Overdose Response

Understanding Trauma as a First Responder

Funded by the Office of National Drug Control Policy and the Centers for Disease Control and Prevention

COLLABORATE • SHARE • INFORM & HELP

Federal Disclosure

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Acknowledgments

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The Overdose Response Strategy (ORS)

- Collaboration between public health and public safety
  - Office of National Drug Control Policy (ONDCP), Center for Disease Control and Prevention (CDC), CDC Foundation and High Intensity Drug Trafficking Areas Program (HIDTA)
    - Public Health Analyst (PHA) and Drug Intelligence Officer (DIO)

ORS Program Goals

Share data systems to inform rapid and effective community overdose prevention efforts.

Design and use promising strategies at the intersection of public health and public safety.

Support immediate, evidence-based response efforts that can directly reduce overdose deaths.

Disseminate information to support the implementation of evidence-informed overdose prevention strategies.

Sections

- Trauma Basics
- Responding to Overdose Calls
- Trauma's Impact on Policing and Medical Responses
- Benefits to Training

Objectives

- Emphasize what is meant by “trauma”
- Learn how trauma impacts you
- Learn how trauma influences reactions
- Explore alternative routes of communication

Is This a Bait-and-Switch?

Trauma Basics

Why Is It Important to Understand Trauma?

- Seeing what we see is not normal
- Exposure to trauma rewires your body and brain
- There are significant negative outcomes when repeated exposure to trauma is not addressed

What is Trauma?

- What is trauma?
  - An emotional and physical response to a terrible event
    - Violence
    - Serious accident or injury
    - War, combat scenarios
    - Abuse and neglect
    - Repeated exposure to high-stress situations

Types of Trauma

- Direct
  - Happens to you, you witness it
  - Ex. Use of force, patient assault, victim of violent crime
- Indirect
  - Did not happen to you, did not witness it
  - Hearing about a traumatic event from your partner, news, social media
- Acute
  - One-time event over a limited period
  - Ex. Combat, car accident, natural disaster, sudden death
- Chronic
  - Event that happens over and over
  - Ex. Constant need for vigilance, verbal threats, abuse, community violence

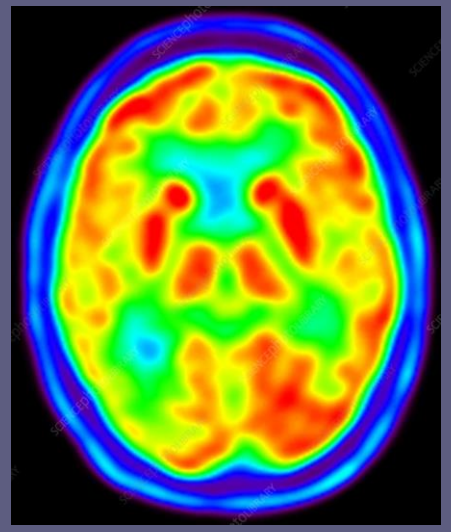
Source: Oklahoma Department of Mental Health and Substance Abuse Services (2014)

Types of Trauma

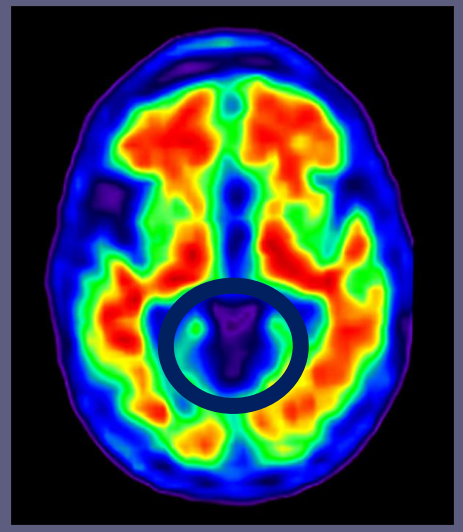
- Insidious
  - Not directly presented to you but is all around you
  - Ex. Anti-police sentiment, negative news coverage of first responders, poverty
- Complex
  - Chronic trauma from a caregiver a child/person should be able to trust
  - Ex. Abuse, neglect
- Organizational
  - Entire group impacted by single event
  - Ex. Death or serious injury to coworker
- Vicarious
  - Repeated exposure to trauma of others in our profession
  - Ex. Cost of caring

Source: Oklahoma Department of Mental Health and Substance Abuse Services (2014)

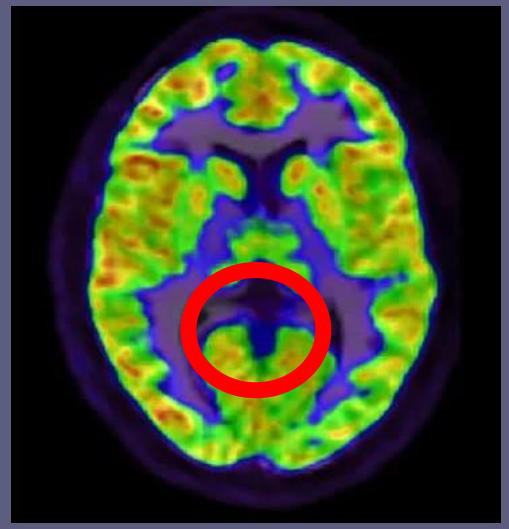
Trauma and the Brain



Healthy Control Subject



Patient with Alzheimer's Disease



Patient with Severe PTSD

Source: National Institute of Health: National Center for Biotechnology Information (2023) and National Institute of Health: National Center for Biotechnology Information (2009)

THREAT (REAL OR PRECEIVED)

FIGHT-OR-FLIGHT [SYMPATHETIC NERVOUS SYSTEM (SNS) ACTIVATES]

REPEATED TRAUMA KEEPS SNS ACTIVATED

Source: Cleveland Clinic (2024), Bremner (2006) *Dialogues in Clinical Neuroscience*

Constant Fight-or-Flight

- Amygdala
  - Handles fear responses
  - Increased activity with trauma and stress even when we should feel “safe”
- Hippocampus
  - Supposed to calm amygdala and prefrontal cortex
  - Declarative/episodic memory
- Prefrontal Cortex (PFC)
  - What makes us “us”
  - Emotional dysregulation

Source: Bremner (2006) *Dialogues in Clinical Neuroscience*

Neurotransmitters

Neurotransmitter	Proper Function	Impaired Function
Epinephrine	Stimulation, mental focus, energy, arousal	Depression, sedation, poor concentration
Dopamine	Comfort, alertness, satisfaction	Fatigue, depression, lack of motivation
Serotonin	Emotional stability, self-confidence, pain tolerance	Depression, anxiety, sleep disorders, less inhibition towards violence, irritability
GABA	Calming effect, relaxation	Anxiety, panic, insecurity, questioning sense of self
Endorphins, Enkalphins	Regulate pain and pleasure, euphoria, sense of wellbeing	Hypersensitivity to pain, inability to feel pleasure

Source: Cleveland Clinic (2022)

Hypothalamic-Pituitary-Adrenal (HPA) Axis

ADRENAL CORTEX

CORTISOL

Source: Johns Hopkins Medicine (2024), Dunlavey (2018) *Journal of Undergraduate Neuroscience Education*

Chronically Elevated Cortisol Levels

- High blood pressure and heart disease
- High blood glucose and diabetes
- Weakened immune system, inflammation and pain
- Metabolism dysfunction and weight gain/loss
- Impaired memory and cognitive function

Source: Johns Hopkins Medicine (2024), Jones & Gwenin (2020) *Physiological Reports*, *8*(24).

When Do Symptoms of Trauma Show Up for First Responders?

- Seeing the same patients, suspects and situations
- Concerns over safety, threats, volatile and unpredictable situations
- Inaccurate representation in the media
- Other first responders giving the profession a negative reputation
- Unreasonable expectations of time and capabilities

So, What Happens Next?

- Maybe nothing!
  - Protective factors
- Anxiety, depression, PTSD, substance use, suicidality
- Burnout, compassion fatigue, whatever the latest buzzword is

Ongoing Inputs

Each could be positive or problematic.

Why Does This Matter?

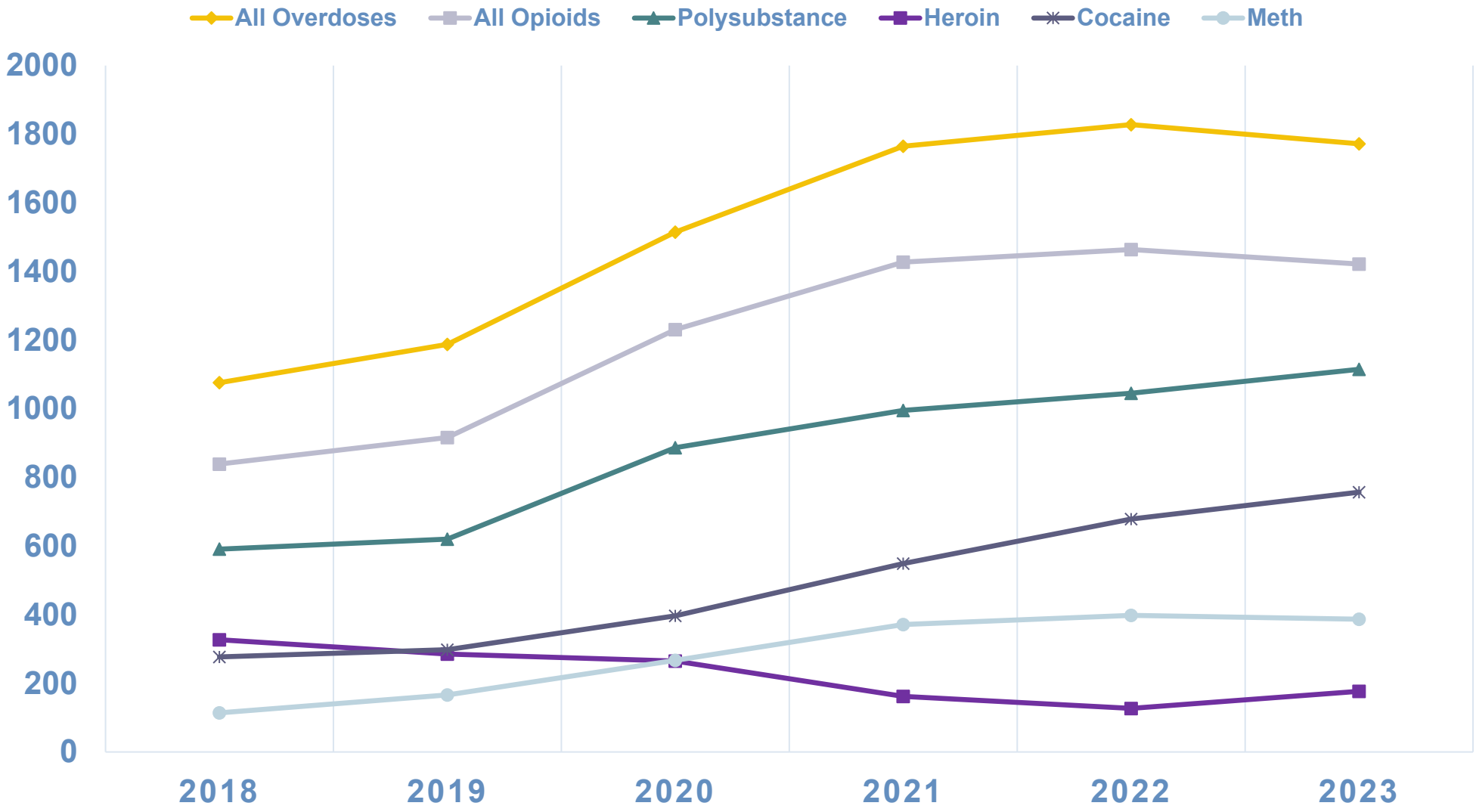
- We regularly encounter and experience traumatic events
- Not addressing the problem means we are not able to help others or ourselves
- Society is asking us to quickly solve problems we aren't equipped to solve
- What else?

Questions?

Break Time!

Responding to Overdose Calls

WISCONSIN OVERDOSE DEATHS (2018-2023)



Source: Wisconsin Department of Health Services (2024)

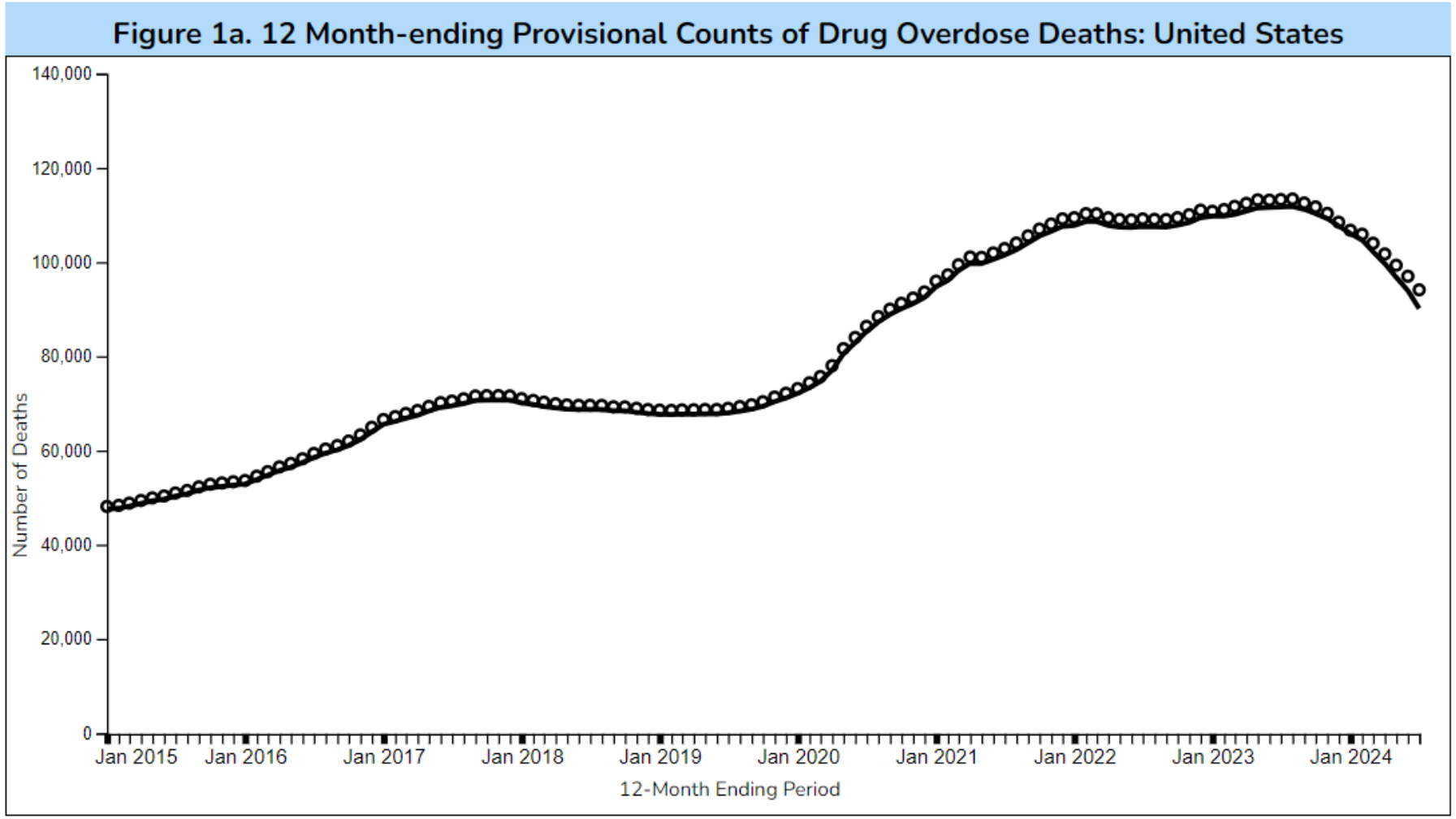
Fatal Overdoses in Wisconsin (2023)

- 1,772 fatal overdoses in 2023
- 62.9% of fatal overdoses in 2023 involved multiple substances
- Ages 18-44 comprised 34.7% of fatal ODs, followed by ages 45-64 at 26.6%
- Native American and Black communities most impacted by fatal overdoses

Source: Wisconsin Department of Health Services (2024)

12 Month-ending Provisional Counts of Drug Overdose Deaths: United States (2024)

Based on data available for analysis on: December 1, 2024



Source: Centers for Disease Control and Prevention (2024)

Why Are Fatal Overdoses Decreasing?

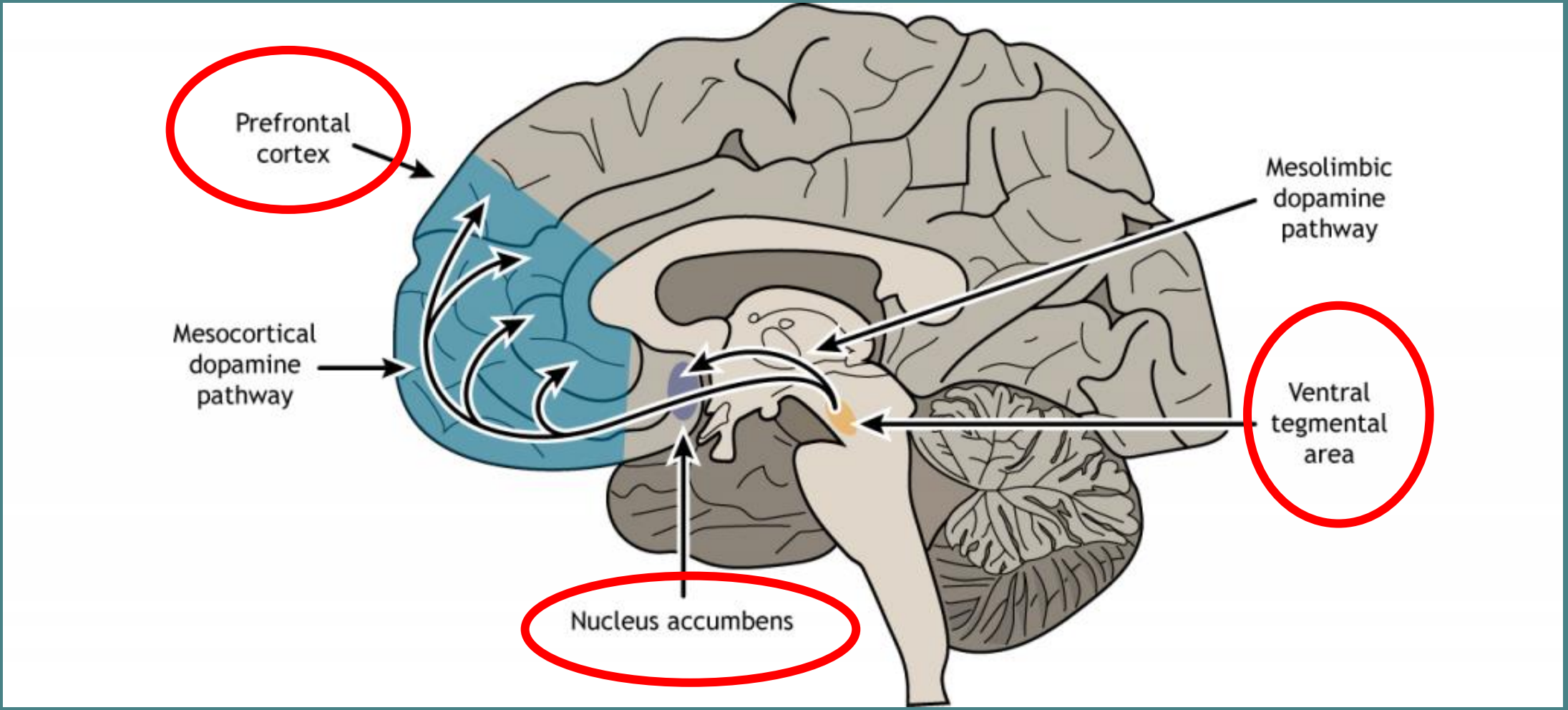
- Increased access to treatment?
- Naloxone saturation?
- Interdiction and seizures?
- Drug Trafficking Organization (DTO) changes?
- Fewer susceptible people?
- Marijuana legalization?
- Xylazine?
- Transition to smoking?

Substance Use, Addiction and the Brain

- Many of the neurotransmitters and brain structures that are impacted by trauma are also impacted by substance use and addiction
- Our brains LOVE dopamine
- Reward pathways are established when our brain gets something it likes

Source: National Institute on Drug Abuse (2020)

Reward Circuit



Source: Hedges (2022)

Changes with Addiction

Brain Structures

- Prefrontal cortex
  - Loss of impulse control
  - Impaired social judgment
- Amygdala
  - Unable to regulate risk-reward situations
- Hippocampus
  - Impaired memory and emotional recall

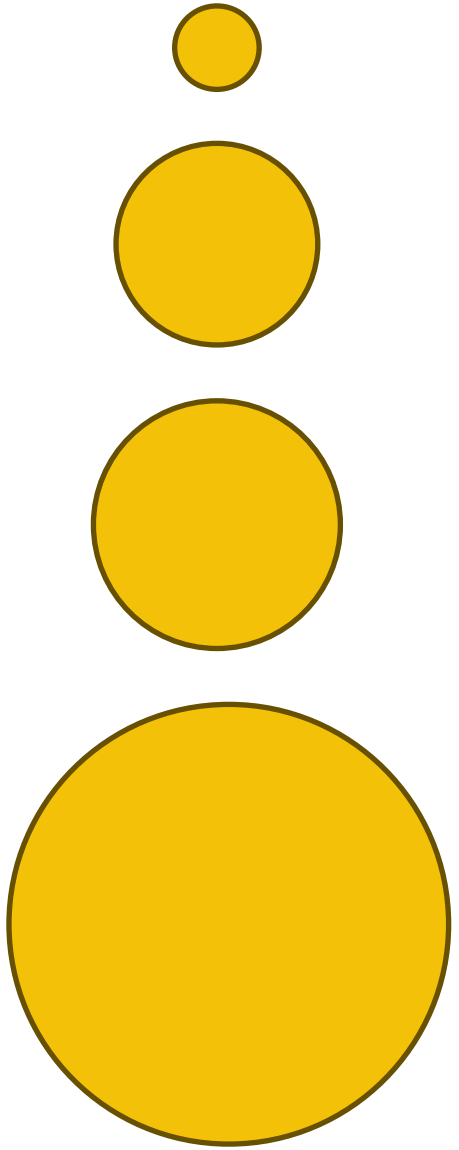
Neurotransmitters

- Dopamine
  - Increased fatigue and depression
- Serotonin
  - Increased irritability and less inhibition to violence
- Endorphins
  - Hypersensitivity to pain, inability to feel pleasure

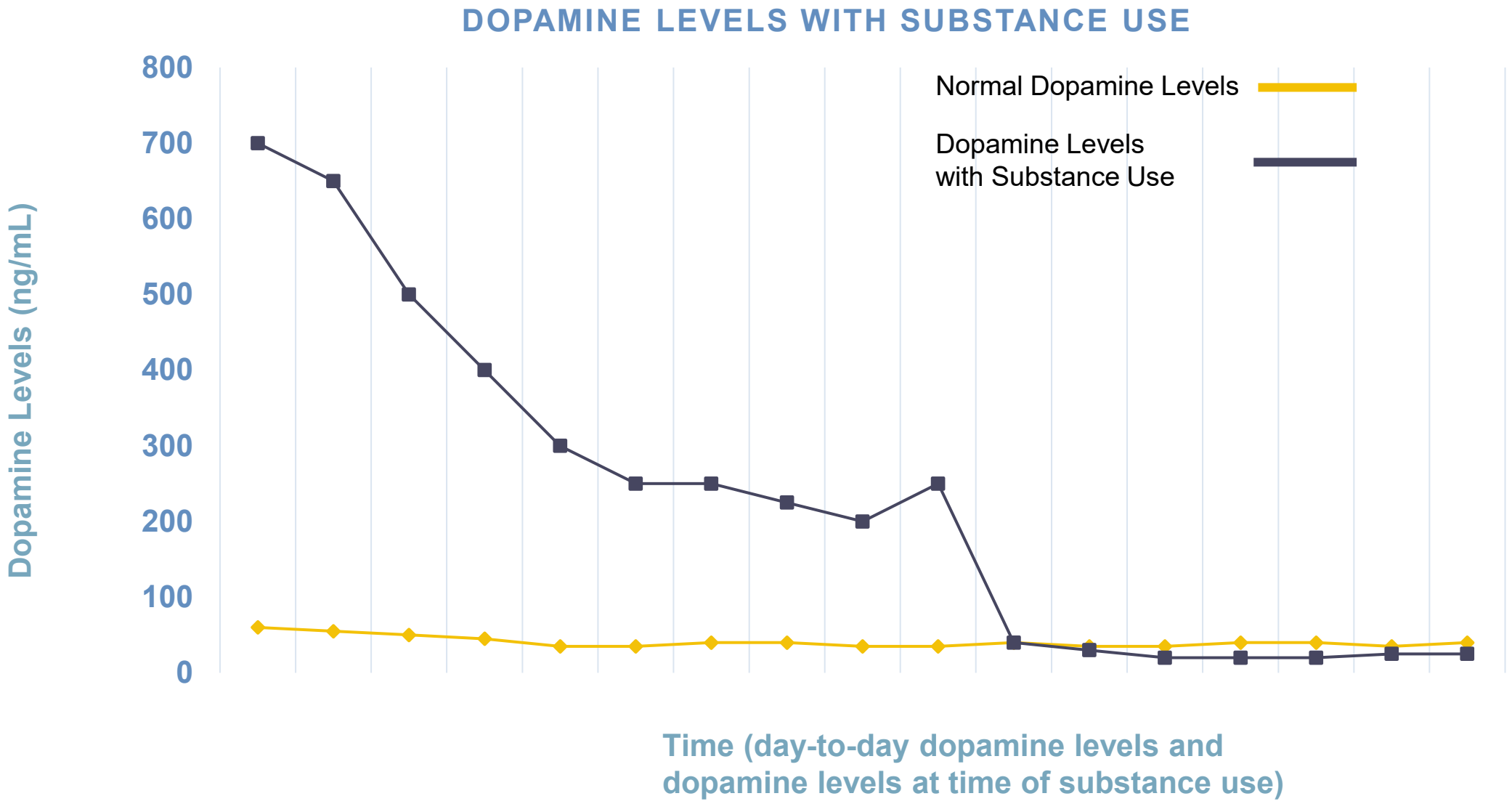
Source: NIAAA (2023), NIDA (2020)

Dopamine Levels with Substance Use

- Baseline: 30-50 ng/mL
- Cocaine: 300 ng/mL
- Heroin: 400 ng/mL
- Methamphetamine: 1,000 ng/mL



Source: Yorgason et al. (2020), Wise & Jordan (2021)



Source: Lauretani et al. (2024) *International Journal of Molecular Science*

Well…Now What?

- How do we apply what we know about trauma, addiction and substance use to overdose calls?
  - Trauma influences our reactions
  - What is your reaction when responding to an overdose call?
- Responder reactions:
  - Memories of past overdose calls, personal or family history with substance use and/or overdose fatalities
- Patient reactions:
  - Emotional implications of almost dying, physical effects, concerns about jail, medical bills, shame or embarrassment

Regardless of your personal feelings about substance use, addiction and overdoses, what are the desired outcomes that unify our professional responses?

- Patient survives.
- Patient does not overdose again.
- Patient seeks help/treatment.
- How do our responses impact these outcomes?

Questions?

Break Time!

Trauma's Impact on Safe and Effective Policing and Medical Response

Understanding trauma and its role in crime reduction, improved medical outcomes and job satisfaction.

Why Do Law Enforcement Officers Need to Understand Trauma?

Trauma impacts EVERYTHING!! Without treatment, trauma can cause permanent physiological and psychological changes to our brains.

- Community policing
  - **Traumatized people have difficulty trusting others**
- Interviewing
  - **When and how to interview people with trauma triggers or PTSD**
- Behavior
  - **Adverse Childhood Experience (ACEs) and brain development – behavior change for officers and the community**

Why Do Emergency Medical Services (EMS) Need to Understand Trauma?

- We see many of the same people law enforcement does
- Getting a medical history
  - **Traumatized people have difficulty trusting others**
- Patient interactions
  - **Scene control**

Understanding Trauma is Important for First Responders

- First responders are in traumatic situations
  - Police – crime scenes, domestic violence, targets/backlash, discharge of weapons
    - **Training topics do not reflect actual work experiences**
  - EMS – unsuccessful resuscitation efforts, patient violence against responders
    - **Training topics may also not reflect actual work experiences**

Understanding Trauma is Important for First Responders

- Law enforcement and EMS respond to individuals or groups who are experiencing trauma
  - **Patients, victims, witnesses, family**
- Community policing and community trauma
  - **Racial and economic disparities**
  - **Generational challenges**
- How are we supported through traumatic situations?
  - **Risk of Substance Use Disorder (SUD), depression, suicidality**

Crime and Disaster-related Trauma Experienced by Law Enforcement and EMS

- Crime scenes
- Victims of violence, sexual assault, car accidents, fires
- Child victims
- Death
- Natural disasters
- Catastrophes (infrastructure collapses)
- Violent events (school shootings, bombings, mass graves)

Ongoing Trauma Experienced by Law Enforcement and EMS

- Unsuccessful resuscitation efforts
- Mass casualty incidents
- Replaying calls in your head
- Wondering if you made a mistake

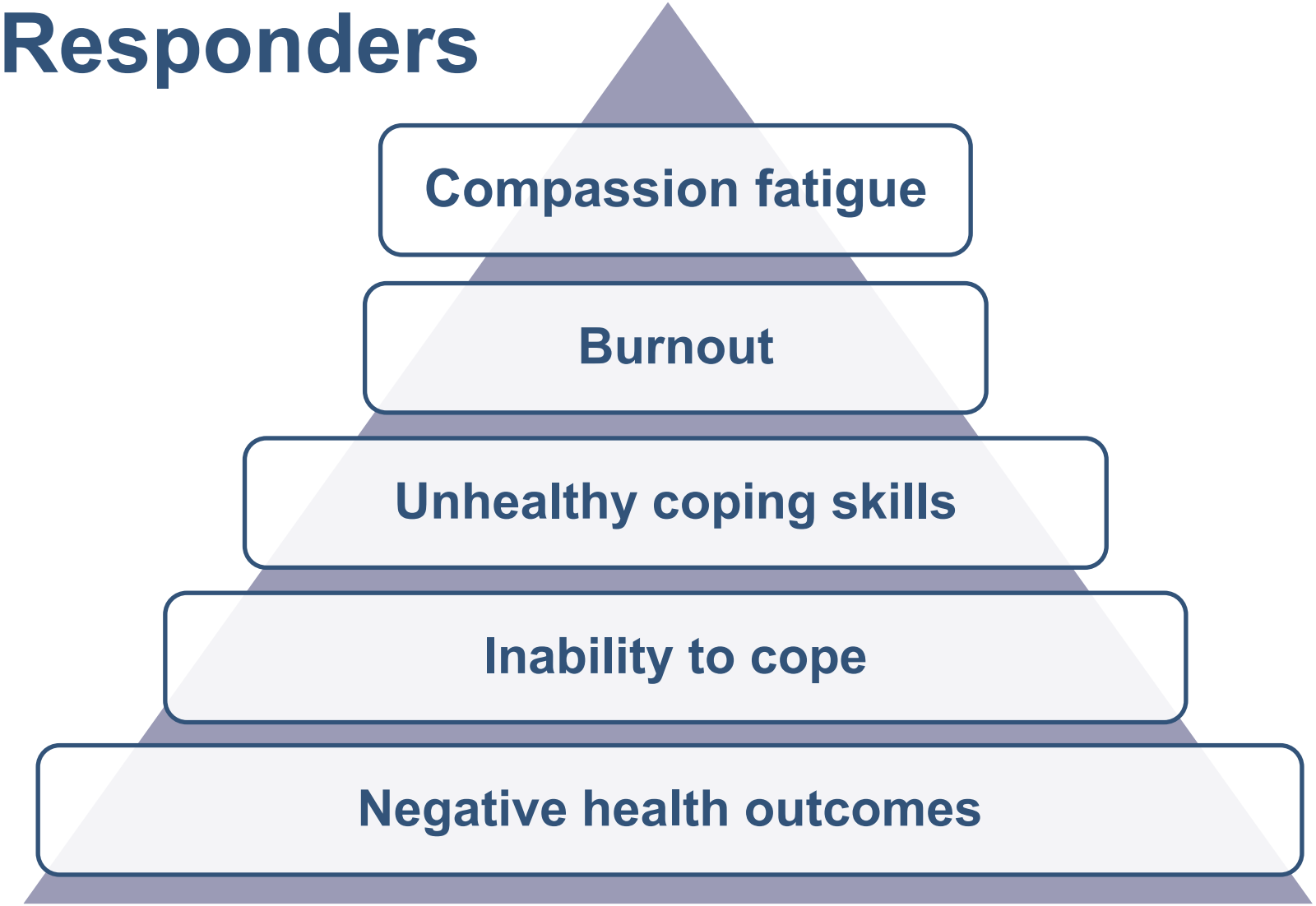
Other Trauma Experienced by Law Enforcement

- Forced retirement
- Illness, injury, addiction, death
- Keeping secrets out of fear of job loss
- Constant state of hypervigilance
- Trained bias – “Us v. Them” mentality
- Internal investigations, lack of support from leadership
- “Bad cops” – other officers tarnishing reputation of law enforcement
- Isolation from family, friends, external support networks

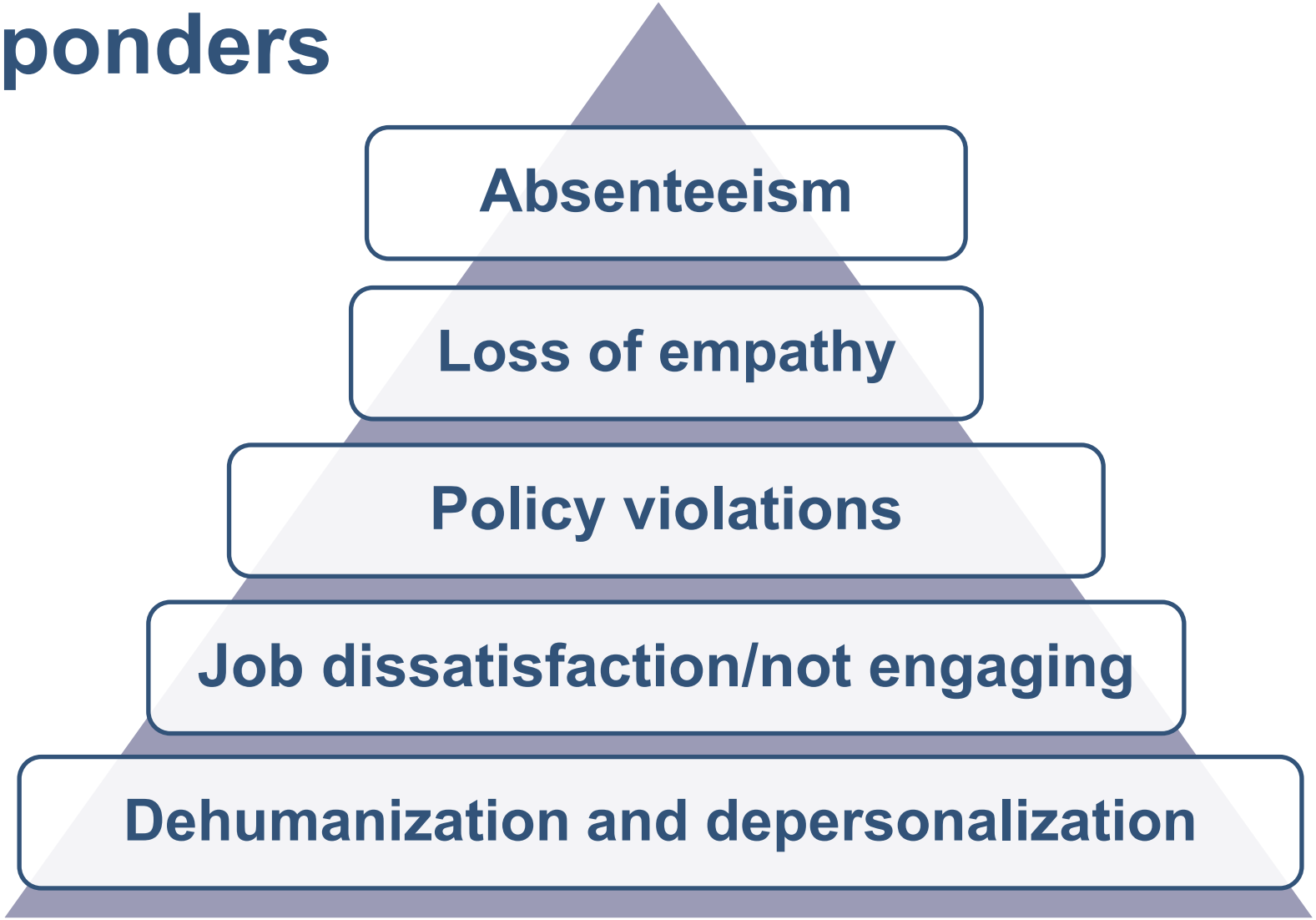
Other Trauma Experienced by EMS

- Illness, injury, addiction, death
- Going from 0 to 60 when tones drop
- Seeing the same patients – feelings of being unable to make a difference
- Other Emergency Medical Technicians (EMTs) or paramedics tarnishing reputation of EMS
- Isolation from family, friends, external support networks

Personal Trauma-related Consequences for First Responders



Work Trauma-related Consequences for First Responders



Law Enforcement and Mental Health

- Approximately **1 in 4** law enforcement officers will experience suicidal thoughts in their lifetime

- More law enforcement officers (LEOs) die from suicide than from line-of-duty deaths
  - 136 line-of-duty deaths in 2023
  - 184 suicides in 2023*

***2024 suicide data not yet available**

Source: FBI (2024), Drew & Martin (2021)

Law Enforcement and Mental Health

- Most law enforcement officers (LEOs) will experience **at least one** of the following:
  - Alcohol abuse
  - Depression, anxiety, PTSD
  - Burnout

- Approximately **20-30%** of LEOs have a SUD compared to 10% of general population

Source: Becknell (2014) & Rowley (2020)

EMS and Mental Health

- Rate of suicide attempts are **10x** higher than general population
- Firefighters are **3x** more likely to die from suicide than from line-of-duty death
  - Approximately 100 suicides annually
- Nearly 70% of EMTs and paramedics report not having enough time to process traumatic events before having to return to work
- Similar issues with substance use, depression, PTSD as law enforcement

Source: Rowley (2020)

Mental Health Stigma and Law Enforcement

90 percent of police officers surveyed reported stigma as a barrier to seeking help

High occupational stress is associated with a **250 percent** increased likelihood of developing PTSD

Officers are 35 percent less likely to experience PTSD symptoms with higher levels of peer support

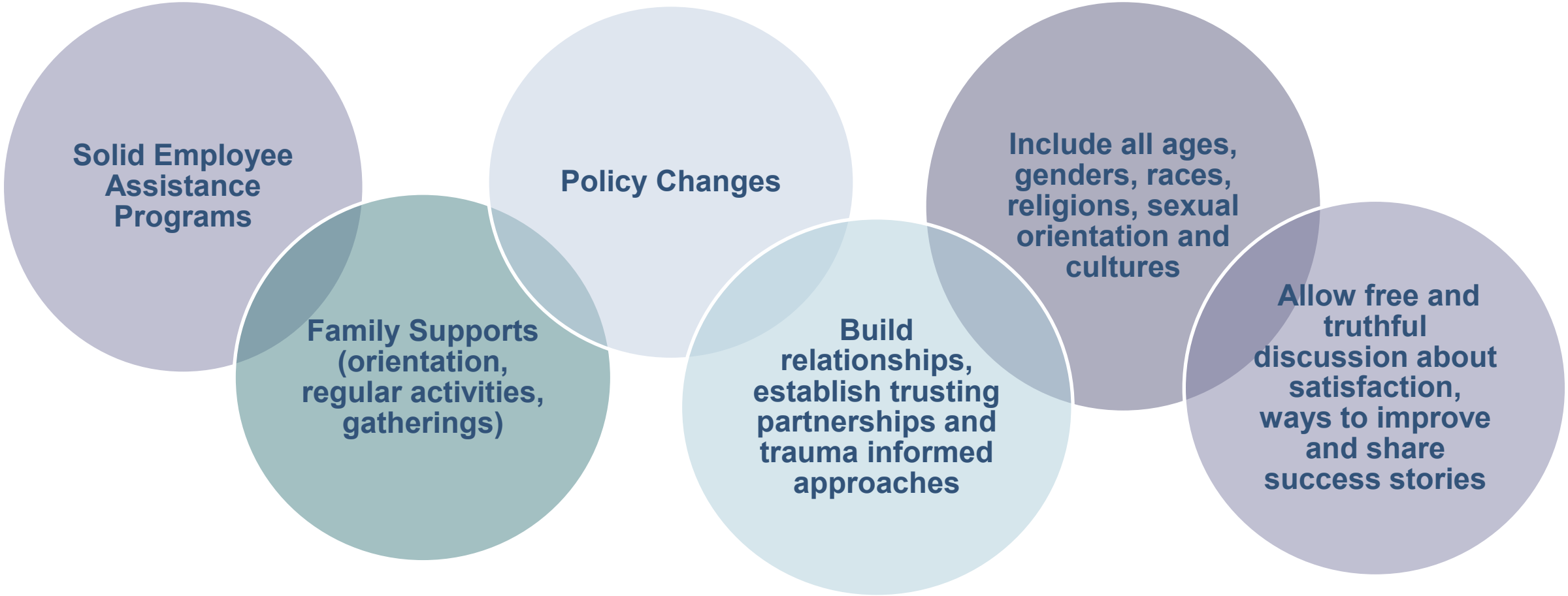
Source: Drew & Martin (2021)

Mental Health Stigma and Fire/EMS

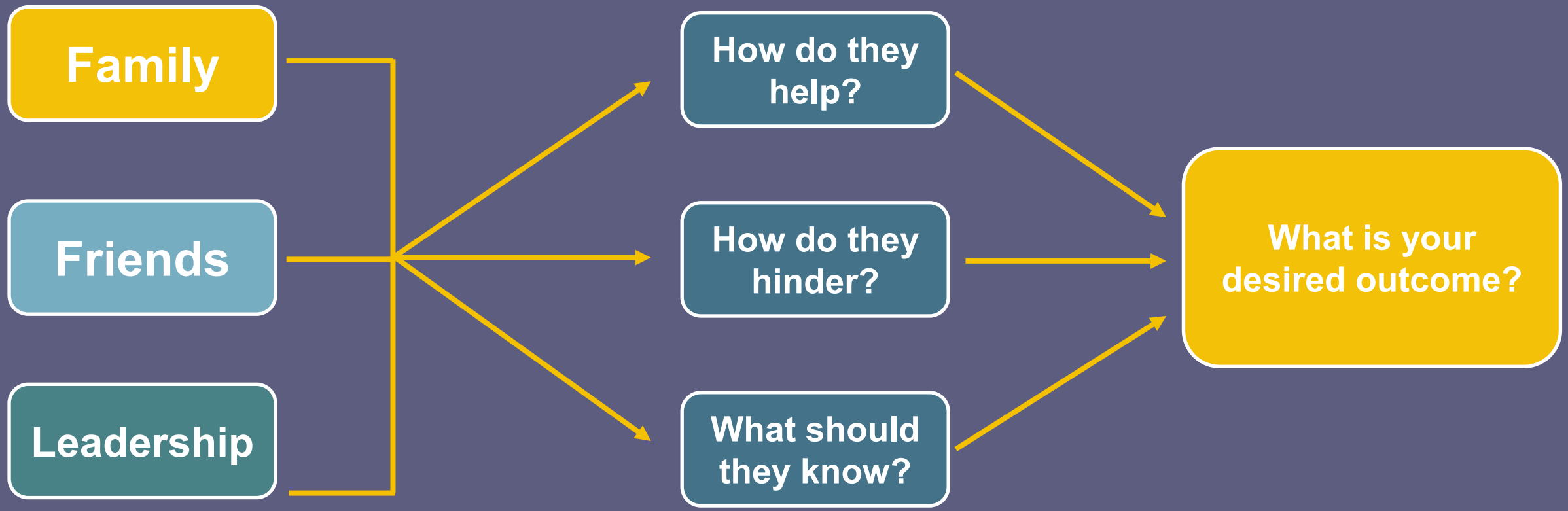
- Early intervention programs initiated by the International Association of Fire Fighters (IAFF)
- Roughly **69% of firefighters, EMTs and paramedics** are part of volunteer agencies – many do not have health insurance to address mental health concerns

Source: Becknell (2014)

Addressing First Responder Trauma and Its Impact On Job Satisfaction



Identifying Support Systems



Supporting First Responders

- Working to decrease stigma around law enforcement and other first responders
- Community relationships that break down barriers
- Not asking first responders to solve problems outside their scope
- Funding programs to address community homelessness, drug use, unemployment and mental health
- Open door policies, EAP, family engagement

Wisconsin Law Enforcement Mental Heath Resources

- Employee Assistance Programs
- Chaplains
- WI Law Enforcement Death Response Teams (LEDR teams)
- The Wisconsin Guardian App
- Police Officer Support Teams (POST)
- Professional Firefighters of Wisconsin
- Firefighters Support Alliance

Benefits of Trainings

In An Ideal World We Want To…

- Foster a supportive environment for first responders and acknowledge the difficult and dangerous work they do
- Work to foster supportive environments for the patients and citizens we serve
  - Increase positive patient outcomes
  - Increase positive police-citizen interactions
- Openly and frankly discuss scenarios routinely experienced by law enforcement and EMS

Recurring Calls for Service

- People don’t call 911 when something good is happening
  - Someone is hurt, sick, dying or needs help
- What are your most frequent calls for service?
- What “routine” calls create the most stress for you?
- What is your reaction when you hear those calls dispatched?

Training Benefit: Learning Accurate Information

Needlestick Injuries

- Hepatitis B
  - Uncommon in the United States
  - Preventable with a vaccine
  - Post-exposure prophylaxis (PEP)
- Hepatitis C
  - Curable
- HIV
  - PEP
  - Highly effective treatment
- Benefits of syringe service programs

Source: Centers for Disease Control and Prevention (2024), Cleveland Clinic (2022), Hepatitis B Foundation (2021), Mayo Clinic (2024)

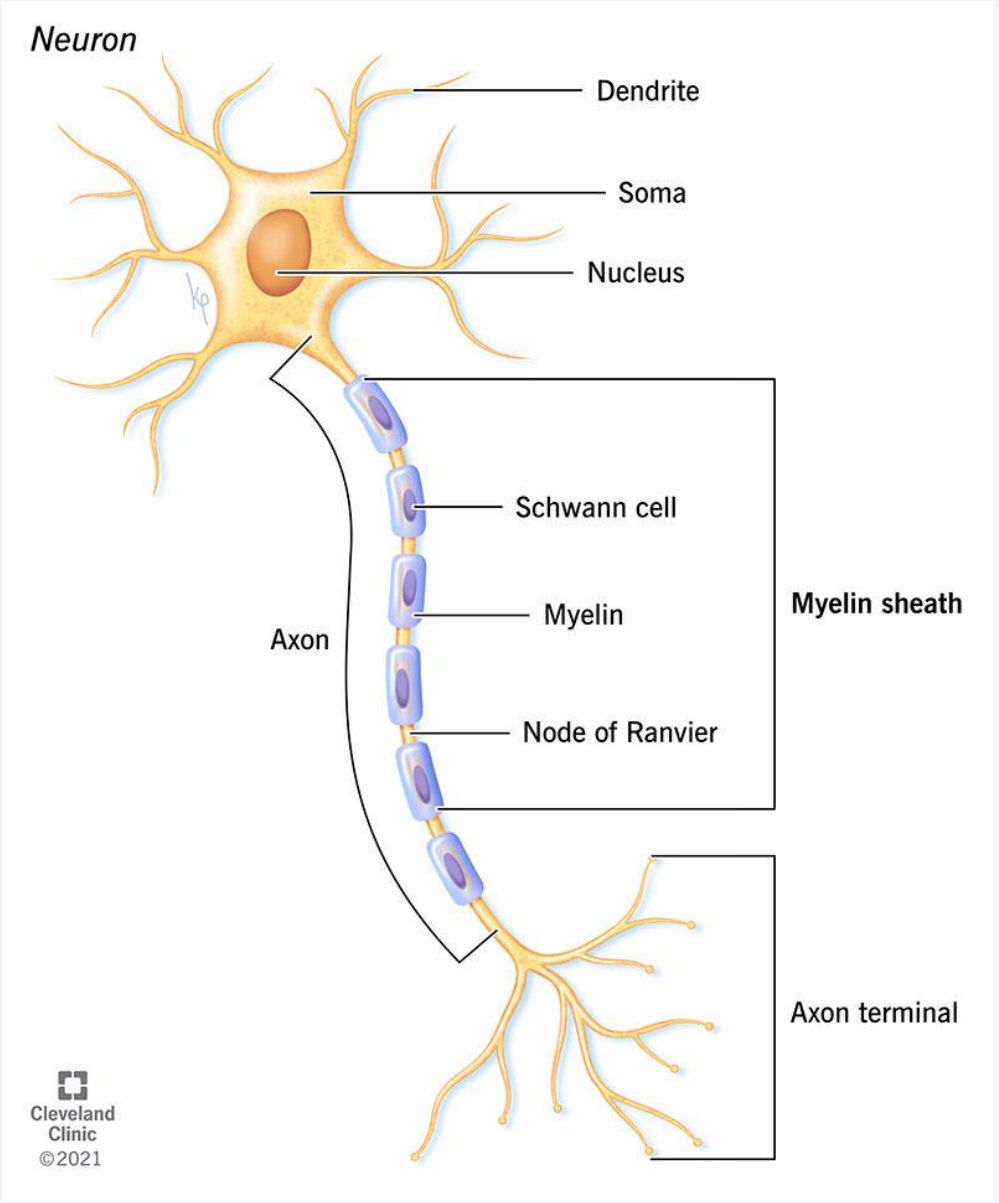
Training Benefit. Learning Accurate Information

Fentanyl Exposure

- Fentanyl powder **cannot** be absorbed through the skin
  - Fentanyl patches
- Fentanyl powder **cannot** be aerosolized and then ingested through passive inhalation

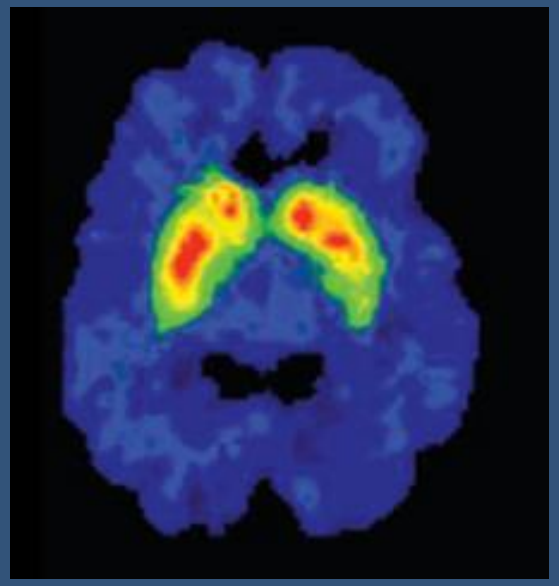
Source: Taxel, Journal of Emergency Medical Services (2022)

Neuroplasticity: Brains Can Get Better!

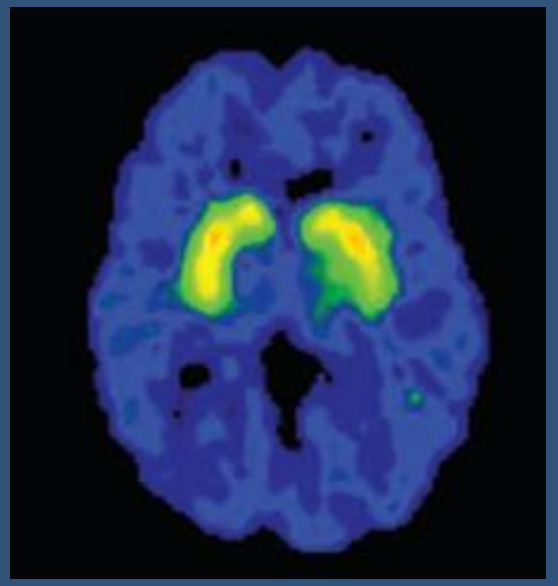


Source: Mavirikaki (2020), O'Brien (2009), Cleveland Clinic (2022)

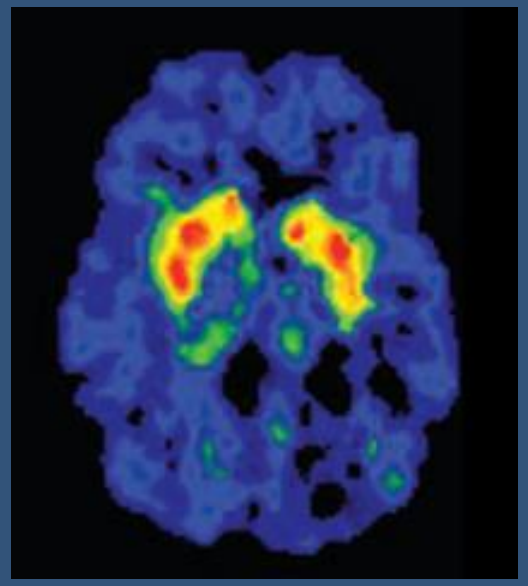
Neuroplasticity



Healthy Control Subject



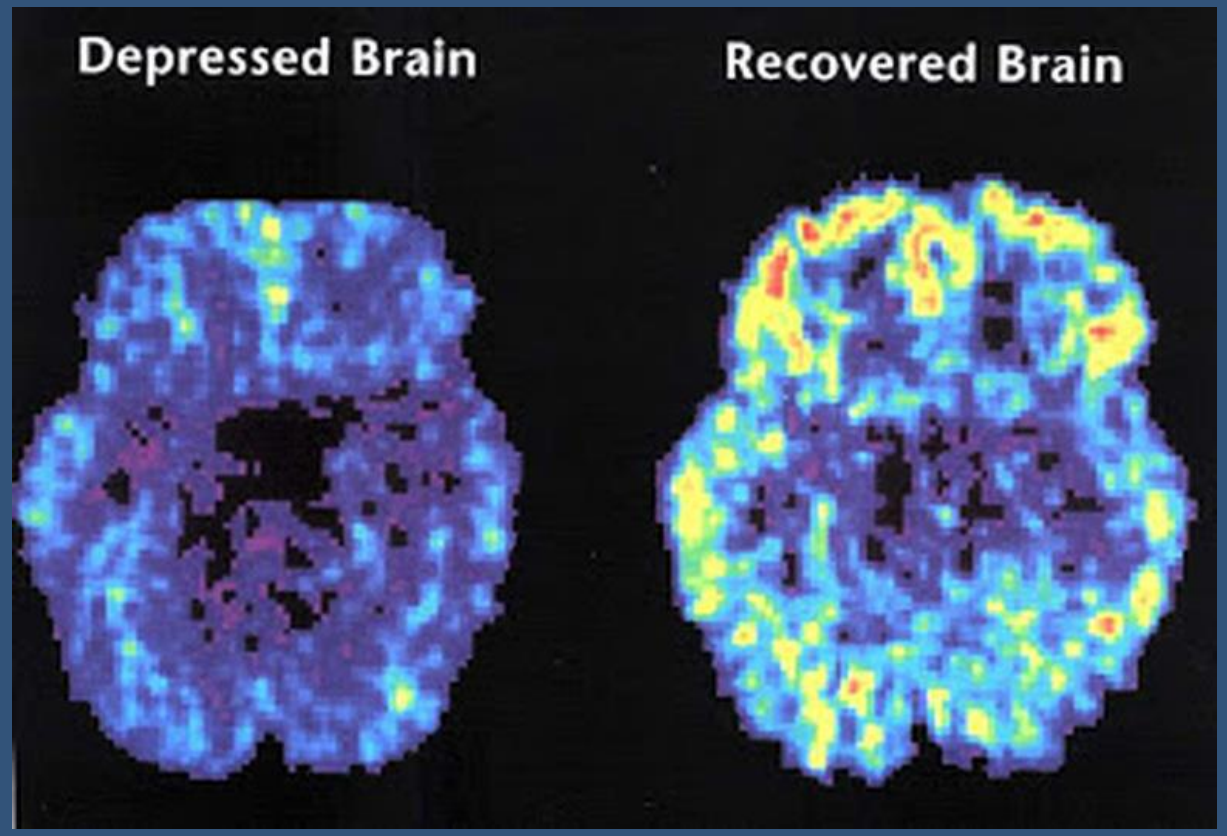
1 month of abstinence from methamphetamine



14 months of abstinence from methamphetamine

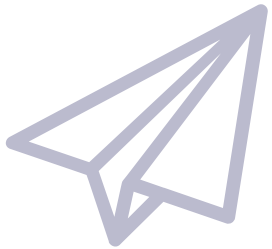
Source: Volkow (2012)

Neuroplasticity



Source: Ziao (2019)

Questions?



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