Xylazine-Associated Wounds: Clinical Insights, Challenges, and Management Strategies

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Disclosure Information

- Joseph D'Orazio, MD – Cooper Medical School of Rowan University
  - Commercial Interests: No Disclosures
- Raagini Jawa, MD, MPH. FASAM - University of Pittsburgh
  - Commercial Interests: No Disclosures
- Tehya Johnson, BSN, MSN, AGPCNP-BC – Boston Health Care for the Homeless Program
  - Commercial Interests: No disclosures
- Lisa Rae, MD, FACS – Lewis Katz School of Medicine
  - Consultant for Polynovo for R&D of new products for burn care and dermal substitutes.

Learning Objectives

1. Review the pharmacology and clinical effects of xylazine
2. Recognize the current landscape of the fentanyl-xylazine drug supply
3. Identify common skin and soft tissue manifestations associated with xylazine use
4. Apply best practices for managing xylazine-associated wounds

Graphic Content Warning

- This talk contains graphic images of xylazine-associated wounds

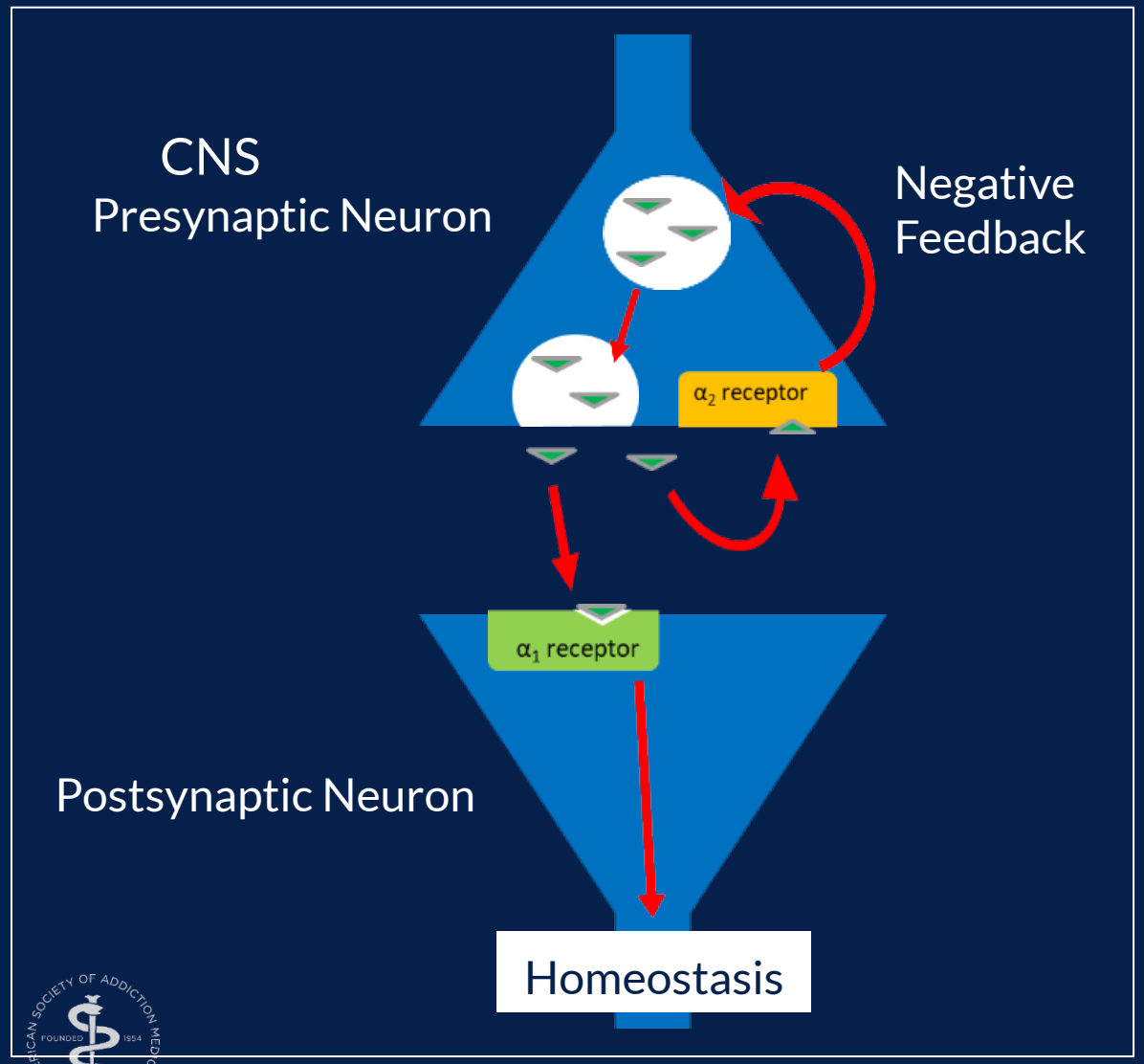
https://www.nytimes.com/2023/04/12/health/tranq-dope-xylazine.html

Xylazine

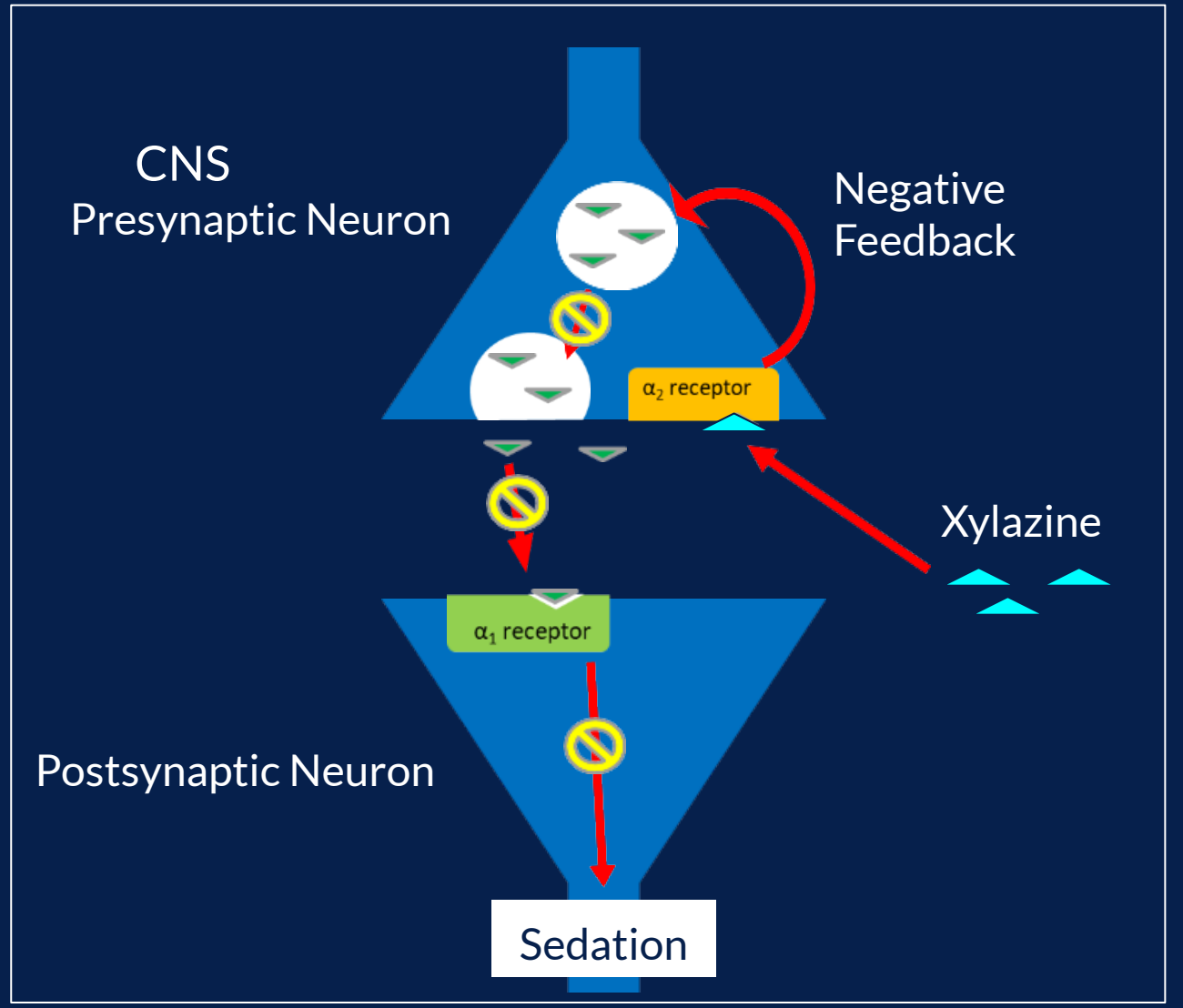
- Veterinary medication used for procedural sedation
  - Centrally acting α-2 adrenergic agonist
  - Decreases sympathetic outflow causing CNS depression
  - Structural similarities to imidazolines including clonidine
- Found as a contaminant to the fentanyl supply
  - Colloquially known as *tranq, sleep-cut, 'anestesia de caballo', sueño*
- Combination of fentanyl-xylazine identified as an emerging threat by ONDCP in 2023

Pharmacology

Normal Physiology



Xylazine Effect

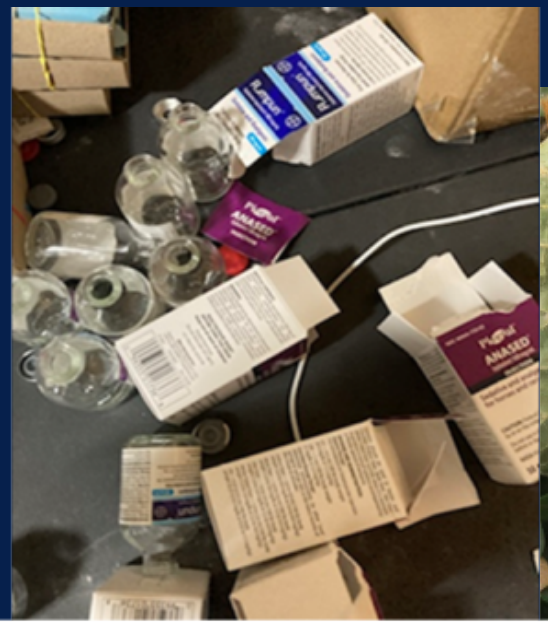


Clinical

- Clinical effect: sedation, blunts the response to hypoxia
- "Overdose": xylazine is always founds in combination with fentanyl → respiratory depression → naloxone
  - Airway control, oxygenation, monitoring
- "Narcan resistant overdose": naloxone reverses opioid effect only
- Xylazine withdrawal: anxiety, restlessness, dysphoria
  - Standard treatment: clonidine, gabapentin
  - Adjuncts: benzodiazepines, antipsychotics, tizanidine, dexmedetomidine, ropinirole, others

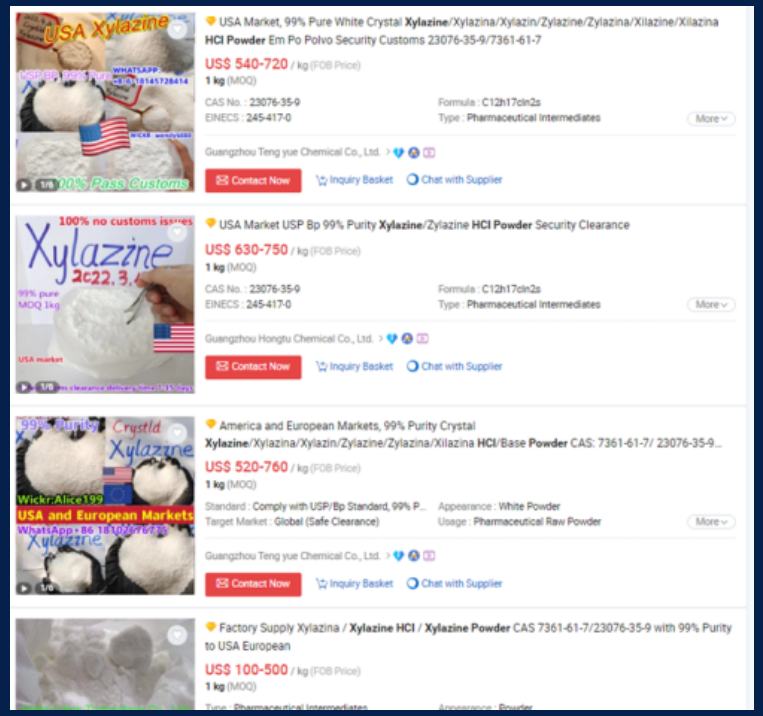
D'Orazio, J., Nelson, L., Perrone, J., Wightman, R., & Haroz, R. (2023). Xylazine adulteration of the Heroin–Fentanyl drug supply. Annals of Internal Medicine, 176(10), 1370–1376. https://doi.org/10.7326/m23-2001

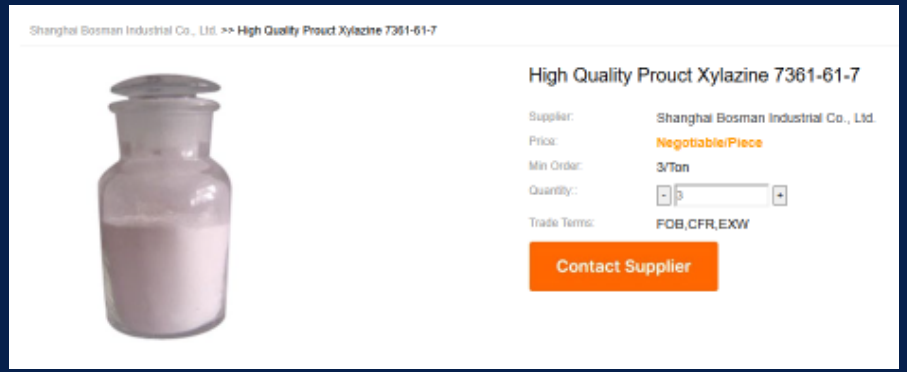
Drug Supply



Source: Drug Enforcement Administration Philadelphia Division

(Christopher Moraff / Narcomedia)





Historical Perspective

- Xylazine use first identified in Puerto Rico in early 2000's as an adulterant to heroin
  - Some reported preference for combination over heroin alone
- Ethnographic studies in 2011 reported chronic xylazine use causing health problems including skin lesions, ulcers, sometimes requiring amputation
- Significant increase in detection of xylazine 2016-2017 in Philadelphia and other areas
  - Wounds presentations increased shortly after xylazine introduction to the heroin supply

FIGURE 1. Photos showing skin lesions among drug users in San Juan, Puerto Rico. *1* Cellulites in a female's leg. *2* Abscesses and cellulites in legs among male injection drug users.

Reyes, et al., 2012
Torruella, 2011

Addiction takes a toll on life and limb

Amputations are spiking amid Philly's tranq crisis. It's a mark of the slow public health response to the latest threat in the drug epidemic

Joseph Kunz undergoes an examination at Cooper University Hospital in Camden. He had been using tranq at the time; eight months later, his life has taken another turn.

Jessica Griffin / Staff Photographer

Amputations Increased in Philly Hospitals for Patients Using Opioids

For patients dealing with an opioid use disorder, amputations in 2023 were 118% higher than in 2016. More than two-thirds of the people suffered from soft tissue infections to their limbs, a possible marker for wounds resulting from the use of the animal tranquilizer xylazine, medical billing records show.

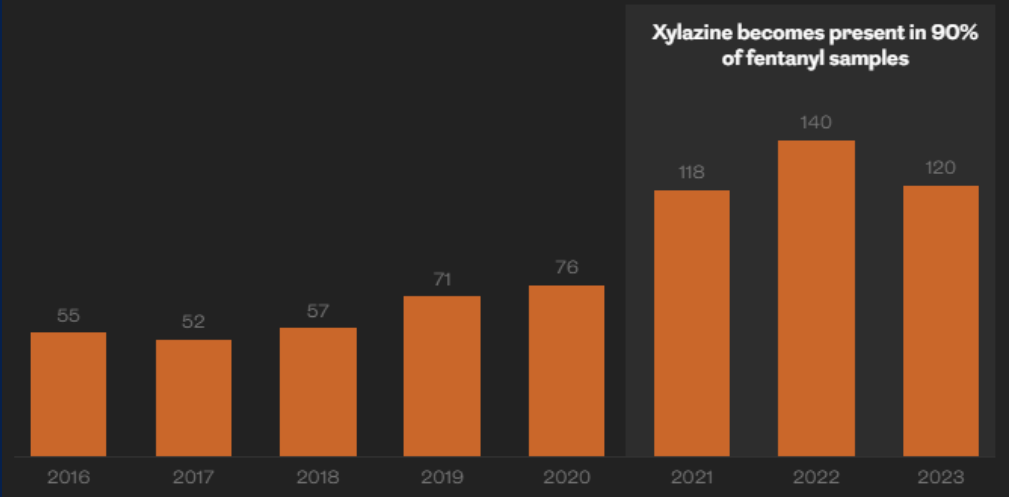


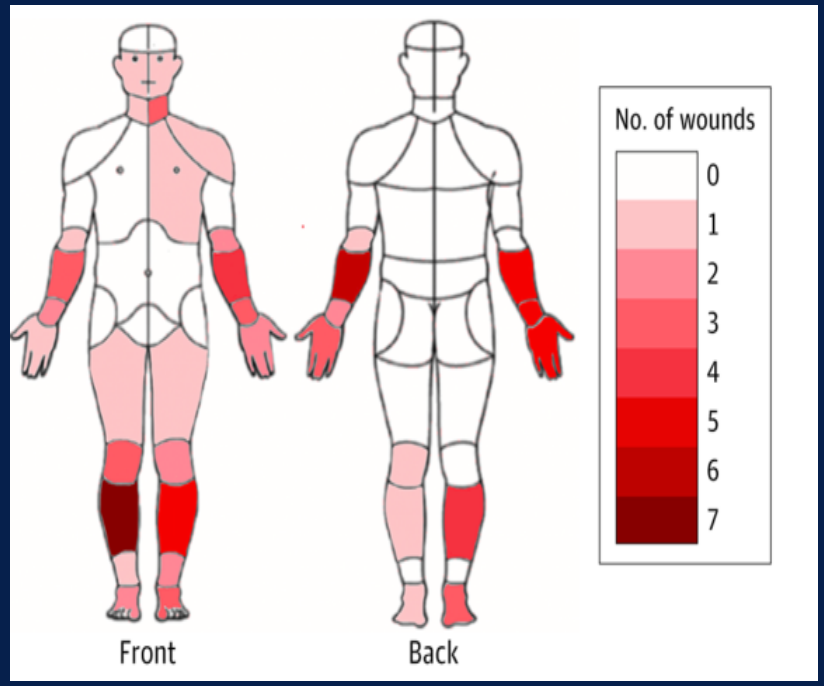
Chart: Dylan Purcell / Inquirer Staff • Source: PA Health Care Cost Containment Council (PHC4)

Introduction to Xylazine-Associated Wounds

Tehya Johnson, BSN, MSN, AGPCNP-BC
Boston Health Care for the Homeless Program

Intro to Wounds

- Xylazine wounds distinct from other typical injection related wounds
  - Develop both at AND distal from injection sites
  - Develop regardless of route of administration
  - Misidentification is common



Lutz et al. JAMA Dermatology. 2024

Potential Mechanisms of Xylazine-Associated Wounds

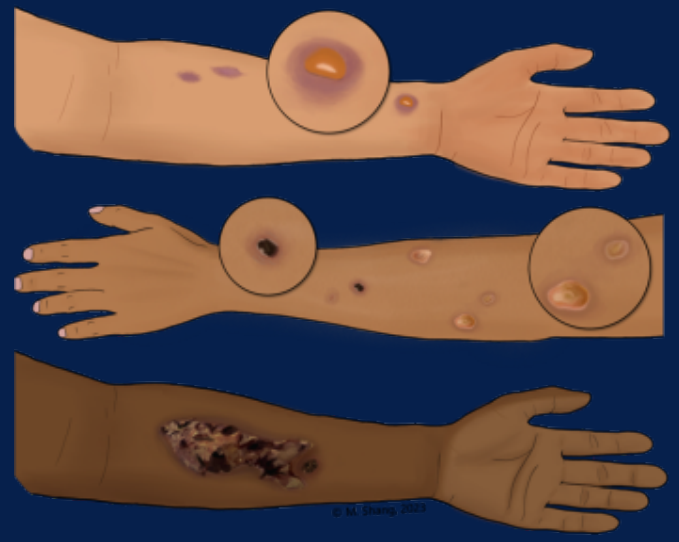
- Tissue destruction mostly occurs at injection sites
  - Cytotoxic effect, local capillary vasoconstriction
- Non-injection sites wounds
  - Kappa-opioid agonism, delusional parasitosis, pruritus
  - Pressure wounds
- Biopsy of xylazine associated wounds:
  - Epidermal necrosis with local fibrin thrombi
  - Nonspecific inflammation with leukocyte infiltrate

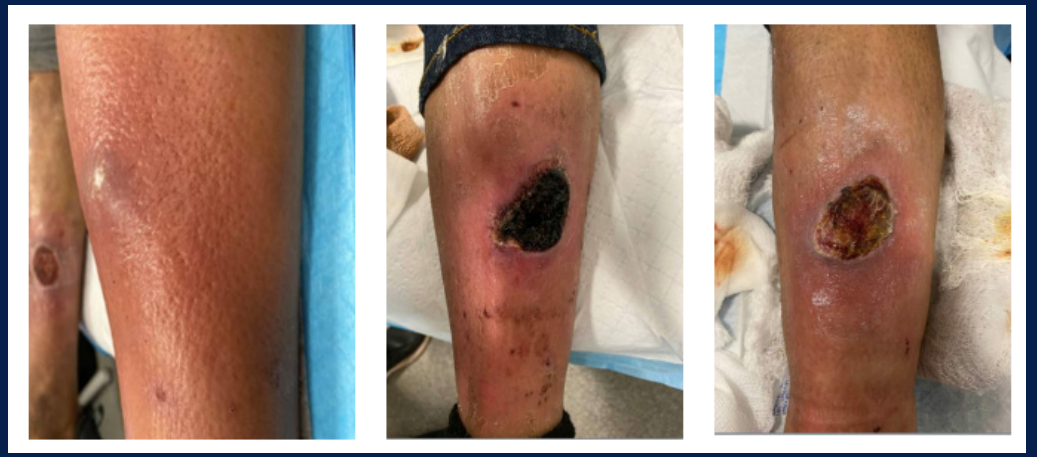
Papudesi et al. StatPearls. 2023; Rose, et al. JAAD Case Reports. 2023

Wound Description

Characteristics:

- Start as red or purple blisters which develop into smaller wounds that can coalesce into larger ulcerations
- Extension with continued injection into wound area
  - Size of wound and depth of wound
- Delayed healing time
- Significant necrosis within wound bed
- Copious drainage
- Significant periwound swelling
- Distinct odor





Torruella RA. Substance Abuse Treatment, Prevention, and Policy. 2011; Jawa R et al. DAD. 2024; McFadden et al. JAM. 2024

Ulcerated Necrotic Injections Sites

- Venous congestion
- Colonization, Infection
- Surrounding Cellulitis
- Underlying Abscess formation
- Possible Necrotizing fasciitis

Past 90-day injection practices among PWUD who primarily inject

	All (n=155)	Xylazine wounds (n=135)	Non-xylazine wounds (n=20)	Odds Ratio	95% CI (LCL, UCL)
Injection frequency per day				1.24	(0.48, 3.19)
1–5 times	78 (50.3 %)	67 (49.6 %)	11 (55.0 %)		
≥6 times	77 (49.7 %)	68 (50.4 %)	9 (45.0 %)		
Reuse of needles	64 (41.3 %)	58 (42.9 %)	6 (30.0 %)	1.76	(0.64, 4.85)
Skin popping	**47 (30.3 %)**	**46 (34.1 %)**	**1 (5.0 %)**	**9.82**	**(1.27, 75.68)**
Muscling	31 (20.0 %)	30 (22.2 %)	1 (5.0 %)	5.43	(0.70, 42.23)

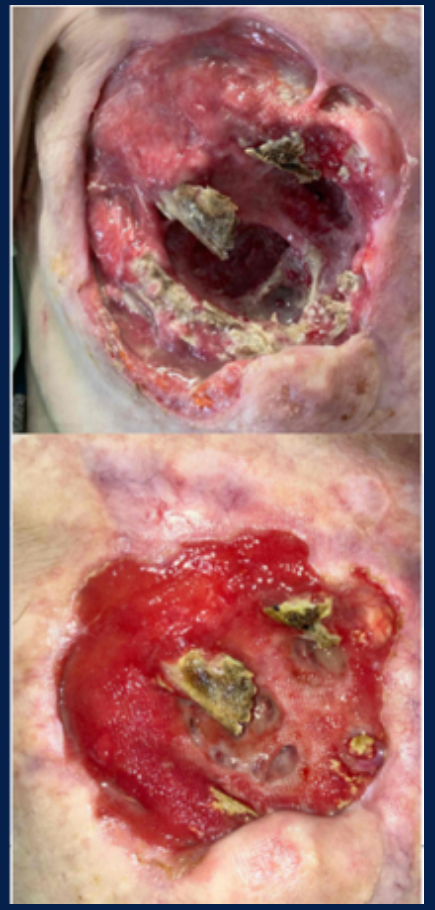
Jawa R et. al. Drug and Alcohol Dependence. 2024

Wound Care Fundamentals

- Patients have an amazing ability to heal

<u>Goals of wound care:</u>

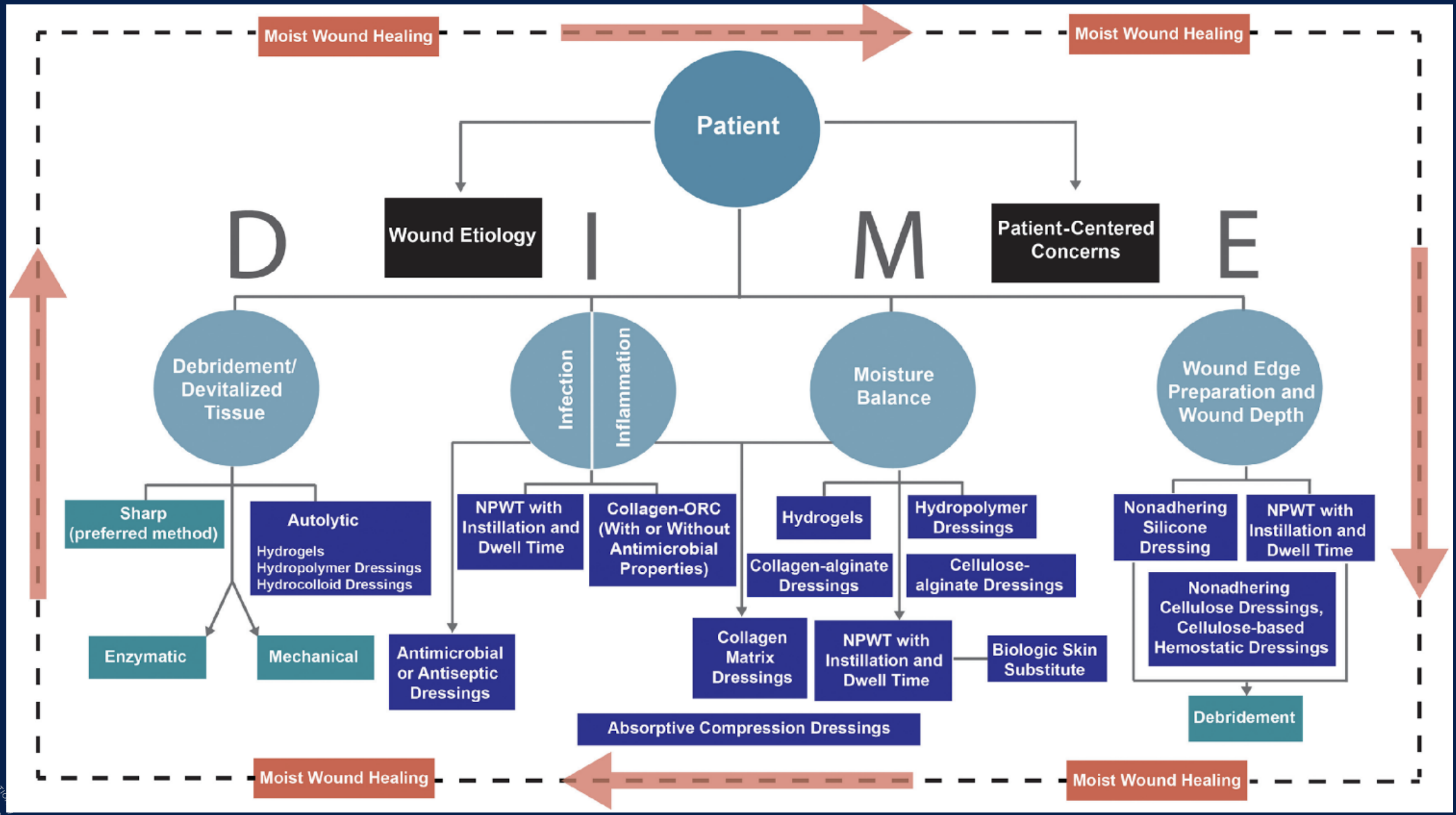
- Improve overall healing time
  - Debride devitalized tissue, maintain healthy tissue
  - Balance moisture
- Decrease risk of local and systemic infection
- Decrease pain (of wound and with dressing changes)
- Decrease exposure of underlying structures: tendon, bone, major vessels, organs
- Improve daily quality of life



Patient Participation

Imperative we involve patients in their wound care, as they are the experts on their own body and this aids in establishing a safe space

- Engagement is key
  - Ask for consent before physical contact/performing wound care
  - Have patient participate in wound care
  - Provide education (ex. what is this dressing, why, how will this wound change) and allow for Q&A
  - Avoid rushing removal of previous dressing
  - Shared decision making regarding wound care plans
- Time wound care with pain medication/opioids/home dosing
- Reduce stigma: no blaming or shaming, no stigmatizing terms or care



Snyder et al. Advances in Skin and Wound Care. 2016

Assessment

- Document all wound sites
  - Ideal to use specific/standardized anatomical terms
- Wound description
  - Size, depth, color, tunneling, undermining, drainage type, periwound area
- Superinfection

Pertinent Patient Hx:

- Chronicity of wound
- Substance use practices (i.e. injection into wound)
- Pain management
- Current wound care/dressing
- Prior surgical intervention

Wound Care Basics

Step 1: CLEAN (goal is once daily)

- **Patient-centered, ask what patient can currently tolerate**
- **Soak** prior dressing before removal
- **Cleanse** wound and periwound area
  - Soap and water, normal saline or dermal wound cleanser
  - Avoid alcohol and peroxide based cleansers
  - **Wipe** with gauze or Irrigate with normal saline any debris that is ready to come off, removes bacteria
  - Do **NOT** drip water for cleansing, this is ineffective
- Dry thoroughly before applying new dressing

Blowout Medical, 2025d; McKesson Medical-Surgical Inc., 2025

Wound Care Basics

Step 2: Control Infection/Promote Autolytic debridement

- **Imperative devitalized tissue - including slough, eschar, bioburden, biofilms - are debrided from wound bed**
  - Otherwise prevents re-epithelization, angiogenesis, tissue remodeling, wound closure; difficult to assess underlying tissue, signs of infection
- **Autolytic debridement** - highly selective process within the wound bed where endogenous phagocytic cells and proteolytic enzymes break down devitalized tissue
  - Can be enhanced by both specific debriding agents and moisture-retentive dressings
- **Enzymatic debridement** - use of topical agent containing collagenase (exogenous proteolytic enzyme) promote detachment of necrotic tissue from wound bed

Manna et al., StatPearls, 2023

Wound Care Basics

Debriding Agents:

- Enhances autolytic debridement:
  - Hydrogel, Medihoney, Xeroform
- Enzymatic debridement
  - Santyl (prescription needed)
- Consideration: drainage increases, plan for this in patients not seen regularly

Skin Protectants:

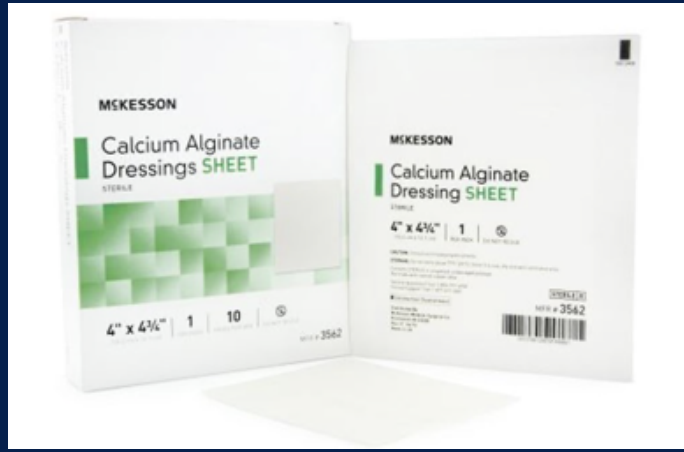
- A & D ointment
- Petrolatum

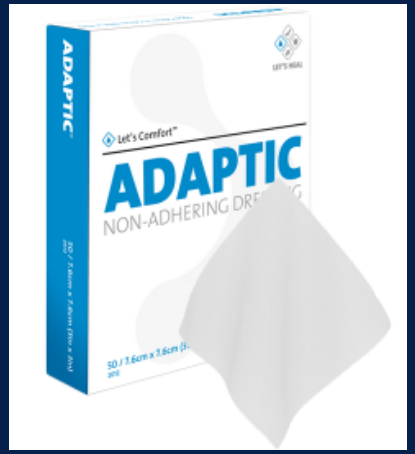
Blowout Medical, 2025e; Blowout Medical, 2025h; Blowout Medical, 2025i; Blowout Medical, 2025j; Concordance Healthcare Solutions, 2025

Wound Care Basics

Step 3: KEEP MOIST (but balanced!)

- Primary dressings (can be applied directly to a wound bed)
  - Debriding agents, greasy gauze (xeroform, oil emulsion dressings, vaseline gauze), silver sulfadiazine (SSD), calcium alginate/aquacell silver (promotes re-epithelization), A&D
- Can use in combination depending on needs/moisture level
  - ex. medihoney and adaptic, greasy gauze and SSD
- For all dressings with moisture, recommend cut to size of wound to avoid maceration of border





Blowout Medical, 2025b; Blowout Medical, 2025c

Wound Care Basics

- **Step 4: COVER WOUNDS**
  - **Over primary dressing -** Absorbent Gauze (ABD pads or regular gauze), Rolled Gauze (Kerlix) to secure, tape if needed
    - Absorbs drainage from wounds, barrier to bacteria and debris
    - Cheap and easy to obtain
  - **Over Gauze -** Coban or Ace Bandage
    - Coban - caution with applying too tightly
    - Ace Bandage - caution with metal clips

Blowout Medical, 2025a; Blowout Medical, 2025f; Blowout Medical, 2025g

ID management of xylazine wounds

- Are often misidentified as cellulitis or necrotizing skin infection
- AVOID TOPICAL ANTIBIOTICS! - Antibiotic stewardship, no evidence that this improves healing
- Avoid superficial wound cultures to guide antibiotic choice
- For exposed bone, consider chronic osteomyelitis→ low utility to do diagnostic bone biopsies
- If a suprainfection or SSTI, short courses of systemic antibiotics are reasonable to cover strep and staph spp.

Empiric antibiotic treatment recommendations

Empiric Tx	Non-infected Wounds	Local Wound Infection	Wound Infection with Systemic Symptoms	Severe/Necrotizing
First-line	Mupirocin nasal and CHG 4% topical x 5-7d if hx of MRSA infection or colonization	Doxy + Amox/clav OR Cefadroxil x 7d	Vancomycin* + Ceftriaxone**	Linezolid + Pip/tazo
Alternative		Bactrim monotherapy (beta-lactam allergy, normal renal function) Linezolid monotherapy (if not on methadone)	*Daptomycin (if Vancomycin allergy) **Cefepime (if high c/f sepsis)	Cefepime + Metronidazole (if PCN allergy)

- Narrow antibiotics based on susceptibilities if deep wound cultures

Shang M et al. SAJ. 2025

Wound Healing Examples

Johnson, T et al. AMERSA. 2024

Wounds Healing Examples

At admission:
exposed bone
bilateral forearms

3 months: conservative
wound care only

6 months

Wound Healing Examples

3 weeks

3 months

Advanced Management of Xylazine-Associated Wounds

Lisa Rae, MD, FACS
Medical Director, Temple Burn Center, Philadelphia

Avoiding Aggressive Debridement

- Aggressive surgical debridement should be avoided, maintain healing potential of the wound and avoid further exposure of bone and tendon
- This wound has been there for months to years... Usually not the cause of sepsis, if septic.
- Rule out sick patient from the wound (deep abscess, NSTI) – clinical diagnosis
- Air on CT may be from recent injecting, not helpful
- Chronic osteomyelitis almost ubiquitous
- Protect exposed tendon and bone for limb salvage
- Avoid and Delay Amputation, Dermal Substitutes can help

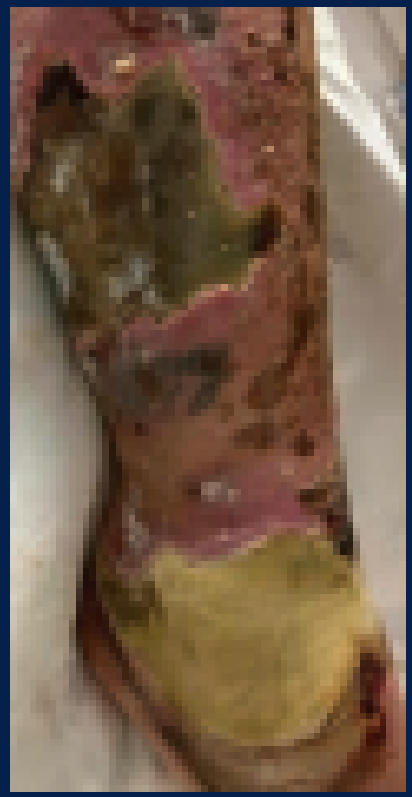
Surgical Assessment

- Emergency
  - Deep space infection – abscess, necrotizing fasciitis
  - Imaging may be misleading- air in soft tissue may be due to recent injection or open wound, periosteal inflammation is common
- Avoid aggressive surgical debridement
  - Repeated surgical debridement leads to excessive tissue loss and increased risk for amputation
- Avoid amputations - complex decision, multidisciplinary approach
  - Patients with severe wounds retain good healing capacity
  - Removal of exposure to xylazine and good basic wound care can allow for healing of even severe wounds
- Options for surgical interventions

Surgical Options

Surgical debridement

- Operative sharp debridement of eschar
- Bedside sharp debridement
  - Cross hatching



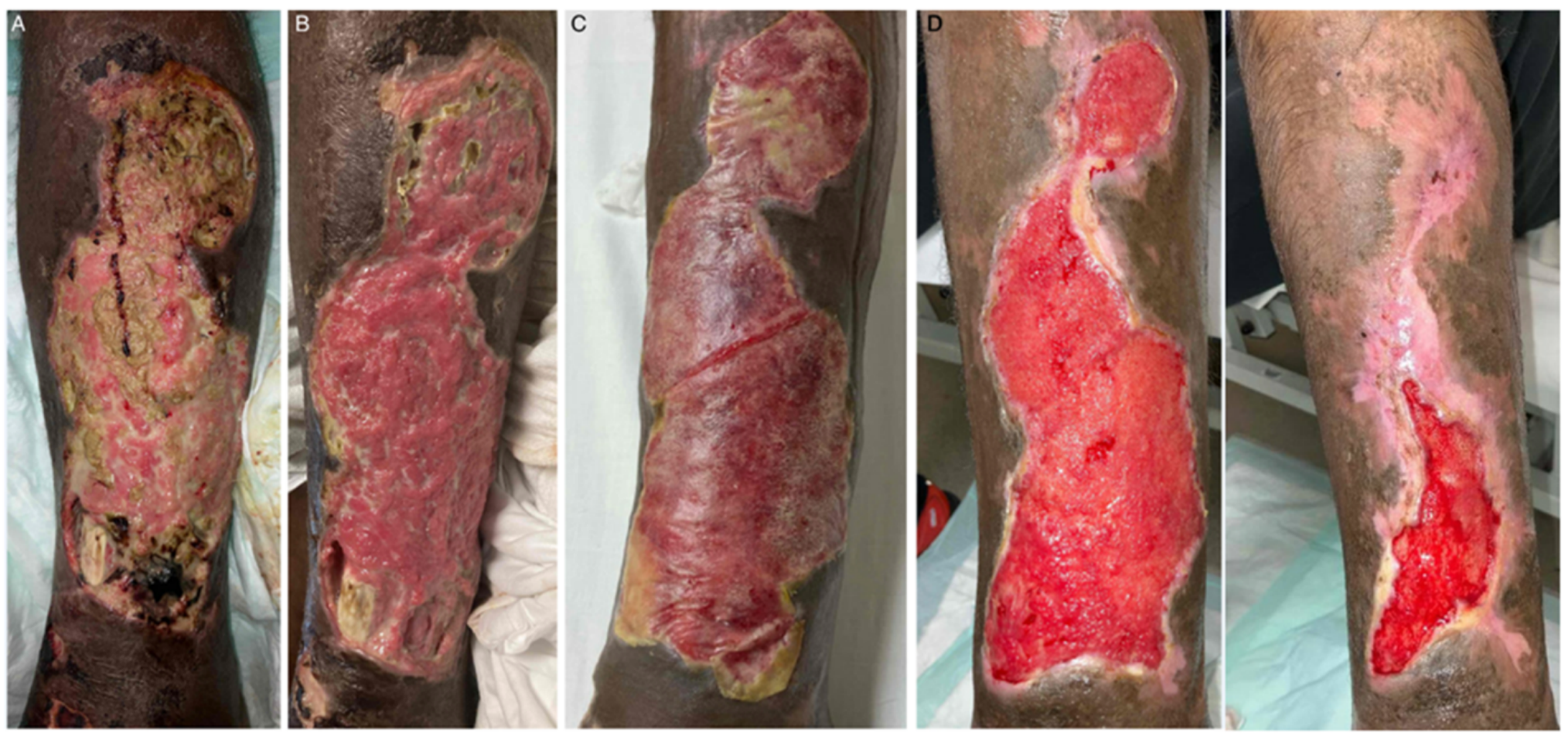
Surgical Options

- Coverage options
  - Skin grafting
  - Dermal substitute
  - Flaps
- Timing of surgical intervention

STSG 100% healed

2 Months later with ongoing xylazine use

Wound Care → Dermal Substitute → Recovery



Admission → 3 days of wound care → POD 14 dermal substitute → POD 3 Months → POD 5 Months

Wound Care → Dermal Substitute → Ongoing Use

Admission with wound care

POD 3 S/P Dermal Substitute

3-4 weeks Post Op

Long Term Follow Up
No Skin Graft

5 Months since Dermal Sub

9 Months since Dermal Sub

OR Placement of Synthetic Dermal Substitute

Admission

SSD W/C 3 days

OR Minimal Debridement

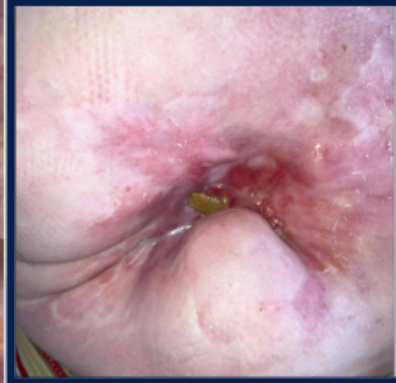
Placement of Dermal Substitute

Minimal Bone Exposure 1 Year Post-Op Despite Return to Injection Drug Use

POD 7 Integration | POD 23 Delamination | 3 Months | 1 Year

Advanced Techniques

- Focus of care is Harm Reduction
- Improve quality of life → simplifies wound care, pain reduction, less drainage
- Protect structures for life and limb salvage
- Improve relationship with the health system, help engagement in recovery services
- Help maintain recovery or re-enter recovery
- BTM cost offsets healthcare utilization
- Plastic Surgery, Podiatry, and Burn specialists can be champions!



Silvadene Cream

Silvadene Cream 1% (Silver Sulfadiazine, SSD)

- Topical Antibacterial Medication
- Kills wide spectrum of bacteria
- Stays active for days
- NO bacterial Resistance
- **Maintains Moisture**
- Less painful dressing changes
- Promotes Autolytic Debridement
- Promotes granulation tissue
- **Cheap**

When using:

- For SSD:
  - Apply ointment (SSD) to the greasy gauze (xeroform, adaptic, vaseline gauze)
  - Lay on patient's wound with minimal overlap
  - Do NOT rub ointment directly on wound
  - Secure dressing with gauze

Non-Injections Site Wounds

Heterogeneous group of wounds

Unclear pathophysiology leading to ulceration/wounds

- Complication of overdose
- Prolonged downtime
- Unknown
- Often very deep, difficult to skin graft

Case 1: IV use in leg but presents with deep wound to back

Case 1: Poor Skin Graft Take and Healing

POD 6

2 Months

5 Months

Case 2: Inhalational use of Fentanyl/ Xylazine

Case 2: progression after 2 Months

Case 2: Placed Dermal Substitute

1 Month Post Op

2 months Post Op

Multidisciplinary Care and Healthcare Protocols

Raagini Jawa MD, MPH, FASAM

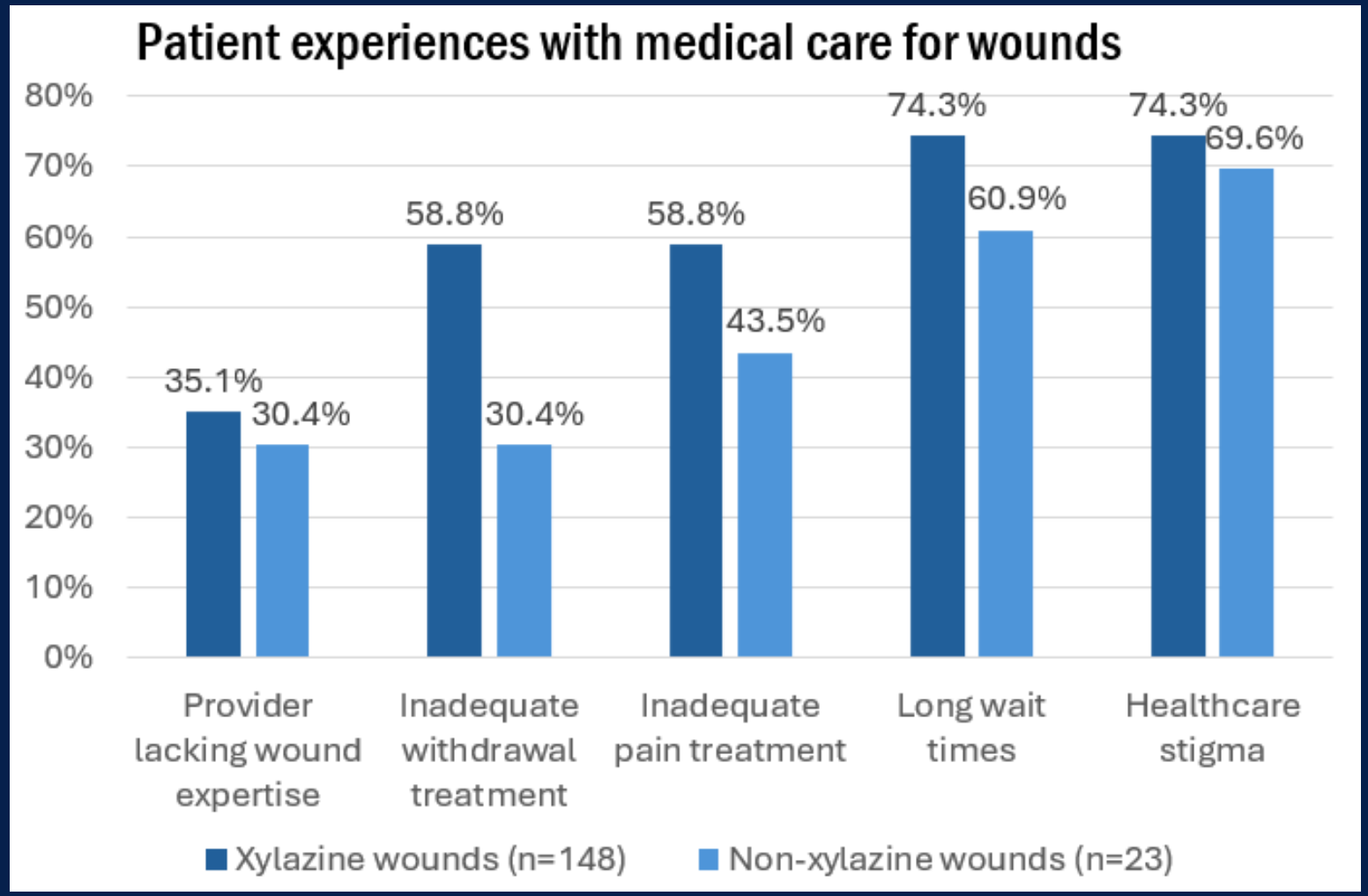
Infectious Disease/Addiction Medicine, UPMC, Pittsburgh, PA

Hospitalized patients with xylazine wounds have poor outcomes

- Single center case series: 82 patients with 125 xylazine wounds
- Mean age 40.3 ± 8.2 years, 57% male
- 125 wounds
- **54% had osteomyelitis, 40% bacteremia**
- 78% had surgery recommended
- 13% had amputation.
- Mean hospitalization 4.1x
- Patient directed discharge **2.8x**

Arango, S et al. Journal of Bone and Joint Surgery. 2025

Healthcare barriers



21.2% experienced being denied to detox/rehab due to their wounds!

~75% get wound care at syringe service programs!

Jawa R et. al. Drug and Alcohol Dependence. 2024

Patient experiences with medical care for xylazine wounds

1 Healthcare Stigma

"No, I was just ready to die then if that's what was gonna happen. If it was gonna kill me, it was gonna kill me. You know... they shame you so bad on it... it's like why would I put myself through that again?"

2 Inadequate Withdrawal Treatment

"Honestly, a couple of times, I've taken my own shit, you know, and just snort it a little bit just to keep stable... I didn't want to get arrested. I didn't want them to search me... But I didn't want to be sick."

3 Inadequate Pain Treatment

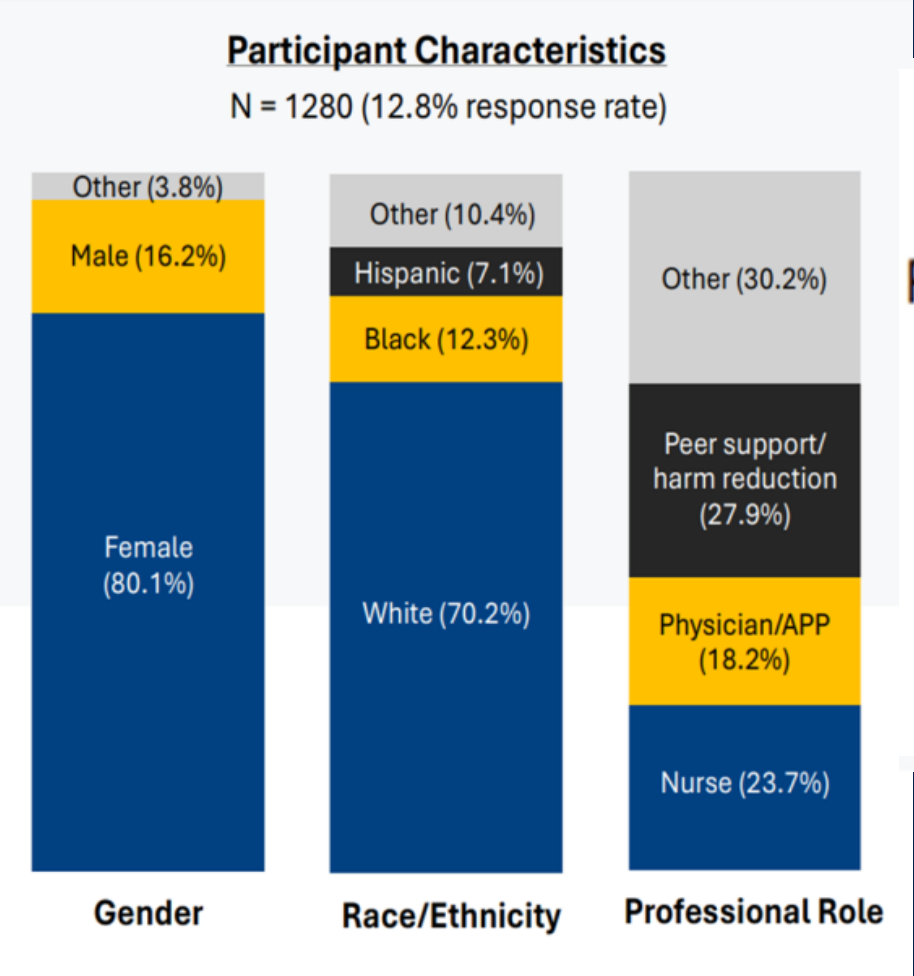
"I don't even get questions like, am I in pain? Cause if they think I'm an addict, I'm not getting anything."

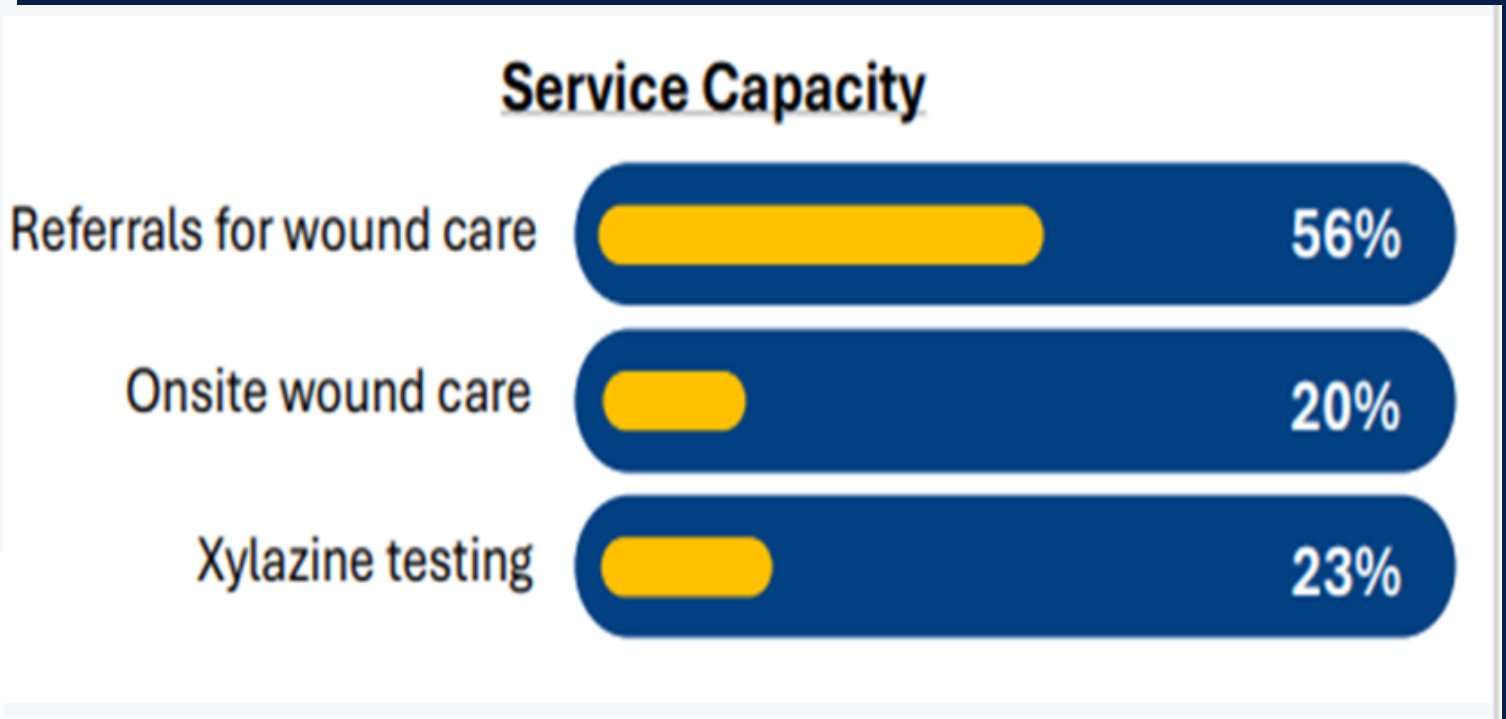
4 Fear of Surgical Amputation

"I wouldn't want to be amputated, you know...I don't wanna lose any limbs... I don't wanna do any irreversible damage."

Jawa R, Shang M, Hull I et al. Unpublished data. 2025

U.S. addiction workforce has limited wound care capacity





Jawa R et. al. Journal of Addiction Medicine. 2024

Self-treatment of xylazine wounds is common

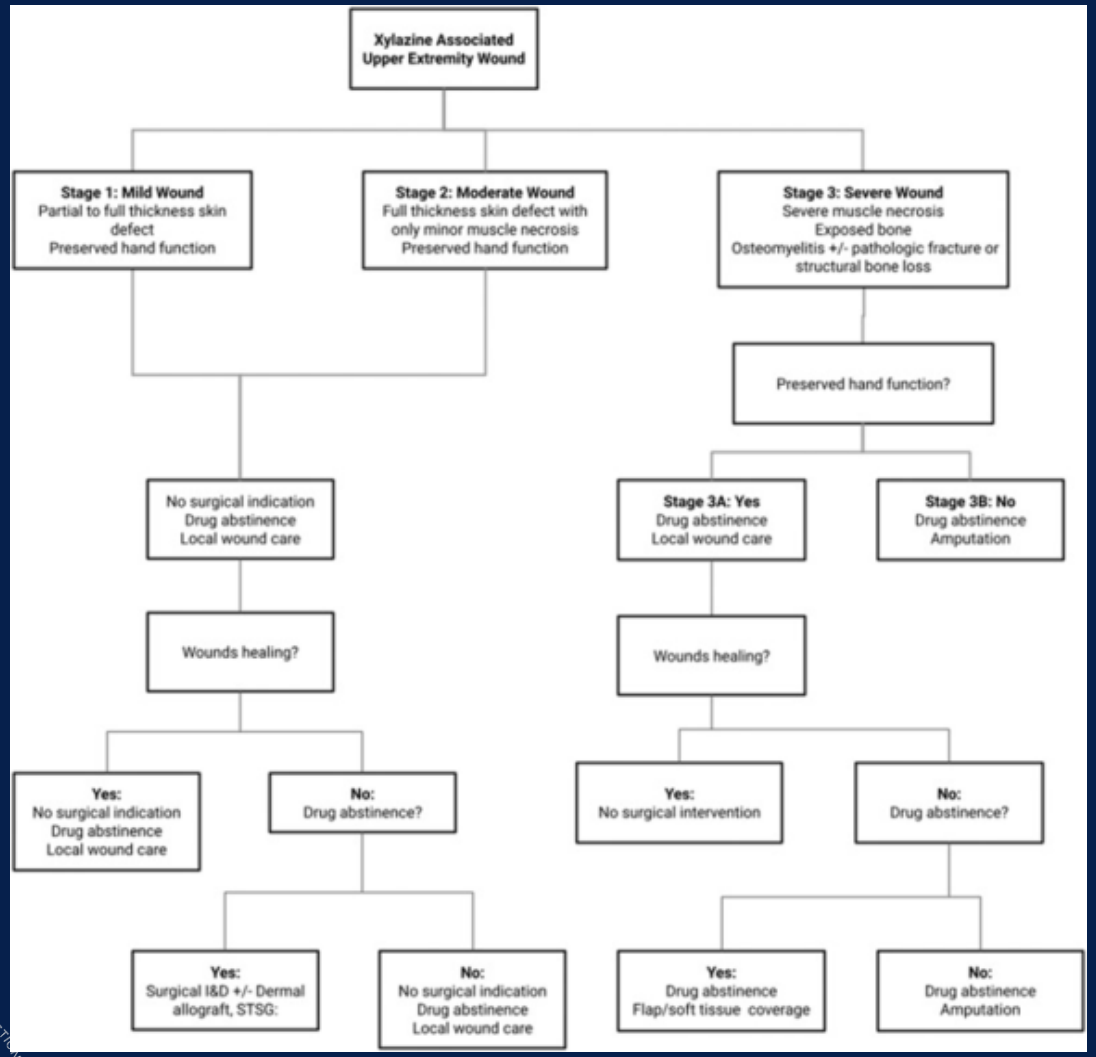
- ~4/5 patients self-treat
- >2/3 delay care

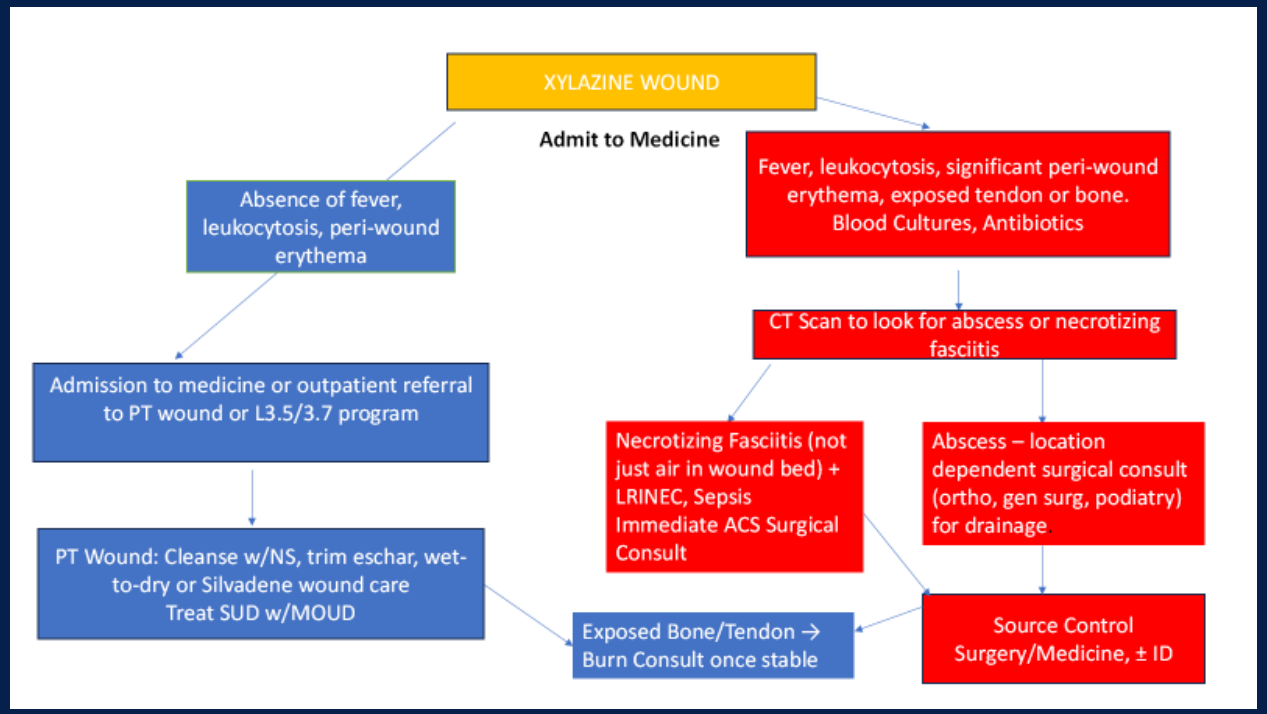
Heterogeneous past 90-day self-treatment practices

- 71% used water/saline and soap to clean their wounds
- 35% used wound wash
- 56% alcohol-based sanitizers
- 41% hydrogen peroxide
- 66% used bandages or gauze
- 18% left their wounds uncovered

Kelly P et al. SUAJ. 2024
Jawa R et al. DAD 2024

Current protocols vary





Tosti, 2024

Need for collaborations

Goal: Build consensus guidance for inpatient management of xylazine exposed patients

Wound management:

Addiction Med
Nursing
General Surgery
Plastic Surgery
Wound Care
Infectious Disease
Hospital Med

Shang M, Hull I, Jawa R. SAJ. 2025

Need for collaborations

- All patients get Addiction medicine and Wound Care Nursing consult on admission
- If concern for suprainfection, start empiric antibiotics
- If no improvement on empiric antibiotics after 48 hours, consult ID
- Surgical consult for potential debridement IF deep or necrotizing infection
  - Torso: General surgery/trauma
  - Extremities/face: Plastic surgery
- Standardized discharge instructions and linkage to care

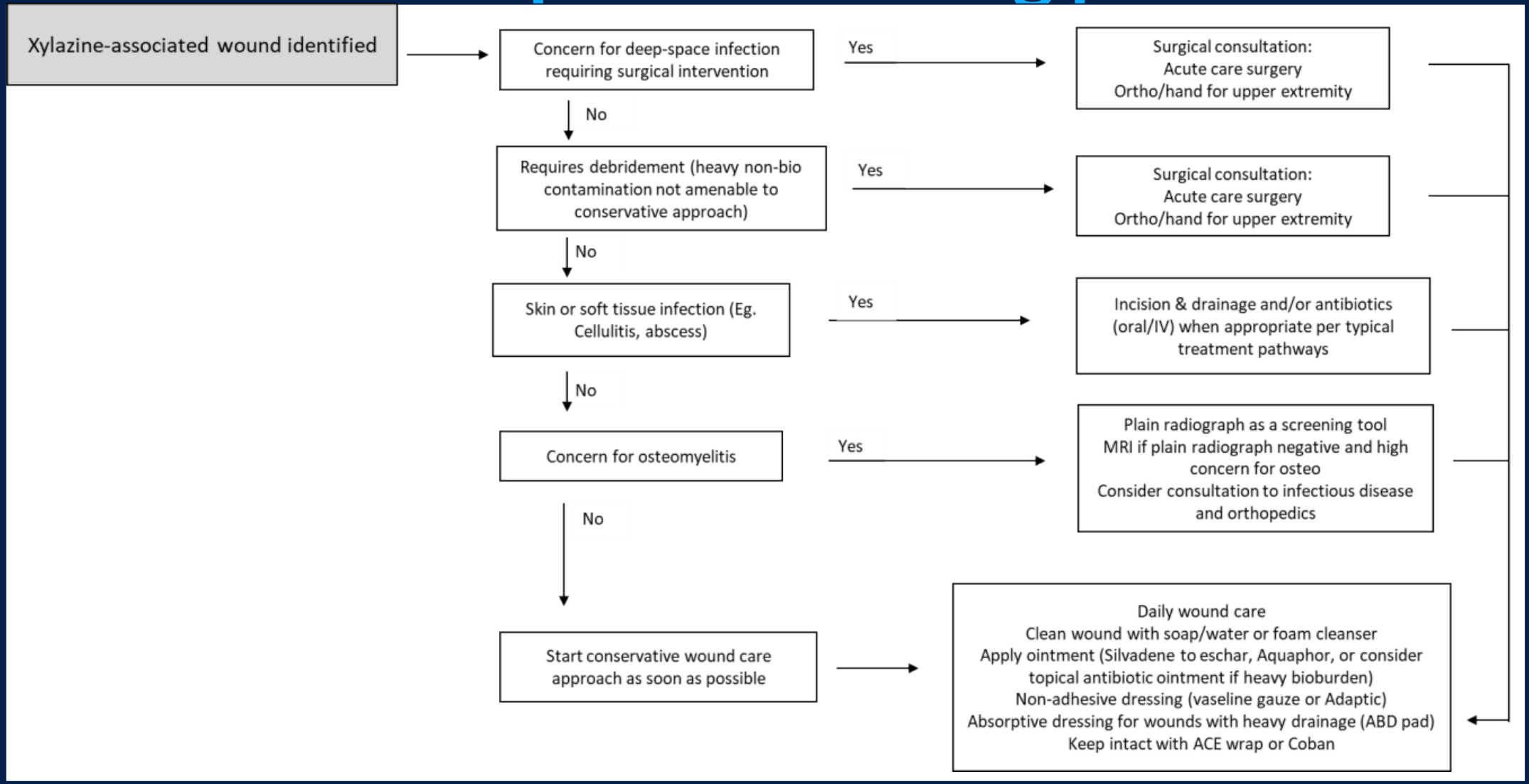
Shang M, Hull I, Jawa R. SAJ. 2025

Bedside nursing protocol

Wound Type	Treatment and Dressings	
Clean wound bed without non-viable tissue (Pink granulation tissue, NO eschar/slough AND NO signs of infection)	Xeroform (Cut dressing to the wound size to prevent skin maceration), Change daily and PRN	
	Pick 1:	Small drainage: Composite (Gentac) dressing, Change daily and PRN Moderate to large drainage: ABD and kerlix, Change daily and PRN
Nonviable tissue in wound bed (Eschar/slough AND NO signs of infection)	Apply Medihoney gel in nickel thick layer to wound bed daily + Xeroform (Cut dressing to the wound size to prevent skin maceration), Change daily and PRN	
	Pick 1:	Small drainage: Composite (Gentac) dressing, Change daily and PRN Moderate to large drainage: ABD and kerlix, Change daily and PRN
Concern for infection (Purulent drainage, odor, surrounding warmth, erythema, or induration)	¼ strength Dakins dampened gauze	
	Pick 1:	Small drainage: Composite (Gentac) dressing, Change daily and PRN Moderate to large drainage: ABD and kerlix, Δ q12 and PRN
Multiple small wounds	For intact or partial superficial scabs: apply A+D ointment daily For small wounds with drainage: Xeroform + Composite (Gentac) dressing, Change daily For small wounds with slough: Medihoney + Composite (Gentac) dressing, Change daily	
Peri-wound area	For small drainage: Apply A+D ointment to periwound daily For moderate to large drainage: Vaseline to periwound daily	

Shang M, Hull I, Jawa R. SAJ. 2025

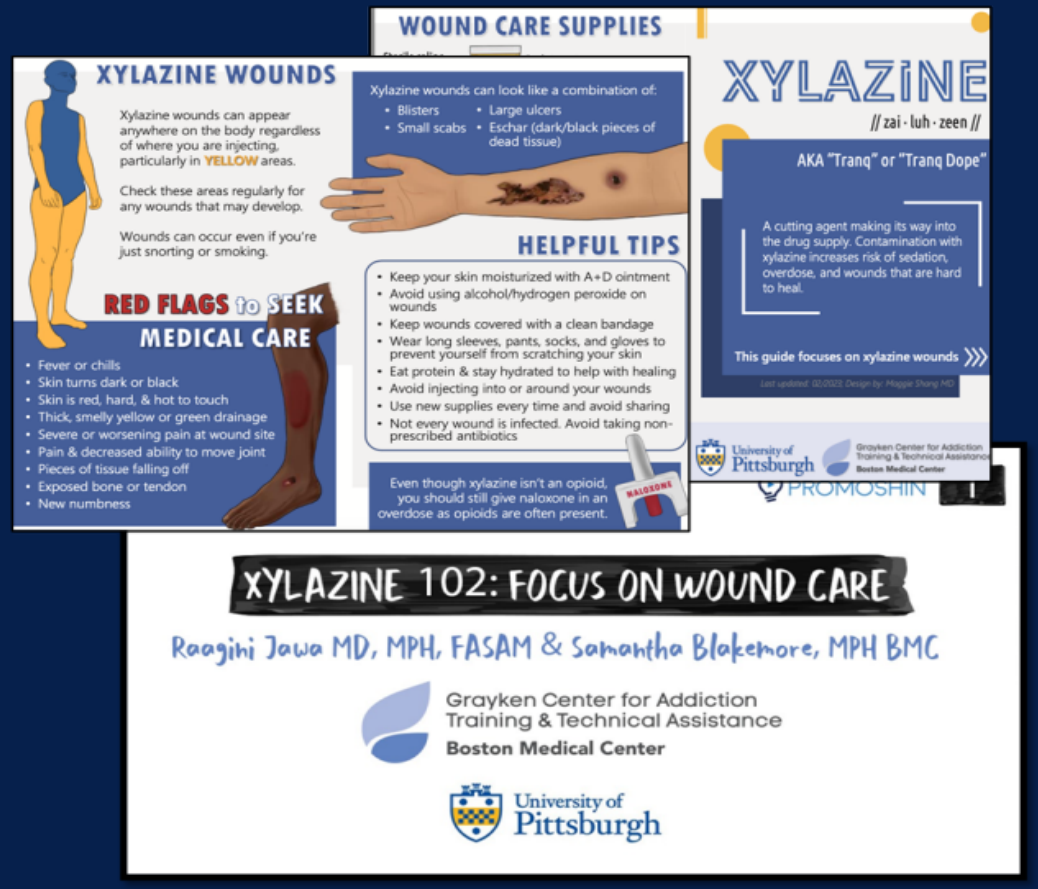
Other examples of existing protocols



Xylazine-Associated Wound Care Recommendations. Cooper University Healthcare

Discharge considerations

- Standardized Discharge Instructions on harm reduction and xylazine wound care
- Patient-facing pamphlets:
  - Xylazine overdose prevention (English/Spanish)
  - Xylazine wounds (English/Spanish)
- Xylazine test strips
- Wound care supplies (at least 5 days)
- Wound care appointment within 1 week



Xylazine, a veterinary tranquilizer, has become a popular additive to street drugs, such as opioids like fentanyl. This exposure can lead to wounds that may appear anywhere on the body, regardless of how you use (i.e., injecting, smoking, or snorting) or where you inject. Xylazine wounds can start as small blisters that progress to larger ulcers (see picture below). These wounds can heal with regular wound care, including cleaning and dressing the wounds every day. It is important to start treatment as early as possible and watch for signs of infection. It is also important to check your skin regularly for new wounds, check your drugs for xylazine, and use new and sterile equipment. See additional resources for locations to obtain harm reduction supplies.

UPMC offers many wound centers and supplemental addiction clinics throughout Pennsylvania and Western Maryland. Our teams of specialized providers, nurses, and other medical professionals have years of experience treating wounds.

To contact an outpatient wound center nearest you, please review our list of locations, and call to schedule an appointment.

*A physician order or insurance referral is not typically needed to schedule a consult.

Shang M, Jawa R. Illustration of Spectrum of Xylazine Wounds. 2023.

ADDITIONAL RESOURCES

Obtaining Harm Reduction Supplies

You may obtain safer use supplies, such as sterile injection equipment, smoking supplies, fentanyl and xylazine test strips, and wound care kits at the following locations:

- **Prevention Point Pittsburgh**
  412-247-3404 **www.pppgh.org**
- **Free naloxone (Narcan) delivered by mail:**
  https://nextdistro.org/pennsylvania
- **Any of the following addiction clinics:**
  - **Center for Psychiatric and Chemical Dependency Services**
    3501 Forbes Ave.
    Pittsburgh, PA 15213
    412-246-5910
  - **Central Outreach Street Medicine**
    Nurse line: 412-526-3378
    Main clinic: 412-515-0000
  - **Internal Medicine-Recovery Engagement Program**
    1515 Locust St., Suite 233
    Pittsburgh PA 15219
    412-232-6275
  - **Latterman Family Health Center**
    2347 5th Ave.
    McKeesport, PA 15132
    412-673-5504
  - **Magee Pregnancy and Women's Recovery Center**
    300 Halket St.
    Pittsburgh, PA 15213
    412-755-2879
  - **Pittsburgh Mercy Operation Safety Net**
    For care of those staying outside or in shelter
    412-932-6633 or 412-417-5808
  - **UPMC Mercy Emergency Department**
    1400 Locust St.
    Pittsburgh, PA 15219
    412-232-8111
- **To find a location near you, search "PA Overdose Prevention Program" and navigate to "interactive recognized entities map."**
- **Your local health department**

If you are interested in finding substance-use disorder treatment and recovery, please follow up as recommended by your medical provider.

Find additional resources for other services in Pennsylvania here:

PA Department of Drug and Alcohol Programs
www.ddap.pa.gov
1-800-662-HELP (4357),
24 hours a day, 7 days a week.

ADDITIONAL ADDICTION CARE CLINICS

These clinics can provide both substance use disorder treatment and basic wound care.

UPMC MERCY INTERNAL MEDICINE RECOVERY ENGAGEMENT PROGRAM
1515 Locust St., Second Floor, Suite 233
Pittsburgh, PA 15219
412-232-6275

UPMC CENTER FOR ADDICTION RECOVERY
2501 N. 3rd St., Second Floor
Harrisburg, PA 17110
717-782-4781

SECOND AVENUE COMMONS
700 Second Ave.
Pittsburgh, PA 15219
412-232-7544

PITTSBURGH MERCY FAMILY HEALTH CENTER
249 S. 9th St.
Pittsburgh, PA 15203
412-697-3260

PITTSBURGH MERCY OPERATION SAFETY NET
For care of those staying outside or in shelter
412-932-6633 or 412-417-5808

PREVENTION POINT PITTSBURGH WOUND CLINIC
Sundays, Noon to 3 p.m.
5913 Penn Ave., Second Floor
Pittsburgh, PA 15206

Additional days/sites available.
See website for schedule or call **412-247-3404**.

CENTRAL OUTREACH STREET MEDICINE
Nurse line: 412-526-3378
Main clinic: 412-515-0000

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OUTPATIENT CARE AND RESOURCES FOR XYLAZINE-RELATED WOUND CARE

UPMC Wound Healing Services

UPMC
LIFE CHANGING MEDICINE

Co-Locating SUD and wound care

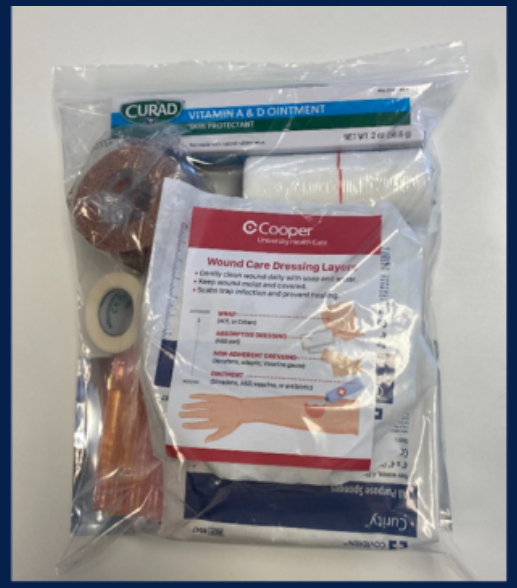
Creating a service line:

- Wound care education
- Wound care supplies
- Referral pattern and triage
- Billing

Clinical care:

- Build wound care protocol
- Frequency of visits
- Wound care and dressing
- Documentation of progression
- Wound care kits
- Access to MOUD and harm reduction

To-go wound care kits and supplies



Continued substance use?

- Abstinence DOES NOT preclude initiation of medically necessary treatment of xylazine wounds!!

- Risk mitigation:
  - Educating on basic wound self care and red flag symptoms
  - Ensure adequate wound care and harm reduction supplies
  - Encourage the use of community based drug testing or XTS to avoid xylazine exposure
  - Consider alternate routes of administration
  - Enhance nutrition
  - Give resources for other social determinants

Next Steps

Research on:

-Optimizing wound healing and pain management

-Risk factors for progression of xylazine wounds

-Infection prevention of chronic xylazine wounds

Models of:

-Low-barrier, addiction-focused, trauma-informed wound care

-Using advanced wound techniques in harm reduction venues

Discussion/Q & A

Final Takeaways/Summary

- Xylazine-Associated Wounds

Xylazine-associated wounds can at injection sites and elsewhere.
They may be misidentified as cellulitis or necrotizing infections.

- Best Practices in Wound Care

Core principles: clean daily, keep moist, and cover wounds.
Autolytic debridement of eschar (e.g., with SSD, Medihoney, Santyl) is preferred over aggressive surgical debridement.
Avoid topical antibiotics and superficial cultures due to poor efficacy and risk of resistance.

- Avoid Aggressive Early Surgical Debridement

Aggressive debridement and early amputations are discouraged unless there's clear evidence of deep infection.
Patients commonly retain a strong capacity for healing with basic wound care.

- Advanced Surgical Techniques

Advanced surgical techniques, especially with BTM, may be used to close xylazine-associated wound
Partner with plastic surgery, podiatry, and burn surgery to create an algorithm for surgical closure

- Integrate Addiction Medicine and Harm Reduction

Abstinence is not a prerequisite for wound care.
Emphasize patient-centered, nonjudgmental care. Co-locating wound care with addiction services improves outcomes and engagement.

- Create System-Level Solutions and Protocols

Creating low-barrier access to wound care can improve outcomes
Creating system-level protocols can standardize treatment for patients
To-go wound care kits, wound care education, and linkage to care on discharge are vital components of ongoing care.

QR Code for Clinical Toolkit

References

- Ahern, J., Stuber, J., & Galea, S. (2007). Stigma, discrimination and the health of illicit drug users. Drug and Alcohol Dependence, 88(2–3), 188–196. https://doi.org/10.1016/j.drugalcdep.2006.10.014
- Arango SD, Flynn JC, Zeitlin JH, Weir TB, Miller AJ. Xylazine-Associated Necrotic Upper-Extremity Wounds: A Single Hospital System's Experience with 82 Patients and 125 Wounds. J Bone Joint Surg Am. 2024 Dec 23. doi: 10.2106/JBJS.24.00534. Epub ahead of print. PMID: 39715298.
- Ayub, S., Parnia, S., Poddar, K., Bachu, A. K., Sullivan, A., Khan, A. M., Ahmed, S., & Jain, L. (2023). Xylazine in the Opioid Epidemic: A Systematic review of case reports and clinical implications. Curēus. https://doi.org/10.7759/cureus.36864
- D'Orazio, J., Nelson, L., Perrone, J., Wightman, R., & Haroz, R. (2023). Xylazine adulteration of the Heroin–Fentanyl drug supply. Annals of Internal Medicine, 176(10), 1370–1376. https://doi.org/10.7326/m23-2001
- Health Federation of Philadelphia. https://healthfederation.org/
- Jawa R, Blakemore S, Murray S, Ventura AS, Hristova T, Wilder A, Shang M, Johnson T, LaBelle C. Wound Care Capacity of the Addiction Workforce in the Setting of Xylazine. J Addict Med. 2024 Nov-Dec 01;18(6):723-726. doi: 10.1097/ADM.0000000000001352.
- Jawa R, Ismail S, Shang M, Murray S, Murray-Krezan C, Zheng Y, Mackin S, Washington K, Alvarez P, Dillon J, McMurtrie G, Stein M, Walley A, Liebschutz JM. Drug use practices and wound care experiences in the age of xylazine adulteration. Drug Alcohol Depend. 2024 Oct 1;263:112390. doi: 10.1016/j.drugalcdep.2024.112390.
- Johnson T, Bailey C. Healing the 'Non-Healing': A Holistic Approach to Treating Xylazine-Associated Wounds Boston Health Care for the Homeless Program. Oral Presentation, AMERSA 2024

References

- Kelly PJA, Jessop AB, Scialanca M, et al. Psychosocial Impact of Suspected Xylazine-Associated Skin Wounds Among People Using Fentanyl, Philadelphia, 2022 to 2023. Substance Use & Addiction Journal. 2024;46(2):347-356. doi:10.1177/29767342241289797
- Lutz L, McFadden R, Xu L, et al. Wound Characteristics Among Patients Exposed to Xylazine. JAMA Dermatol. 2025;161(1):75–80. doi:10.1001/jamadermatol.2024.4253
- Manna B, Nahirniak P, Morrison CA. Wound Debridement. [Updated 2023 Apr 19]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/sites/books/NBK507882
- National Institute on Drug Abuse. http://nida.nih.gov/research-topics/xylazine
- National Institute on Drug Abuse. Words Matter: Terms to use and avoid when talking about addiction. https://nida.nih.gov/nidamed-medical-health-professionals/health-professions-education/words-matter-terms-to-use-avoid-when-talking-about-addiction
- Papudesi, B.N., Malayala, S.V., & Regina, A.C. (2023). *Xylazine Toxicity*. StatPearls Publishing. Available from: https://www.ncbi.nlm.nih.gov/books/NBK594271/
- Perrone J, D'Orazio J, Rae L, et al. National Institute on Drug Abuse Clinical Trials Network Meeting Report: Managing Patients Taking Xylazine-Adulterated Opioids in Emergency, Hospital & Addiction Care Settings. Annals of Emergency Medicine. 2024Manna, B., Nahirniak, P., & Morrison, C.A. (2023). *Wound Debridement.* StatPearls Publishing. Available from: https://www.ncbi.nlm.nih.gov/books/NBK507882/
- Quijano, T., Crowell, J., Eggert, K., Clark, K., Alexander, M., Grau, L., & Heimer, R. (2023). Xylazine in the drug supply: Emerging threats and lessons learned in areas with high levels of adulteration. □The □International Journal of Drug Policy/International Journal on Drug Policy, 120, 104154. https://doi.org/10.1016/j.drugpo.2023.104154

References

- Reyes, J.C., Negron, J.L., Colon, H.M., Padilla, A.M., Millan, M.Y., Matos, T.D., & Robles, R.R. The emerging of xylazine as a new drug of abuse and its health consequences among drug users in Puerto Rico. *Journal of Urban Health* 2012; 89(3): 519-526. doi: 10.1007/s11524-011-9662-6.
- Shang M, Hull I, Liebschutz JM, et al. Building Multidisciplinary Consensus on Inpatient Xylazine Management through Clinical Protocols. Substance Use & Addiction Journal. 2025;0(0). doi:10.1177/29767342251329681
- Snyder, R. J., Fife, C., & Moore, Z. (2016). Components and quality measures of DIME (devitalized tissue, infection/inflammation, moisture balance, and edge preparation) in wound care. Advances in skin & wound care, 29(5), 205-215.
- Rose, L., Kirven, R., Tyler, K., Chung, C., & Korman, K. Xylazine-induced acute skin necrosis in two patients who inject fentanyl. *JAAD Case Reports* 2023; 36: 113-115. doi 10.1016/j.jdcr.2023.04.010
- Synder, R.J., Fife, C., & Moore, Z. Components and Quality Measure of DIME (Devitalized Tissue, Infection/Inflammation, Moisture Balance, and Edge Preparation in Wound Care. *Advances in Skin & Wound Care* 2016; 29(5): 205-215. doi: 10.1097/01.ASW.0000482354.01988.b4
- Torruella, RA. Xylazine (veterinary sedative) use in Puerto Rico. *Substance Abuse Treatment, Prevention, and Policy* 2011; 6(7). doi: 10.1186/1747-597X-6-7.
- Tosti R, Hozack BA, Tulipan JE, Criner-Woozley KT, Ilyas AM. Xylazine-Associated Wounds of the Upper Extremity: Evaluation and Algorithmic Surgical Strategy. J Hand Surg Glob Online. 2024 Jun 19;6(5):605-609. doi: 10.1016/j.jhsg.2024.05.003. PMID: 39381381; PMCID: PMC11456669.
- Wu, Kevin, Baker, Jeff. Patient Communication in Substance Abuse Disorders. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK549858/
- Zagorski, C. M., Hosey, R. A., Moraff, C., Ferguson, A., Figgatt, M., Aronowitz, S., Stahl, N. E., Hill, L. G., McElligott, Z., & Dasgupta, N. (2023). Reducing the harms of xylazine: clinical approaches, research deficits, and public health context. Harm Reduction Journal, 20(1). https://doi.org/10.1186/s12954-023-00879-7