, methamphetamine, cocaine**
- **DEA analysis of counterfeit pills showed 0.02 to *5.1mg of fentanyl/tablet* (>*2x lethal dose!*)**
  - **42% of pills tested contained ≥2mg**
  - **Medical dose 50-200*mcg* = 0.05-0.2*mg***
  - **Drug trafficking is by the *kg***
  - **1kg of fentanyl can kill *500,000 people***

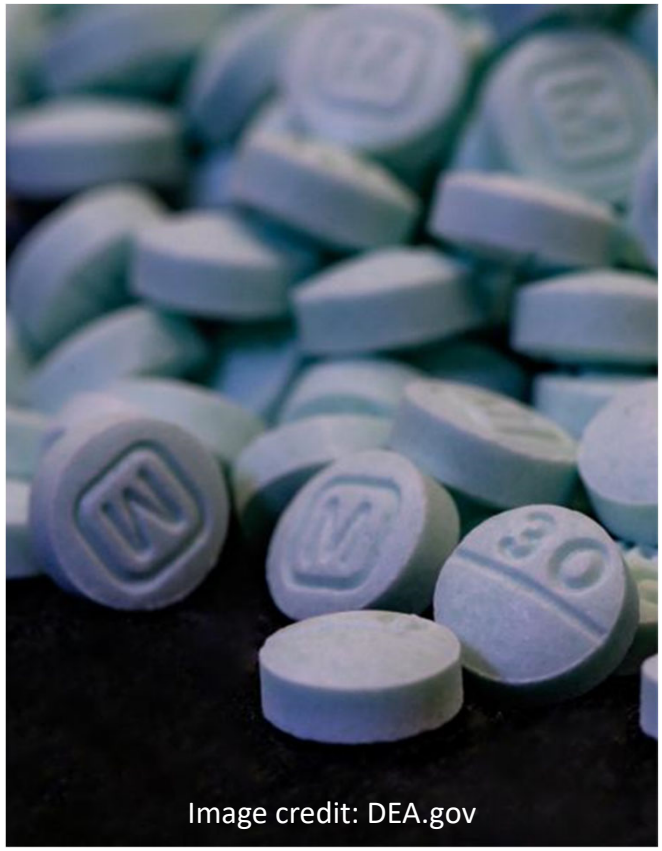


Image credit: DEA.gov

Figure 76. Two Milligrams of Fentanyl - A Potential Lethal Dose

Source: Network Environmental Systems (NES)

A lethal dose of carfentanil 1/100th of the amount shown next to the penny.

Potential Lethal Dose Heroin, Fentanyl and Carfentanil

Comparing the size of lethal doses of heroin, fentanyl, and carfentanil. The vials here contain an artificial sweetener for illustration. (New Hampshire State Police Forensic Laboratory)

Fentanyl Packaged as Candy

Rainbow Fentanyl

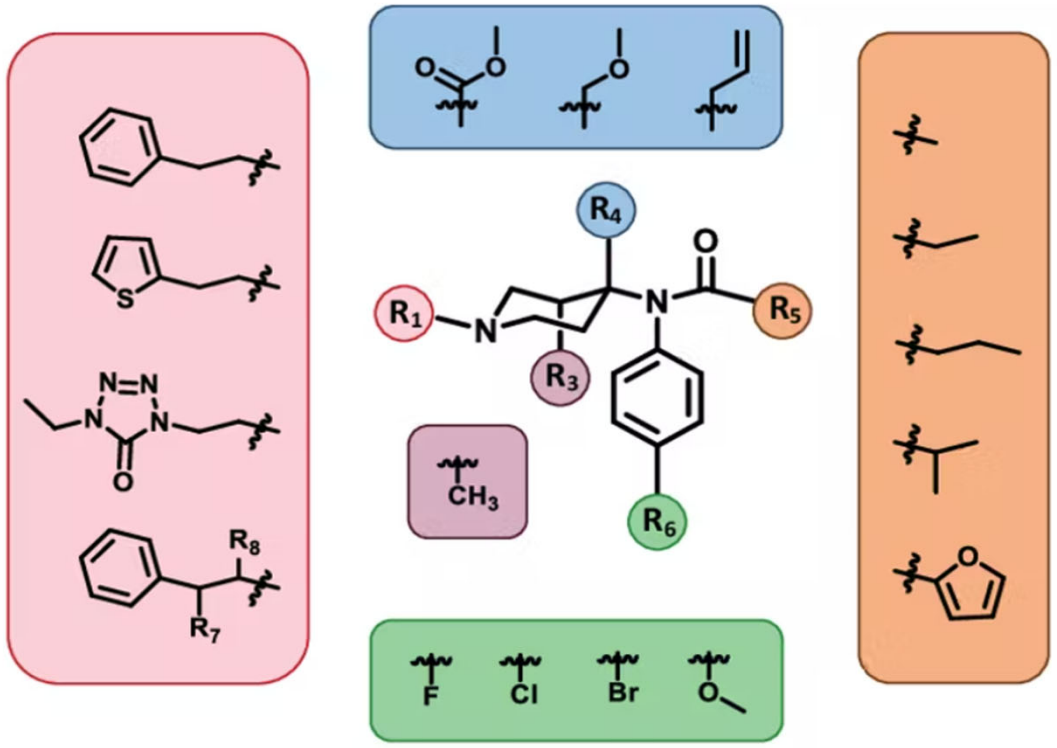
Rainbow Fentanyl: A Dangerous Trend

Sep 27, 2022

Fentanyl Overview

- This synthetic opioid was developed as painkiller for surgery.
- Fentanyl is 50 times more potent than heroin.
- Fentanyl has a specific chemical structure with multiple areas than can be modified to form related compounds with marked differences in potency
- In 2016 some patients who overdosed only had fentanyl in their toxicology reports.

Fentanyl's chemical backbone (the structure in the center) has areas (the colored circles) that can be substituted with the surrounding colored boxes to change its potency. For example, carfentanil is 100 times more potent than fentanyl.



Fentanyl's chemical backbone (the structure in the center) has multiple areas (the colored circles) that can be substituted with different functional groups (the colored boxes around the edges) to change its potency. Christopher Ellis et al., CC BY-

The Fentanyl Problem (1)

- Fentanyl and its analogs are the primary drivers of death in the opioid overdose crisis.
- Fentanyl can be used knowingly or unknowingly.
- It has been pressed into counterfeit pills mimicking prescription medicines.
- It is 50 times stronger than heroin.
- Unintended use, particularly by people with no or low opioid tolerance, has resulted in a spike in drug overdose deaths.

The Fentanyl Problem (2)

- Overdose can occur by ingestion, injection, or inhalation.
- Overdose by fentanyl can not occur by exposure through skin.
- Reversal of fentanyl overdose may require repeated doses of naloxone.
- This paper offers recommendations for remediating the impact of fentanyl.

Introduction

- Uncertainty of the presence of fentanyl in opioids has led to some safer practices among people who inject drugs (PWID).
  - Tester shots
  - Micro-dosing
  - Staggering injections with peers
  - Fentanyl test strips
- This qualitative study was to better understand how PWID came to recognize fentanyl by sight, taste, and subjective drug effects in order to prevent overdose.

Methods

- Study participants were recruited at a needle services program in Greensboro, North Carolina.
- Eligible participants used illicit opioids and injected in the past 7 days.
- Semi-structured, 60-minute, interviews were conducted.

Results: Physical Sensations (1)

- Participants detected changes to the heroin supply using sensory and subjective drug effects.
- Most (86%) identified 2014 and 2015 as the point when the “heroin” suddenly started to feel different.
- All noted sharp increases in potency.
- The rush was much more intense sometimes to the point of causing panic and anxiety.
- 25% described feeling “pins and needles” on the neck or face (the prickly sensations did not occur with heroin).

Results: Physical Sensations (2)

- The fentanyl high was described as much briefer (sometimes just minutes) compared to heroin (4 to 8 hours).
- Many described fentanyl as “having no legs.”
  - *“If you got something that lasts for more than 10 minutes (after the initial rush) you found some really amazing shit.”*
  - *“It wears off faster than heroin…so people use a lot more--every fucking 30 minutes to an hour.”*
- Fentanyl effects were described more like a sedative with tranquilizing effects and periods of unconsciousness.

Results: Changes in Appearance and Taste

- Participants claimed they could detect fentanyl in “heroin” simply by appearance.
  - Heroin in this area is darkish brown and fentanyl is mainly white or gray.
  - Over time some felt the color factor became less useful as the fentanyl started to be cut to give it a darker appearance.
- Texture also distinguished heroin (granular and rocky) from fentanyl (a fine powder).
- Taste: heroin has a bitter flavor and a vinegary smell; fentanyl tastes sweet and has a medicinal flavor.

Results: Modifying Drug Preferences (1)

- The prevalence of fentanyl has had the effect of altering drug consumption patterns and preferences particularly the increased use of stimulants.
- 72% reported smoking or injecting cocaine or crack.
- 44% reported using methamphetamine.
- Two approaches to stimulant use were reported:
  - Concurrent use in a single injection (speedball or goofball).
  - Sequential use in separate injections.
- Participants reported the use of stimulants was related to the extreme sedative effect of fentanyl requiring a counteracting drug.

Results: Modifying Drug Preferences (2)

- Participants reported the use of stimulants was related to the extreme sedative effect of fentanyl requiring a counteracting drug.
- *"Yeah, as methamphetamine goes now, everybody calls it ice and it's definitely out there. I would say 8 of 10 people that inject heroin love to do ice because it's a speedball…Me personally, I like to rush off one and then I wait a while and I like the rush of the other."*
- *"…the meth is going to keep you awake, which is important when using fentanyl, since what overdoses you is that you fall asleep and then you stop breathing…"*

Results: Modifying Drug Preferences (3)

- 24% reported using gabapentin to enhance the opioid high and minimize withdrawal symptoms.
- *"I love gabapentin. When I was in drug court that's the only thing I could get away with, and I would get so high off gabapentin. They gave me energy, it just makes me feel good. It enhances the high from dope. It potentiates. And they are dirt cheap, $1.00 apiece."*
- Several reported use as described above, but more reported use to reduce withdrawal symptoms.
- Reported amounts used for withdrawal ranged form 500mg to 2000mg.

Results: Changing Patterns of Drug Consumption (1)

- All reported using opioids more frequently because of fentanyl's short high.
- The higher number of daily injections resulted in physical harm.
  - *" The fact I have to inject more is tearing my veins up. I'm losing sensation in fingers; my legs swell now because I'm using the veins in my legs."*
- Some who used opioids and stimulant reported smoking the stimulant to save their veins for injecting opioids.
- Some switched from injecting to smoking or sniffing opioids also.

Results: Changing Patterns of Drug Consumption (2)

- To reduce overdose risk some injected a “tester shot” which is a smaller amount of drug to test its potency.
- Some avoided using alone.
- Some reported patronizing the same dealer who could be relied on to disclose the type and strength of the product.

Discussion

- The strong rush and short high reported is consistent with fentanyl's pharmacologic profile as a synthetic opioid with high lipophilicity resulting in a rapid onset of action and short duration of effect.
- The higher frequency of injection increases the number of times per day people are exposed to blood-borne pathogens (e.g., HIV/HCV).
- Mounting evidence that stimulants are used to manage fentanyl-induced sedation suggests that overdose deaths involving fentanyl and stimulants are largely due to intentional mixing rather than an adulterated supply.

Now Let’s talk about Xylazine

VICE News

Drug Users Are Losing Their Fingers and Toes After Shooting 'Tranq Dope'

In Philadelphia, the animal tranquilizer xylazine has infiltrated the opioid supply, and it's been linked to horrific wounds and amputations.

By Manisha Krishnan

APRIL 12, 2023

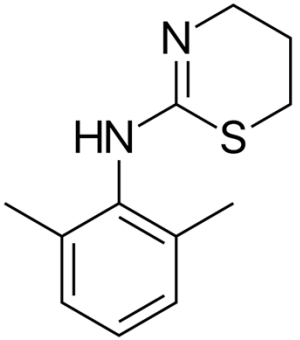
Biden-Harris Administration Designates Fentanyl Combined with Xylazine as an Emerging Threat to the United States

Xylazine's growing role in overdose deaths nationwide prompts Administration to make this designation for the first time in U.S. history

What is Xylazine?

- Veterinary analgesic, sedative, and muscle relaxant designed for large animals (horses and cattle)
- As heroin adulterant, first detected in the 2000s in rural Puerto Rican drug markets
- Puerto Rican public health literature first to identify link between xylazine adulteration, extended periods of sedation/sleep, and novel types of skin wounds *(Rodriguez et al. 2008; Reyes et al. 2012; Torruella 2011)*

Wait, *What*?



- Xylazine – a derivative of clonidine
- Alpha-2 agonist
- Used only in animals—no approved human uses
- It's probably being **diverted** (purchased or stolen) from veterinary pharmaceutical suppliers, but also seems to be imported in directly from South America
- Being added chiefly to **heroin/FASH** (fentanyl-adulterated and –substituted 'heroin'), but also reported in **cocaine** so far
- Strip tests are very newly available! Validation still isn't clear.

Xylazine Zoomed Out

- Xylazine is a continuation of a multi-year pattern
- In the past 5-10 years, the **splintering** of new psychoactive substances found in the illicit drug supply has **accelerated**, gradually even replacing heroin in parts of North America
  - **Heroin**
  - Heroin + fentanyl
  - Heroin + fentanyl + carfentanil + etizolam
  - Heroin + fentanyl + carfentanil + etizolam + isotonitazene/etc. nitazenes + flualprazolam + xylazine + brorphine + O-DMST + U-47700 + …
- *But why is this really all that bad?*

Where is Xylazine Appearing?

- In 10 jurisdictions—representing all 4 US Census Regions—xylazine increasingly implicated in overdose mortality, rising from 0.36% of deaths in 2015 to 6.7% in 2020.
- In 2020, highest xylazine prevalence observed in Philadelphia (34.7% of overdose deaths), followed by Maryland (19.2%) and Connecticut (10.2%)
- In Philadelphia in 2020, fentanyl present in 98.4% of xylazine-involved-overdose deaths

Source: Friedman, Montero & Bourgois 2022

How Often is Xylazine Detected?

- Most recent drug testing data in Philadelphia shows relative concentration of xylazine and fentanyl in local “dope” supply
  - Average “dope” sample consists of 2-10% fentanyl, 30-40% xylazine, and no heroin *(CSFRE 2022)*
- Data is forthcoming from NY state, but there are reports of the presence of xylazine in various parts of the state, including NYC, Onondaga County, Monroe County, and Long Island *(NYS Department of State 2023)*

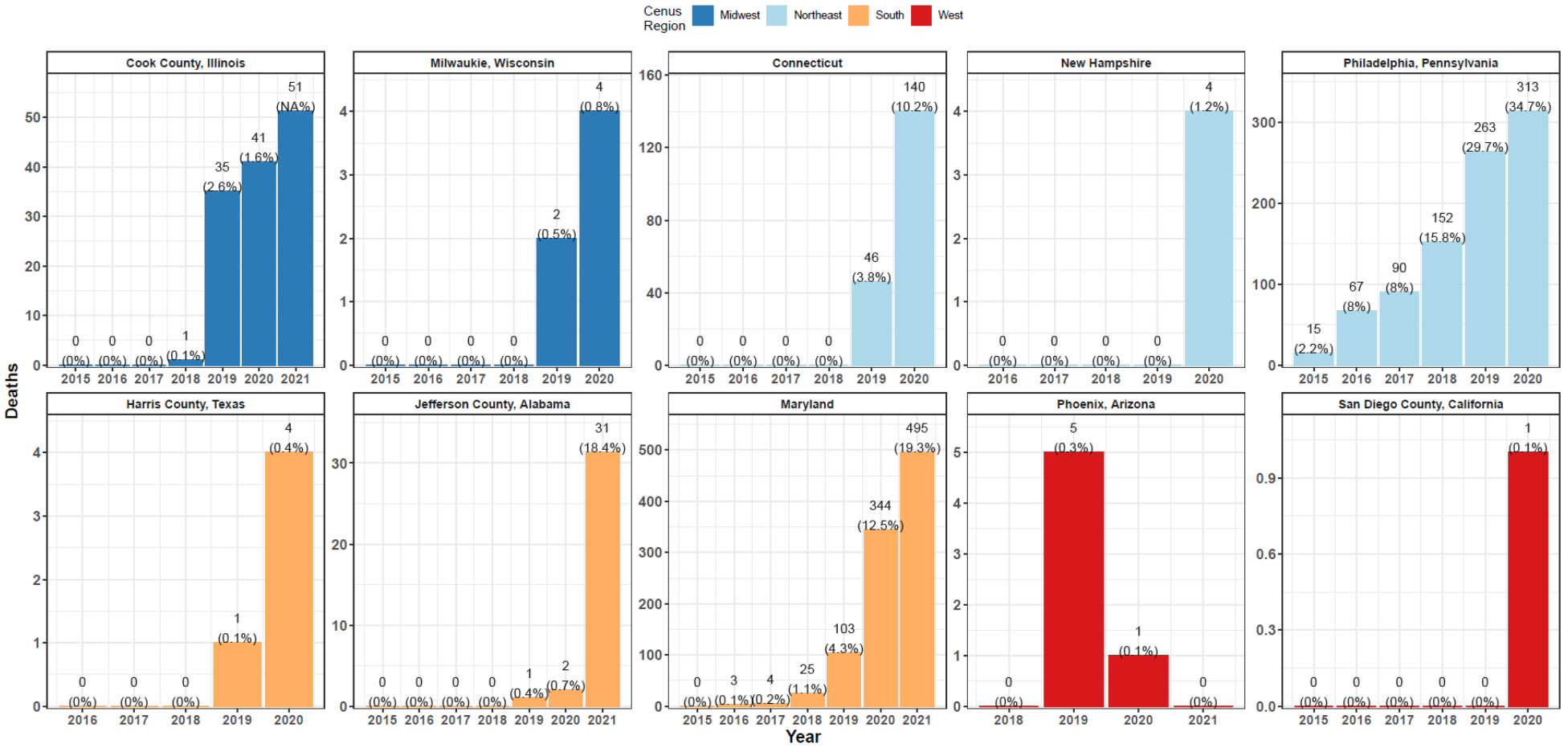


Figure 1. Xylazine-Involved Overdose Deaths by Jurisdiction and Year

Xylazine-involved deaths are shown as counts and as a percent of all overdose deaths in text. Color indicates US census region. Values for 2021 represent estimates, should trends from the observed fraction of the year continue linearly.

Source: Friedman, Montero & Bourgois 2022

Number of Xylazine-Positive Overdose Deaths by Region

Region	2020	2021	Percent Increase
Northeast	631	1,281	103%
South	116	1,423	1,127%
Midwest	57	351	516%
West	4	34	750%

Source: DEA 2023

Why Xylazine? Why Now? (1)

- Limits of fentanyl adulteration
  - Length and quality of “high”
  - Fentanyl cannot serve as diluent or bulk of substance sold as “dope”
- Xylazine compensates for deficiencies introduced by fentanyl

Why Xylazine? Why Now? (2)

Tom, male, white, unhoused 35-year-old opioid and meth injector in Philadelphia:

"Fentanyl is such a short-lived high, that the high… It's a good high but it's so short that the nod is over real quick and you get sicker faster. See, ***the tranq extends the high, it gives the dope more of a heroin effect, it's a good rush with the heroin-like 'legs'*** [duration of high].

Source: Montero et al. 2022

Why Xylazine? Why Now? (3)

Tom, male, white, unhoused 35-year-old opioid and meth injector in Philadelphia:

"Tranq-fent is like you shoot it; you get the rush of the fentanyl; then the tranquilizer comes in; you nod; and you fall asleep.

A straight tranq bag is like, you shoot it; ***you get no rush***; you're sitting there for a second talking; and then ***you're waking up 2-3 hours later*** in a weird position. Like one case, I lit a Newport [menthol cigarette]; I shot a bag with a Newport; I woke up with a hole of Newport burnt into my stomach [showing the scar, laughing]. You could literally drown in a half-inch of water if you did a tranq bag and you fell out."

Source: Montero et al. 2022

Xylazine's Transformations to Harm Reduction Landscape

Xylazine has introduced new problems:

- Not opioid (need for new overdose reversal agents to complement, *not replace*, naloxone)
- Ulcers/extensive skin wounds
- Risk of sexual assault and muggings
- Not just overdose: withdrawal and detox

Pharmacology (1)

Sympatholytic

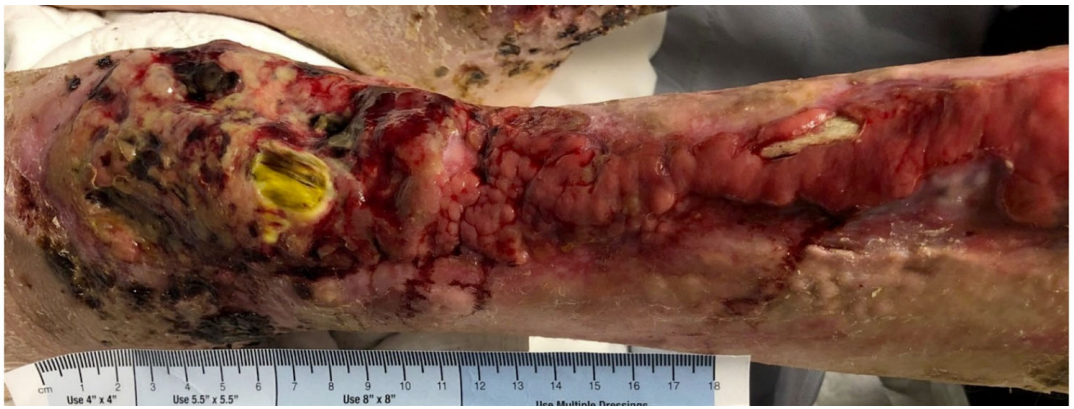
fight-or-flight nervous system

breaks down/suppresses

- **Acute (immediate, short-term) effects**
- Profound sedation
- Low blood pressure
- Slow heart rate
- Weak or absent reflexes

Pharmacology (2)

- **Chronic (gradual, long-term) effects**
- Anemia
- Dysglycemia (usually hyper)
- Severe skin wounds



Xylazine: Domains of Harm - Wounds

- **Wounds**
- Sedation
- Anemia
- Dysglycemia

Xylazine-Related Skin Wounds

- The biological mechanisms behind xylazine-related skin wounds have not been fully elucidated in the clinical and public health literature (as of spring 2023)
- However, clinicians and the Puerto Rican public health literature have offered the following likely explanations:
  - Lack of oxygenation to skin (xylazine is a vasoconstrictor that reduces blood flow and skin oxygenation)
  - PWUD often inject into wounds due to difficulty finding veins (vasoconstriction impedes vein access)
  - PWID also inject into wounds to provide pain relief, as xylazine is an anesthetic
  - “Bed sores” / concrete bruises from xylazine-induced sleep
  - Skin picking leads to excoriation (increasingly common given co-use with methamphetamine)

Wounds

- Consistently described as:
  - Forms a **thick scabs** (eschar) as they heal
  - Develop in areas **other than** where the patient injected
  - **Necrotic** areas are commonly reported
  - **Granular** in appearance, **burn-like**
- Can also involve loss of fingers/toes
- Appears vascular, *but we don't really know*
- **Secondary bacterial infection all but guaranteed for people experiencing homelessness**
- Will probably be worse for people with **diabetes**, but no data on this yet
- There's something different here, but the *how* isn't clear

Wounds – Approaches to Care (1)

- They **do** respond to wound care
  - Easy to panic and jump to radical measures; exhaust wound care first!
  - **We direly need clinical evidence to be able to arrive at best practices**
- General pattern:
  1. Assess
  2. Cleanse: soap + water, saline, or other wound cleanser
  3. Treat: occlusive ointment OR enzymatic/autolytic agent as appropriate
  4. Dress the wound

Wound care guidance courtesy Rebecca Hosey

Wounds – Approaches to Care (2)

- No:
  - Hydrogen peroxide (kills fibroblasts, slows healing)
  - Isopropyl alcohol (very drying)
  - Picking/scratching (offer ample, sturdy dressings if this is likely to be an issue)

yum yum
fibroblasts
yum
muuuahah
ahaha

Wounds – Bigger Picture

- These wounds are novel in a few ways
- They're associated with a novel drug supply contaminant being described as a "zombie drug" and compared to krokodil
- We're only human! We need to be reminded to **take a breath and act conservatively** if at all possible
- We're already hearing about **premature limb amputations**

Xylazine, the so-called 'zombie drug,' taking root in NYC, experts say

BY ANNA LUCENTE STERLING | NEW YORK CITY
PUBLISHED 12:00 PM ET APR. 06, 2023

Wounds – Sequalae

- Any area of exposed broken skin will be susceptible to secondary bacterial infection (esp. if unhoused!)
- Watch for:
  - Signs of endocarditis
  - Signs of sepsis
  - **“Trigger signs”: foul odor, black tissue, rapidly-spreading redness, chunks of tissue falling off**

Community Harm Reduction

- Stigma and abuse in medical contexts = many PWUD will be very reluctant to seek care
- Much of this can be taught!
- Empower people who use drugs:
  - Teach on trigger signs
  - Teach how to use skin markers
  - Teach on basic wound care
  - Encourage proactive development of buddy system

Xylazine: Domains of Harm – Sedation

- Wounds
- **Sedation**
- Anemia
- Dysglycemia

Sedation (1)

- I don’t just mean sleepy…
- I mean ”can’t move *at all* for hours”
- Position matters
- Also a fall risk!
  - Discourage standing when using
- Reported –
  - **Muscle damage**
  - **Nerve damage**
  - **Rhabdomyolysis**
- Harm reduction for xylazine must include watching out for others who are sedated, and moving them regularly!

Sedation (2)

- A bigger issue for people who are unhoused
  - Nodding out on railroad tracks, sidewalks, streets
  - No soft, comfortable place to sleep = greater tissue injury
  - Risk for sexual assault, theft, physical assault
  - Less consistent network of help

Sedation: Harm Reduction

- Never use alone!
- Sit or lay down when using
- Watch out for your friends who are nodding longer than normal
- *Make sure breathing and heart rate are adequate*, and then –
  - Don't allow people to nod in weird positions
  - Put people into the recovery position (ideally)
  - Roll from one side to the other every 2 hours
  - Place padding under bony places – heels, hip, shoulder, ankles, etc.
  - Teach on signs/symptoms of rhabdomyolysis

Xylazine: Domains of Harm – Anemia and Dysglycemia

- Wounds
- Sedation
- **Anemia**
- **Dysglycemia**

Odd Chronic Issues (1)

- With chronic, ongoing use of xylazine…
- **Anemia** (unclear cause)
  - Usually noticed as:
    - Weakness/fatigue
    - Brain fog
    - Irregular heartbeat
    - Feeling cold easily
- **Blood sugar irregularities**
  - Usually hyperglycemia
  - Unclear if transient
  - Has been noted in vet literature
- Loss of some **autonomic tone**
  - Reports of dulled reflexes, incontinence

Xylazine poisoning: a systematic review

Noah S. Ball, Brittany M. Knable, Taylor A. Relich, Allyson N. Smathers, Michael R. Gionfriddo, Branden D. Nemecek, Courtney A. Montepara, Anthony J. Guarascio, Jordan R. Covvey & David E. Zimmerman

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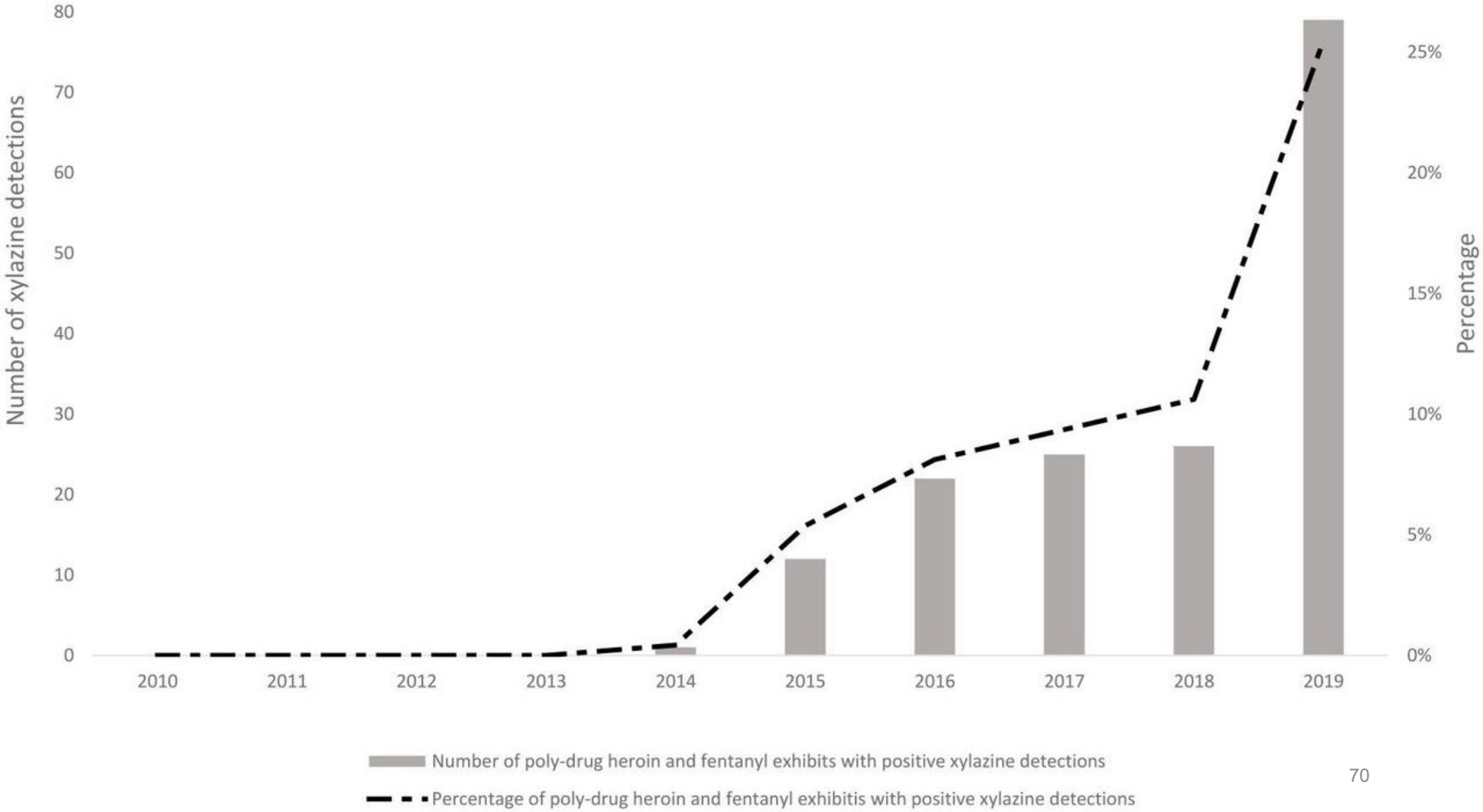
To link to this article: https://doi.org/10.1080/15563650.2022.2063135

Odd Chronic Issues (2)

- The connection between xylazine and anemia and dysglycemia is less clear
  - They're easier to ignore, easier to miss, and there still isn't any good research on this
    - If it is happening, it's being undercounted, which isn't surprising
  - Both have been reported in the vet literature, but they aren't certain why it happens either
- **Something to keep on the radar**, especially until we learn more

Policy Issues: Epidemiology

- At this point, with rare exception, xylazine is co-occurring with fentanyl
  - This will muddy overdose reporting! Expect to see more reports of "naloxone-resistant fentanyl"
  - Small handful of reports of xylazine in other drugs – probably cross-contamination (but we need to know more)
- US mainland epicenter is Philadelphia
  - Quick movement east-to-west
  - Unfortunately suggests a proximal point of inclusion, **but we don't know for certain**


80
70
60
50
40
30
20
10
0
Number of xylazine detections
25%
20%
15%
10%
5%
0%
Percentage
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
Number of poly-drug heroin and fentanyl exhibits with positive xylazine detections
Percentage of poly-drug heroin and fentanyl exhibitis with positive xylazine detections

Policy Issues: Regulation

- Calls for scheduling?
  - Xylazine is very widely used in pre-clinical drug research
    - Cancer, dementia, etc.
  - Xylazine doesn't seem to be coming from the US
  - Scheduling will make it harder to study xylazine's health effects

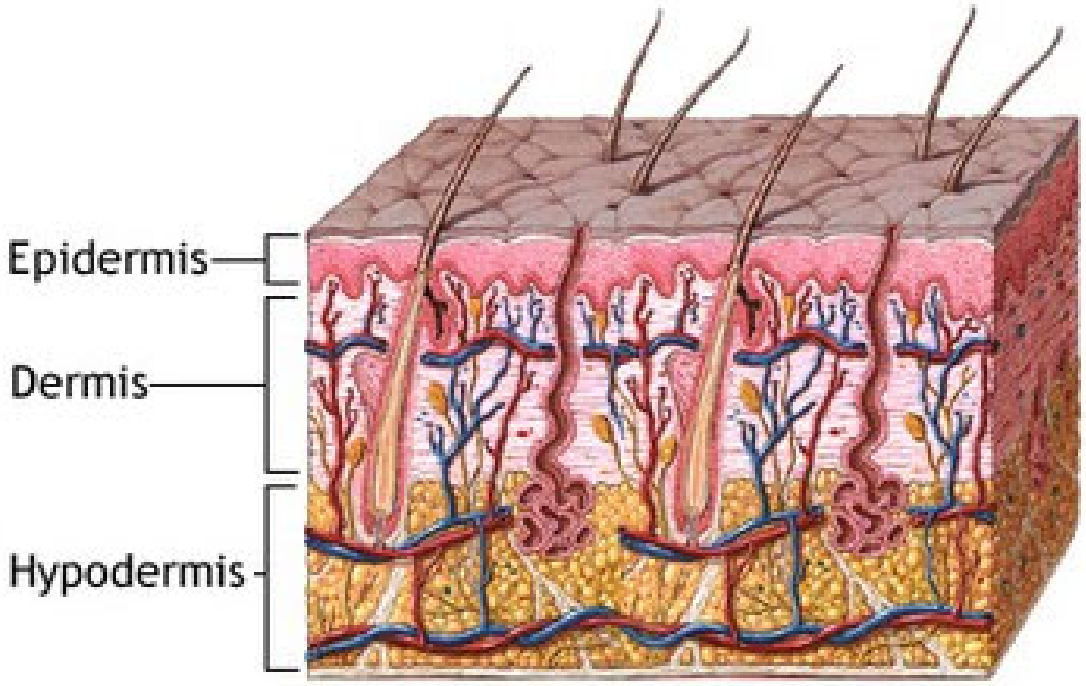
A Note about Overdose…

- Acute, life-threatening overdose seems to be **much more an issue for fentanyl than xylazine**
  - Even in case reports of massive, intentional overdose, very few people died
- We don't expect naloxone to do anything to xylazine, but xylazine and fentanyl typically co-occur
- **Coach people to not hesitate in giving naloxone! But if they've given a couple of doses without response, move on and call for help.**
  - Could also be something totally unrelated! Getting stuck in a cognitive rut is never good.

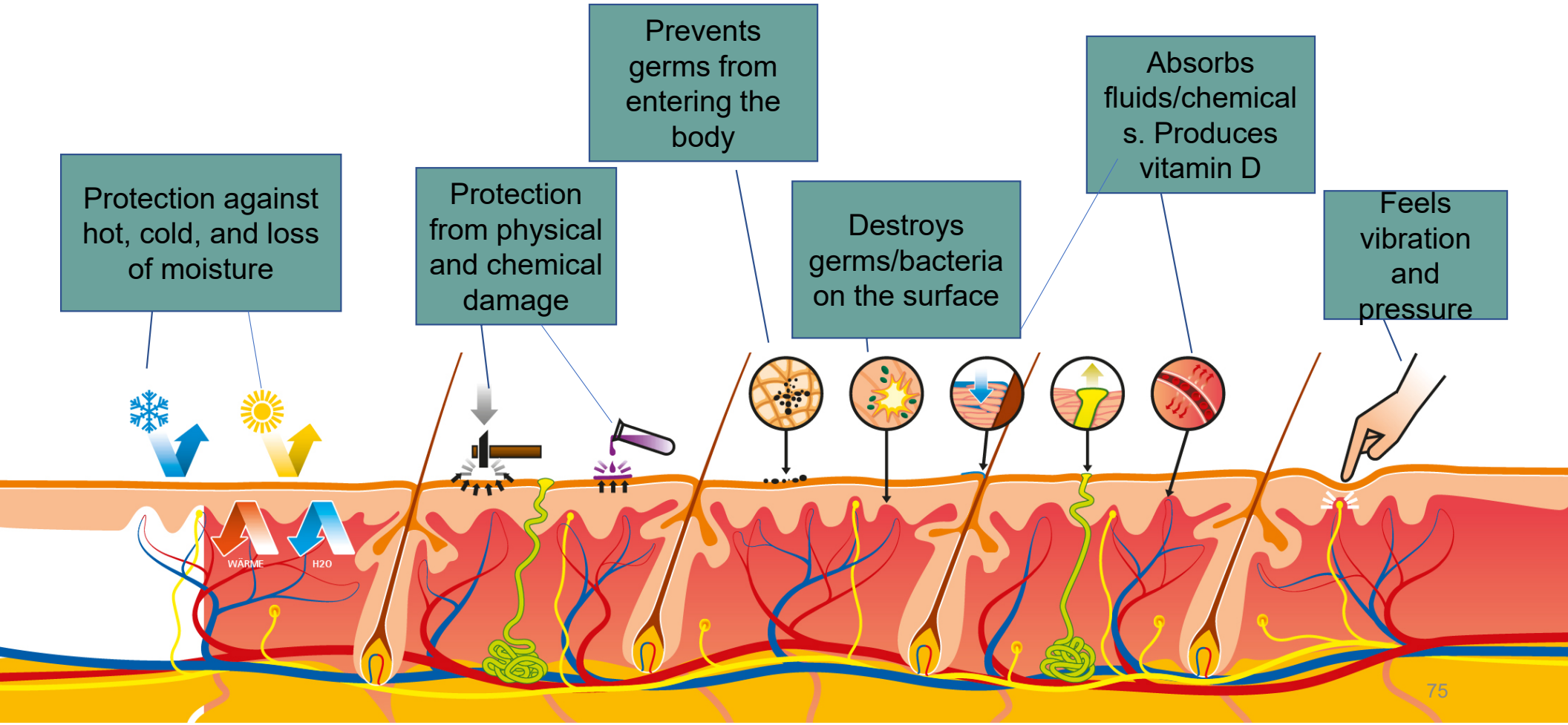
Teamwork = Dreamwork

- We know very little about xylazine in humans, especially chronic use
- **We must work together**, share ideas, successes, and failures
- We will spend years waiting for bench research

Layers of the Skin

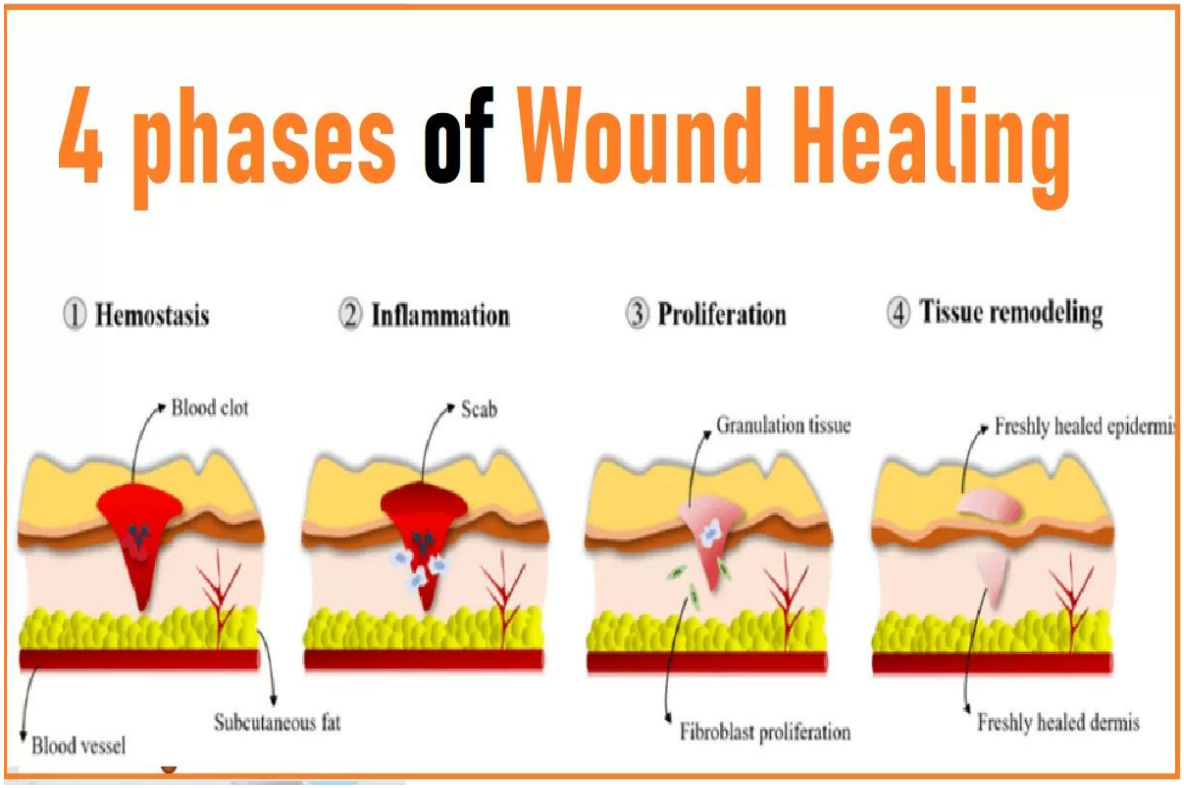


Purpose of Skin

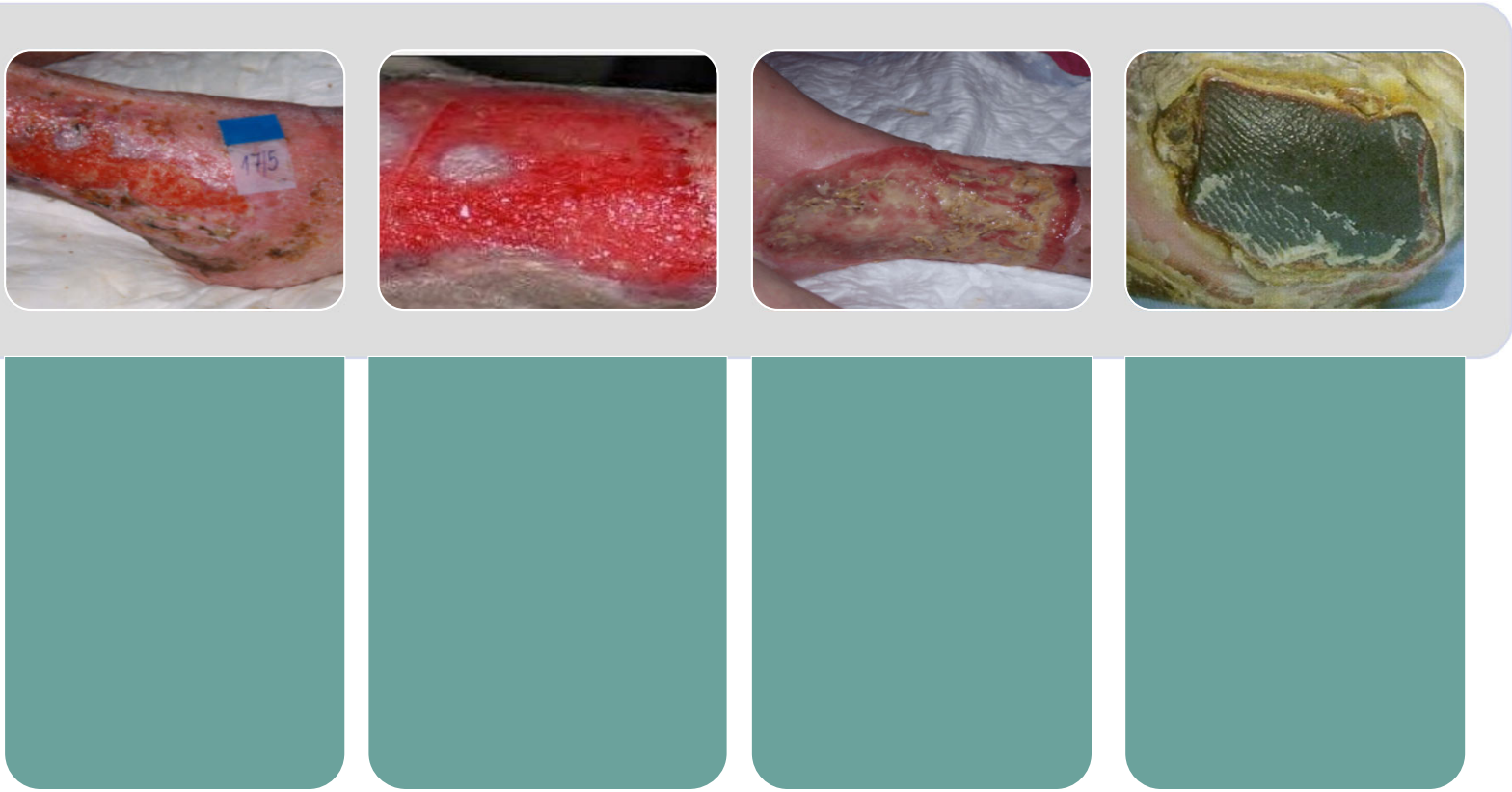


Phases of Wound Healing

1. **Hemostasis** – formation of blood clot to stop bleeding.
2. **Inflammatory** – begins 10-15 minutes after trauma. Destroy bacteria and remove debris. Infected wounds are stuck in this phase.
3. **Proliferative** – fill in and cover wound.
4. **Maturation/Remodeling** – wound gains flexibility and strength.



Types of Tissues



Factors that Delay Wound Healing

Reusing or sharing needles	Soiled skin	Advance age	Smoking- closes the blood vessels
Poor diet- lack of protein and vitamins to help with healing	Delayed or no wound care	Wrong wound dressing	Heart problems, kidney disease, diabetes, infection

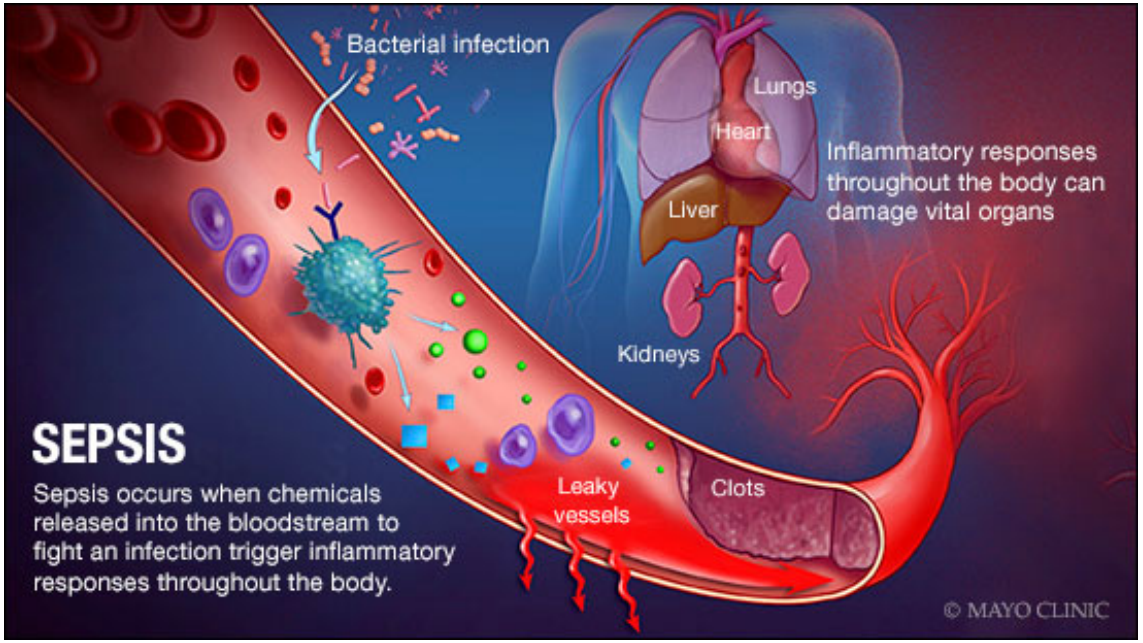
Medications such as steroids & chemotherapy

Symptoms of Wound Infection

- Swelling
- Pain
- Redness around wound
- Warm to the touch
- Foul smelling drainage
- Pus drainage
- Increase in amount of drainage
- Skin becomes hard and thick

Signs of Sepsis (Body infection)

- Fever over 101F
- Chills/shivering/feel cold
- Breathing fast
- Fast heartbeat
- Nausea/vomiting
- Diarrhea
- Sleepy
- Shortness of breath
- Pale skin



Steps to Wound Care

Look at the Wound

- Is it healthy or unhealthy? What type of tissue?
- Is the wound dry? Wet? Moist?
- Are there holes, tunnels along the edges or are the edges really deep?
- Is the surrounding skin thin and delicate? Is it missing, raw and wet?

Look at Drainage

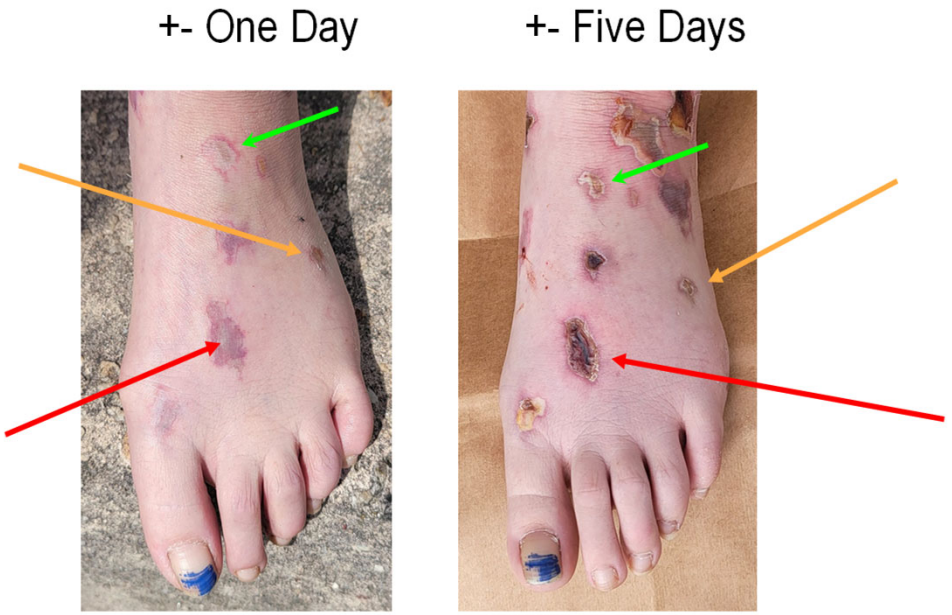
- Does it smell?
- Is there a large amount of drainage ?
- What color is the drainage?

Determine Wound Treatment

- How do I clean the wound? Soap and water? Wound wash (Vashe)?
- What ointment do I use? A&D? Honey?
- What dressing do I use?
- How do I secure the dressing? Tape? Sock?

Xylazine “Tranq” Wound

- Early wounds resemble purple wounds (blister)
- Wounds can develop away from injection site
- Develop quickly – within minutes
- Become necrotic quickly
- Can become infected and difficult to heal
- Treatment
  - Put petroleum or Neosporin and Band-Aid
  - Observe frequently for changes



Patient Wound Care Education

- Wash hands or use hand sanitizer
- Wash wound with soap and water or hand sanitizer before wound care
- Change dressing every 1-2 days. Proper disposable of dressing
- Rinse wound with saline at least every 1-2 days
- Keep wound moist
- Wrap wound with kerlix to keep dressing secure. Not too tight!
- Review signs and symptoms requiring medical treatment:
  - Wound that will not stop bleeding
  - Any signs of sepsis (tired, fever, fast heart rate, vomiting
  - Wound is not healing or getting worse
  - Difficulty moving limb

Wound Care Kits

Prevention Kit

- (1) 2 oz. bottle of liquid soap
- (7) 2x2 gauze – use with normal saline to clean wound
- 4 large square Band-Aids –cover wound
- (7) 5 mL normal saline bullets
- 4 sanitizing wipes
- 40 alcohol prep pads
- 7 regular sized Band-Aids
- Quart plastic Ziploc bag

Treatment Kit

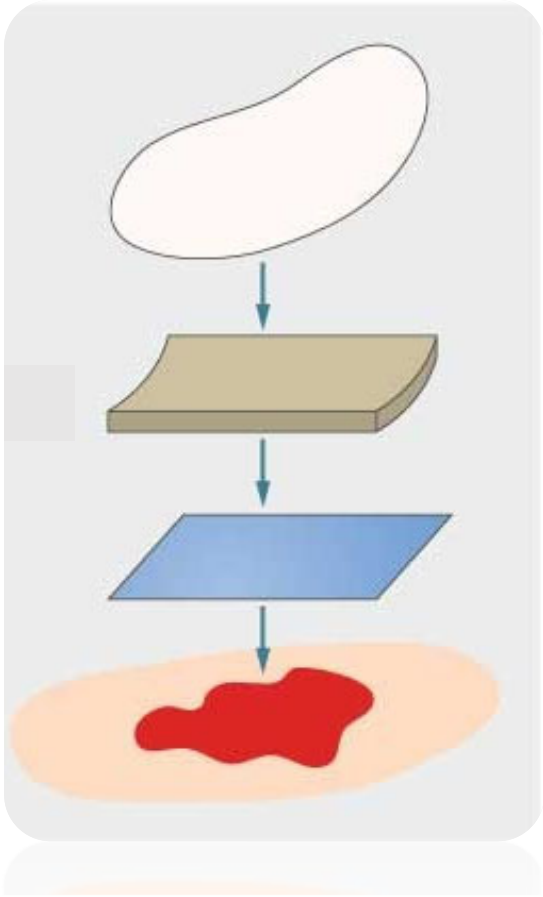
- (7) 4x4 gauze –cleanse
- (1) 4 oz bottle of Vashe wound cleanser
- (2) 4” Kling –cover/secondary dressing
- 1 roll of 1” Paper tape
- 1 tube of medicinal honey
- 7 large square band-aids
- 7 sanitizing wipes
- 40 alcohol pads
- Gallon plastic Ziploc bag
- Towelettes
- Non adherent dressing – xeroform or adaptic
- A&D ointment or petroleum
- ABD pad


CVS Health
STERILE
Manuka Honey Spot Bandages
INFUSED WITH NATURAL MEDICAL-GRADE HONEY
Ideal for minor abrasions, cuts & lacerations
100% Waterproof
Actual Product Size on Back Panel
12 SPOT BANDAGES
22 mm x 22 mm (7/8" x 7/8")


vashe
Skin – Wound – Burn Cleansing Solution
• Debridement Irrigation
• Physical Disruption of Biofilm
• Removal of Microorganisms


#31515
Dressing with Active Leptospermum Honey
WOUND & BURN DRESSING
MEDIHONEY®
• Contains 100% Active Leptospermum Honey
• Helps maintain moist environment conducive to wound healing
1 tube / 1 applicator

Layers to Dressings



The outer layer makes sure the dressing stays in place and protects from dirt and moisture

The absorbent layer absorbs drainage

The contact layer touches the wound

Wounds Heal Best When Moist

If the wound is dry – add moisture	Apply xeroform, A&D ointment, or petroleum
If the wound is too wet – decrease drainage	ABD pad or baby diaper, frequent dressing changes
If the wound is infected – kill bacteria	Medical treatment, antibiotics
If the wound is necrotic – remove dead tissue	Medihoney, Debridement

First Challenge

Identify a change that you are *considering*, something you are *thinking about* changing in your life, but have not definitely decided. It could be something you feel two ways about. It might be a change that would be "good for you," that you "should" make for some reason, but have been putting off. We encourage you to take a risk!

Motivational Interviewing

- Developed by William Miller in 1983
- Later refined by Miller and Stephen Rollnick in 1991
- Originally designed to work with individuals attempting to shift their substance use patterns

---

MI can be defined as follows:

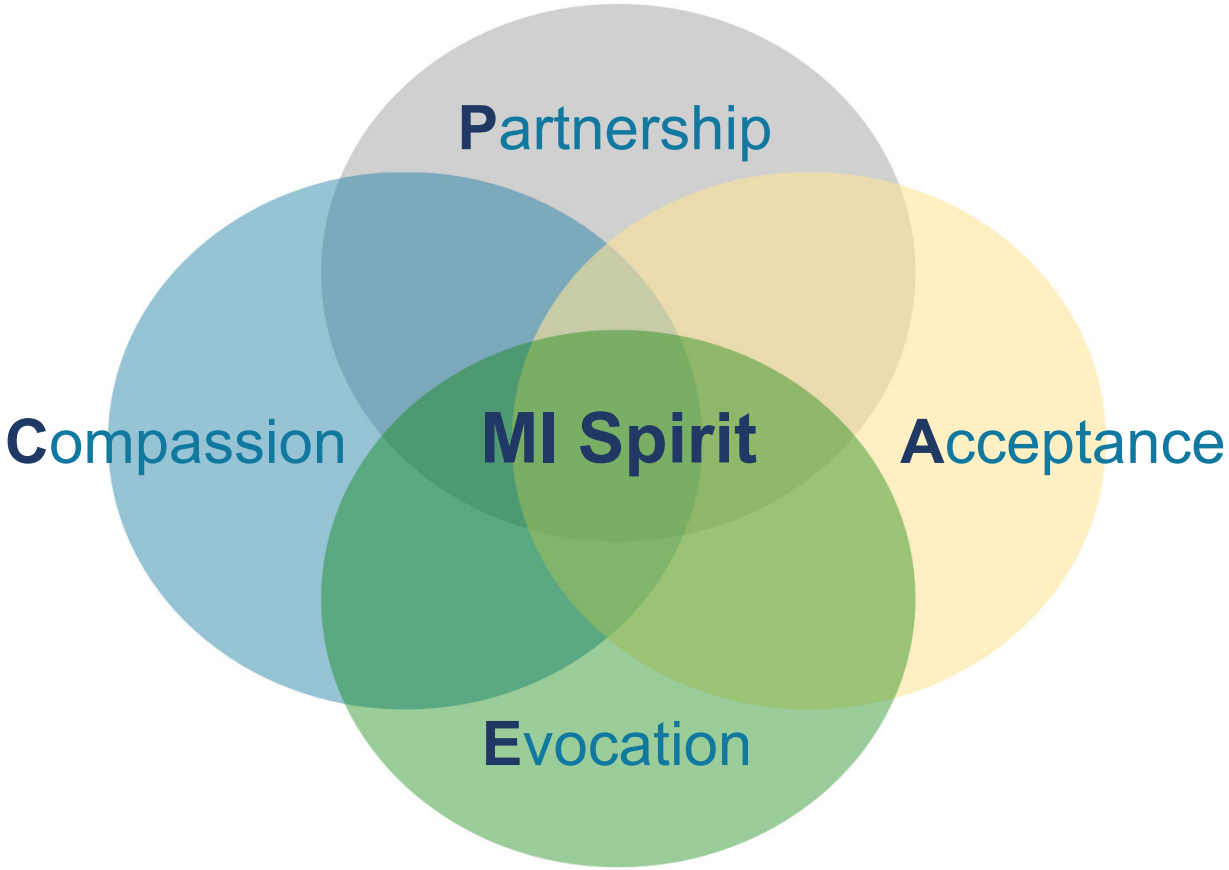
> *"MOTIVATIONAL INTERVIEWING IS A DIRECTIVE, CLIENT-CENTERED COUNSELING STYLE FOR ELICITING BEHAVIOR CHANGE BY HELPING CLIENTS TO EXPLORE AND RESOLVE AMBIVALENCE."* (ROLLNICK & MILLER, 1995).

AMBIVALENCE

"Uncertainty or fluctuation, especially when caused by inability to make a choice or by a simultaneous desire to say or do two opposite or conflicting things."

http://dictionary.reference.com/browse/ambivalence

MI Spirit – How You Are



Core Principles

EXPRESS EMPATHY

DEVELOP DISCREPANCY

AVOID ARGUING

ROLL WITH RESISTANCE

SUPPORT SELF EFFICACY

*BONUS: REDUCES BURNOUT

The Righting Reflex

"A natural and instinctive response of trained care providers is to fix the problem, make things right, to use knowledge acquired from training and experience to help the individual seeking care to overcome their problems." (Miller & Rollnick, 2012)

"YOU REALLY NEED TO GET TREATMENT FOR _____"

"DO YOU KNOW HOW DANGEROUS _____ IS?"

"I HAVE SEEN SO MANY PEOPLE _____"

Sustain Talk

- “Resistance” is expected and normal part of change process
- Reasons to maintain behavior

Change Talk

- When people articulate their own reasons for making changes and are invested in these reasons, they are more likely to engage in behavior change

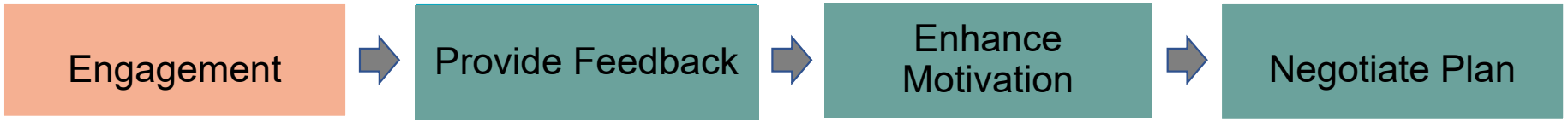
Motivational Skills – Core Strategies

- **O**PEN-ENDED QUESTIONS
- **A**FFIRMATIONS
- **R**EFLECTIONS
- **S**UMMARIES

Brief Negotiated Interview (BNI)

- A specialized “brief intervention” has foundations in motivational interviewing (MI) techniques. It was originally created for the emergency department in collaboration with Stephen Rollnick.
- Structures the conversation with the support of the BNI “algorithm.”
- Designed to elicit reasons for behavior change from the individual, entering their voice and autonomy.
- Individual can end the conversation at will.

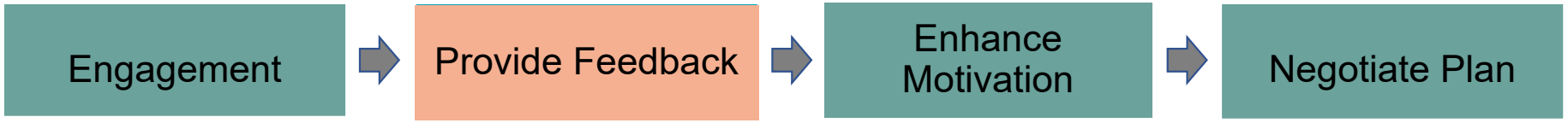
BNI Algorithm (1)



- Build Rapport
- Raise the subject
- Ask permission

"I'm _____, an outreach worker with _____. I noticed you have a bandage that looks like it could benefit from being changed. Are you okay with us talking more about it?"

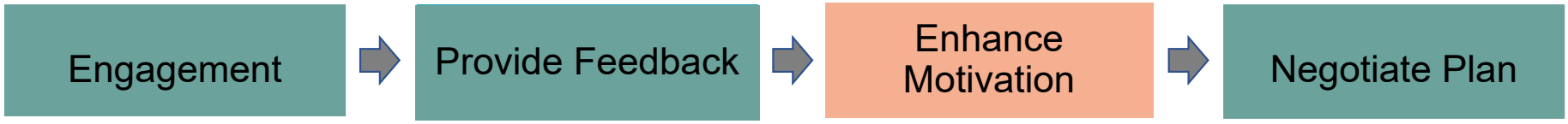
BNI Algorithm (2)



- Elicit permission. Provide information. Elicit response. (EPE)
- Non-confrontational and neutral
- Zero in on main concern(s)

"Would it be okay for us to talk more about it? …With the increased prevalence of xylazine in the opioid supply, severe wounds are causing more sepsis and amputations among those who use drugs. What are your thoughts and/or concerns related to your wounds?"

BNI Algorithm (3)



- Evoke the individuals' reasons for change and reflect on those (change talk)
- Readiness ruler
- Develop discrepancy

"On a scale from 1-10, how likely are you to seek medical care for your wound? Why did you choose ___ and not (a lower number)____?"

"On one hand you recognize this wound is painful and potentially and serious medical concern and on the other seeking medical care feels like a waste of time given your past experiences."

BNI Algorithm (4)

- Develop a collaborative action plan: can use EPE
- Explore challenges
- Assess confidence
- Summarize

"Would you be interested in developing a plan together?"

"While you are not comfortable going to the hospital you might be open to checking out the mobile care clinic that comes by on Tuesdays. You will take some wound care supplies and do your best to keep your wounds clean and dressed in the meantime. You also felt like it's important to monitor your wounds for pain or color changes and you might consider seeking additional care if you notice concerning change. Did I capture everything?"

Tips to Share with Patients/Clients When Interacting with Medical Professionals

- The relationship between patient and medical provider should be nonjudgmental and you, as a patient, should be able to comfortably talk with your provider(s) about as much of your drug use and other aspects of your life as you want.
- It is NOT your fault if your medical provider is judgmental towards you or makes you feel ashamed about your drug use or any other parts of your life. It is their job to provide care without judgment. When a healthcare provider or system can’t provide respectful and effective services, THEY are failing at their responsibilities.

Tips: Before the Appointment

- Make sure to record the name of the person you're going to be speaking to, and to note the date, time, and location of your visit.
- If you're feeling uncomfortable about your appointment, ask a trusted friend, family member, or other peer support figure to go with you as a witness and/or advocate.
- If you're nervous about talking to the doctor or nurse and/or worried you'll forget something, write down a list of your symptoms, how long you've had them, any medications you're taking, any relevant family medical history, and any other concerns ahead of time so you can easily recall everything you want to communicate.
- It's also a good idea to make a list of any questions you have for the doctor or other staff.
- If you're on any medications (e.g., MOUD or any psychiatric medications), be sure to bring along the name and contact info for your clinic, prescriber, and/or psychiatrist.
- Bring a pen and paper or your phone to take notes for documentation during your visit.

Tips: During the appointment

- You **never** have to mention your substance use if you feel uncomfortable or unsafe doing so.
- Take notes, or, have someone else take notes for you.
- You have a **right to informed consent**. This means your provider should explain any procedures, interventions, or recommended courses of treatment to you before they're performed.
- You have the right to agree to treatment or to refuse it. Medical staff will usually ask you to sign a refusal of treatment form if you do refuse it. Refusing care can sometimes result in negative treatment. Remember, you have the right to ask for an opinion from another provider. Try not to get sucked into a negative exchange with a medical provider.
- If your provider refuses treatment for any reason (substance use, weight, mental health issues, gender identity, sexuality, medical history, etc.), you can request that they document in your chart that you were denied that intervention for the relevant reason.
- If you are having a wound lanced and drained, you should be offered a numbing agent. If it's not offered, you can always request it.
- You can request to see your medical chart at any time, for any reason.
- This is your appointment – you can end it at any time, for any reason.

Tips: After the Appointment

- If your doctor acts unethically or harmful, you can file a complaint about them to your state's medical board. If you have Medicaid or Medicare, the Center for Medicaid & Medicare Services has instructions on how to file a complaint about provider behavior, improper treatment, and/or unsafe hospital conditions.
- If you visit an SSP, drop-in center, or anywhere else that provides services to people who use drugs, let staff know about your experience (whether positive or negative). They can help share that information with people who plan on going to that clinic, hospital, or provider so they can have an idea of what to expect. Building this awareness will help other organizations identify appropriate sources of care.

Harm Reduction Strategies: Monitoring the Supply

- Leverage existing surveillance data to identify current threats associated with Fentanyl, Xylazine and other adulterants in the local supply (establish prevalence).
  - this infrastructure for Xylazine is currently quite limited compared to other substances.
  - will need to rely on local resources and evidence that is currently more difficult to access.
- Surveillance via post-mortem toxicology testing (Office of the Medical Examiner).
- Surveillance via direct testing of the drug supply.
  - Fentanyl and Xylazine test strips implemented by practitioners or PWUD in the field.
  - Drug checking machines, offered at select harm reduction programs.
- Engaging those who supply drugs to provide education on:
  - the benefits of drug checking technologies; and
  - the value of communicating test results to customers as a risk reduction measure.

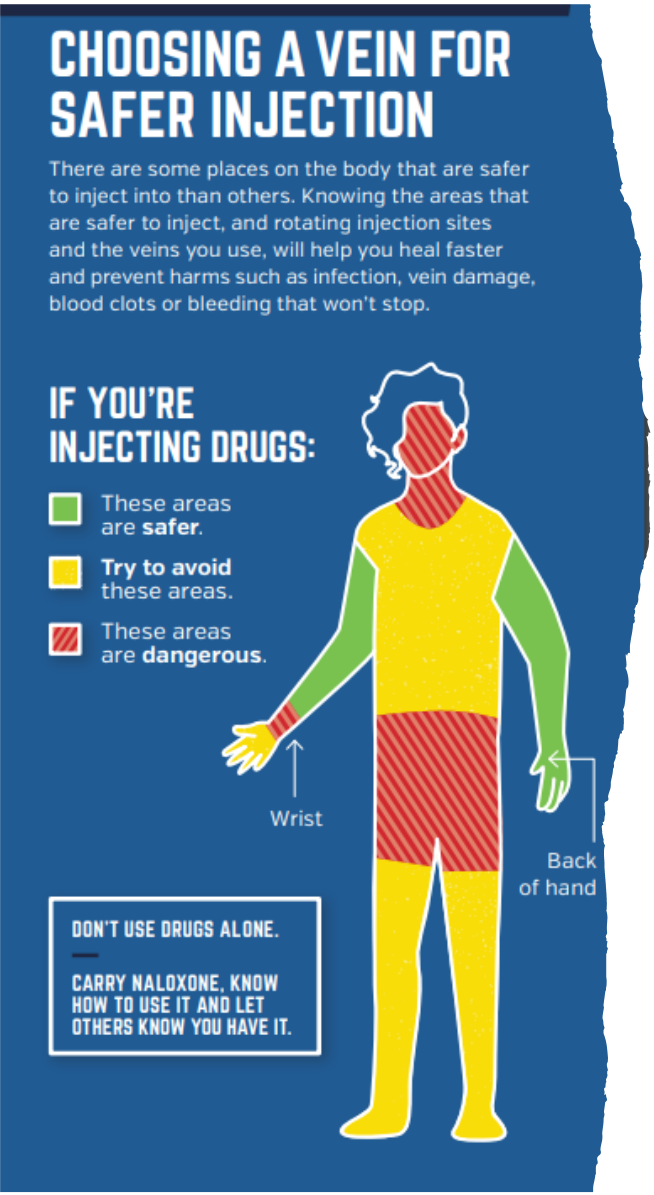
Xylazine Surveillance: Test Strips

- Xylazine test strips, new on the market, are the exact same concept as fentanyl test strips.
- Distributed by BTNX, a Canada-based company that also manufactures fentanyl test strips[1].
- Priced at $300 per box of 100 (substantially more than the price of fentanyl test strips).
  - website indicates special pricing for nonprofit organizations (must call to get a quote).
- Availability appears to be limited as of now, though BTNX has communicated that they have the capability of producing the xylazine test strips to meet market demand.
- BTNX commissioned a validation study performed by CFSRE (Philadelphia-area laboratory), in partnership with the Philadelphia Department of Public Health. Results show[2]:
  - performance deemed acceptable for drug checking purposes demonstrating 91% overall accuracy.
  - no false negative results (i.e. instances in which a sample contained Xylazine that wasn't detected).
  - some test strips came up positive for samples that did not contain xylazine but did contain lidocaine (as such, lidocaine was identified as a potential interferent that may lead to false positives in the field).

Patient Education: Safer Use Practices for Xylazine

- Best to avoid dope that contains xylazine, if you can.
- Go slow, use less
- Get your drugs tested at a harm reduction program, if you can (or utilize test strips).
- Some harm reductionists think it may be safer to sniff/smoke/booty-bump dope with xylazine, but we don't know what other harms this can cause
- Try to avoid using alone. Because of the heavy sedation, be aware of your surroundings and your possessions, especially if you're somewhere that's not secure.
- Try to be in a comfortable seated position that doesn't cut off circulation to arms or legs.
- If you are using alone, double down on other strategies. Have someone check on you. If you are using in a group, stagger your use so someone is always sufficiently alert.
- Carry naloxone and know how to use it (xylazine is often mixed with fentanyl).
- Call 911, be aware that a xylazine overdose may need more care than naloxone.
- Be sure the airway is open, as breathing may be blocked in slumped positions.

New York State Department of Health, Xylazine: What Clinicians Need to Know, 2023, https://www.health.ny.gov/publications/12044.pdf



Safer Injection Techniques

- Clean site first with soap & water and/or alcohol pad
- Using your own clean cooker or spoon, mix drugs with sterile water, heat
- Rotate injection sites
- Insert the needle bevel up into the vein
- Avoid reusing and sharing needles
- Avoid sites that are hard, tender or show signs of infection
- Use a tourniquet a few inches above the injection site (avoid using shoestrings or leather belts)
- Before injecting, pull back slightly on the syringe to check for dark red blood (vein)
- **Avoid artery or sites that have a pulse (wrist, neck, groin)** If the blood is bright red, frothy and pushes back the plunger- take the syringe out immediately and seek medical attention!
- **Avoid high risk sites - leg, foot, groin, neck**
- Change from injection to sniffing
- Use fentanyl and xylazine testing strips
- Use with someone
- Carry Narcan

https://harmreduction.org/issues/safer-drug-use/facts/

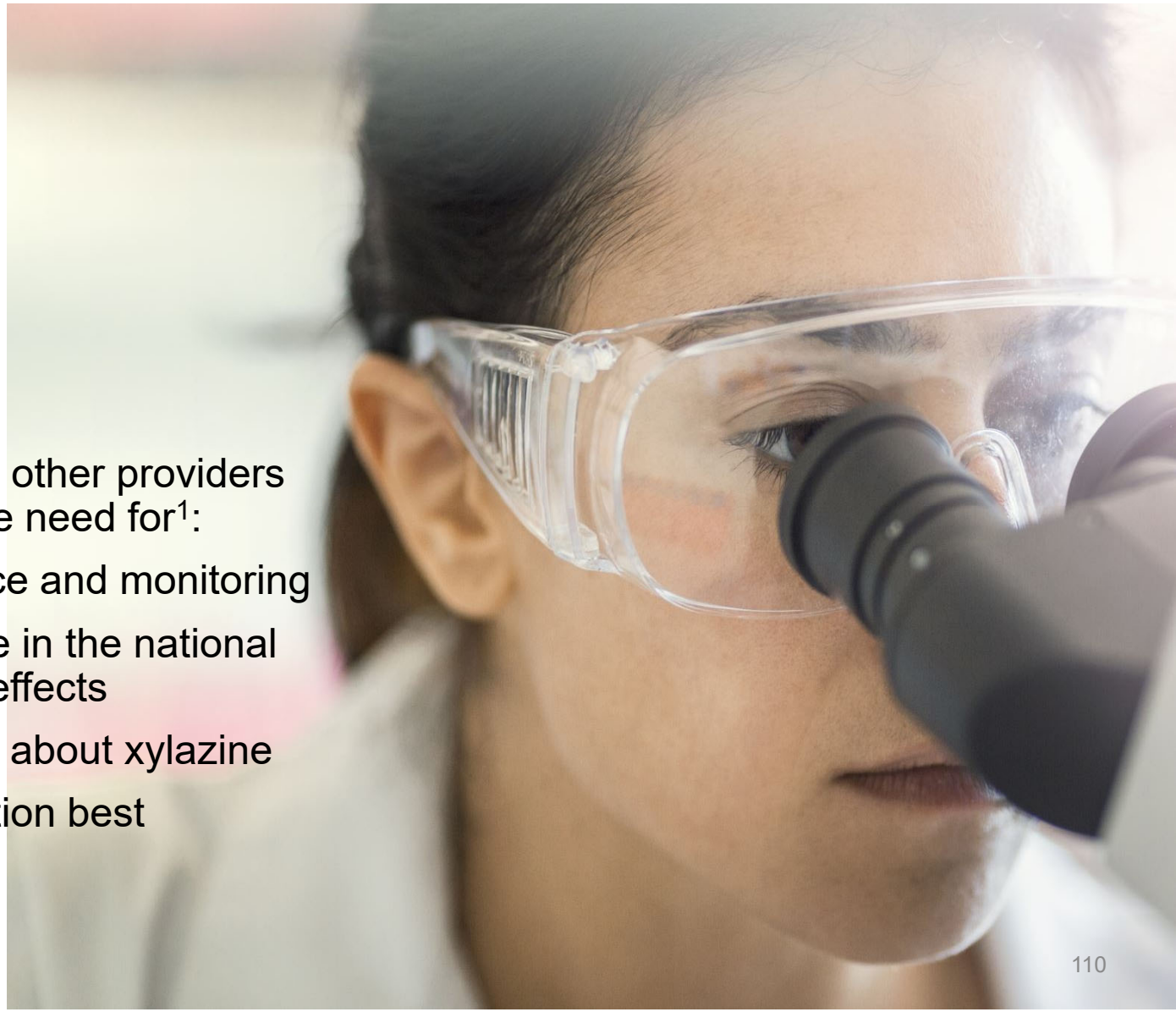
Patient Education: Overdose Response

- There is no reversal agent for Xylazine that is safe for use in humans.
- Since Xylazine is not an opioid and therefore its sedative effects are not reversed by naloxone, an opioid overdose involving Xylazine is much more challenging to reverse and, consequently, can also be more lethal to the user.
- However, because Xylazine is often co-used with opioids, naloxone should typically be administered as the first step in overdose response.
- A person may breathe normally after receiving naloxone, but still be sedated from the xylazine. In this scenario more naloxone may not be needed.
- When overdose is not responding to naloxone, respiratory depression may need to be managed with rescue breathing/ventilation and oxygen.

Improving Infrastructure

Recent recommendations from other providers and researchers emphasize the need for[1]:

- improved xylazine surveillance and monitoring
- more research about xylazine in the national drug supply and its physical effects
- patient and clinical education about xylazine
- xylazine-specific harm reduction best practices.



Recommendations for Enhancing Xylazine Detection, Overdose and Wound Prevention Efforts

- Invest in xylazine test strip research and development.
- Invest in enhancing state, county, and city drug testing infrastructure. Funds could be used to hire personnel, invest in drug checking machines, and otherwise support scant or non-existing drug surveillance infrastructure.
- Support harm reduction services offering sterile injection or snorting supplies and wound care kits. Making sterile supplies available may decrease risk of developing wounds and kits may decrease wound severity.
- Create provider learning networks to establish xylazine-specific harm reduction, wound treatment, and withdrawal abatement best-practices.
- Establish xylazine-specific, public-facing data dashboards. Opioid settlement funds for states could be used to create new or amend existing dashboards to include xylazine distribution, detection, or overdose. Making raw, de-identified dashboard data downloadable can enhance research opportunities.

Four Principles to Address the Fentanyl Crisis

1. Pursue an incremental approach to behavior change (that is, harm reduction).
   - Goal is reducing risk vs abstinence.
   - Only 20%-30% are in the active stage of change.
2. Emphasize engagement.
   - Programs should offer whatever information or services the potential patient is open to receiving.
   - Encourage return for a follow-up visit.

Four Principles to Address the Fentanyl Crisis, Continued

3. Use integrated care to initiate engagement and treatment.
   - Medical settings and primary care are where initial screening and intervention may occur.
4. Be vigilant for fentanyl as the rule rather than the exception.
   - Clinical staff should assume the street drugs are contaminated with fentanyl and every overdose involves fentanyl.

Testing for Fentanyl (1)

- Fentanyl test strips (FTS) can detect the presence of fentanyl in drug samples.
- FTS cost is $1.00 per strip.
- Testing is 96% accurate and can detect at least 10 fentanyl analogs.
- The legality of FTS varies from state to state (some states view FTS as illegal drug paraphernalia).

Testing for Fentanyl (2)

- One study of FTS found 85% of people using illicit drugs wanted to know about the presence of fentanyl.
- Positive changes as a result of tests included:
  - Using a smaller dose.
  - Snorting instead of injecting.
  - Pushing the syringe plunger more slowly to gradually assess drug effect.
  - Having naloxone nearby.
  - Not using the drug.
  - Not using alone.
- There is no evidence that use of FTS has a permissive effect on promoting drug use.

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What Questions Do You Have?

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Thank you!

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