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Xylazine-associated Wounds: Clinical Experience From a Low-barrier Wound Care Clinic in Philadelphia

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Abstract: The veterinary sedative xylazine is spreading in unregulated opioid supplies across North America. Among people who use drugs with repeated exposure to xylazine, a distinct wound type has emerged. Here, we describe these wounds and share our experience treating them in a nurse-led, low-barrier wound care clinic in Philadelphia, PA. We propose a reimagining of wound treatment across settings to better serve people who use drugs, and we advocate for stronger protections against the harms of an increasingly adulterated drug supply. Our perspective from the epicenter of the xylazine crisis can inform the response of communities across the country who are starting to face harms associated with xylazine.

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Xylazine, a veterinary sedative colloquially known as “tranq,” is spreading in unregulated opioid supplies across North America.¹ Xylazine first emerged in unregulated drug supplies in Puerto Rico in the 2000s, where people who use drugs (PWUDs) and researchers noted an association between repeated xylazine exposure and a distinctive soft tissue wound.^{2–4} More recently, clinicians in the United States have described the same phenomenon.^{5,6}

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Our nurse-led Wound Care Clinic (WCC) was established in 2015 within Prevention Point Philadelphia, a harm reduction nonprofit in the Kensington neighborhood. Initially formed to respond to the rise of injection-related skin and soft tissue infections (SSTIs) associated with fentanyl, our clinic has a unique perspective on the local drug supply and its effects on PWUDs. In 2020, as Philadelphia emerged as the epicenter of the xylazine crisis, WCC patients began presenting with wounds resembling those attributed to xylazine in previously published reports.³ Today, more than 90% of unregulated fentanyl samples in Philadelphia contain xylazine⁷ and annual WCC visits are five times that of 2020 due to a surge in what the local community has come to call “tranq wounds.”

Here, we summarize our experience as WCC nurses caring for PWUDs with this new wound type. The descriptions and recommendations we share are not evidence-based standards; research is urgently needed to guide the identification and response to xylazine-associated harms. Rather, we hope our clinical experience as wound care nurses in a low-barrier setting can help steer discussion toward practical clinical and public health responses to xylazine.

WHAT ARE XYLAZINE-ASSOCIATED WOUNDS?

Before the emergence of xylazine, most wounds treated at the WCC were SSTIs characterized by classic signs of infection including erythema and swelling around sites of injection. As fentanyl adulterated and then replaced heroin in the local drug supply through the 2010s, WCC patients who inject drugs reported more frequent injections, and we subsequently observed an increase in SSTIs. Then, in early 2020, patients began presenting with a new wound type, which they associated with certain “stamps” or brands of nonpharmaceutical fentanyl.

In our experience, these new wounds are distinct from typical injection-related SSTIs in two key ways. First, they have a unique appearance and progression. Starting as dark purple blisters with irregular borders and intact skin, they commonly emerge around injection sites on the posterior forearms (Fig. 1, photo 1) or lower legs. These blisters often coalesce (photo 2) and harden into dry, adherent eschar, sometimes opening into deep ulcers (photos 3–4). The wound bed may initially contain islands of preserved tissue, although these are at risk of eventual erosion. Ulceration depth may reach full-thickness, with exposed tendon and bone. While these wounds generally lack classic signs of infection, untreated eschar may foster superimposed infection characterized by periwound cellulitis and purulent drainage.



FIGURE 1. Progression and healing of a “tranq wound” in a WCC patient. Panels 1–4 depict the progression of a xylazine-associated wound in a patient of the Prevention Point WCC. Some PWUDs and hospital-based wound specialists have noted similarities between these wounds and chemical burns. Panels 5–6 show healing in the same wound after surgical debridement during a hospitalization followed by ongoing community-based wound care.

Second, we have observed wounds develop in locations distant from injection sites and in participants who smoke or snort but do not inject fentanyl. For example, individuals who report injecting in only a single location present to the WCC with coin-sized ulcerations covered with friable eschar scattered across areas where they do not inject. Individuals who only smoke or snort fentanyl have presented with this same wound pattern.

Although more research is needed to identify xylazine as the definitive culprit behind these wounds, the timing of their emergence as xylazine proliferated in the local opioid supply, their distinctive progression, and their appearance independent of injection quickly prompted their association with xylazine within the local community.

CHALLENGES IN TRADITIONAL HEALTHCARE SETTINGS

When patients present to the WCC with extensive areas of eschar and concern for complex infections, we facilitate a warm-handoff to local hospitals for evaluation and treatment including imaging, wound culture and biopsy, intravenous antibiotics, and surgical debridement. Even advanced wounds may respond well to hospital-based treatment, as shown in Figure 1, photos 5 and 6.

Nevertheless, WCC patients often avoid hospital-based care due to fears of stigmatizing treatment, unmanaged pain and

withdrawal, and previous traumatic health care encounters. Participants have been called “junkies,” labeled as “drug seeking,” and have had basic care such as toileting assistance withheld by staff. Hospital personnel routinely search and confiscate their personal belongings and cutoff social support through visitation restrictions. We have read surgery consultation notes that explicitly report withholding debridement because the patient may continue to use drugs. These and other discriminatory practices faced by PWUDs are well documented in published literature.^{8,9}

Similar inequities and barriers complicate wound healing after hospital discharge. Skilled nursing facilities with wound care expertise often reject patients with substance use disorder (SUD). The same individual may be rejected from medically managed withdrawal (“detox”) or residential drug treatment centers just for having a wound. Other patients are instructed to follow up at specialty outpatient clinics with inflexible schedules and expectations of sobriety—policies that render them inaccessible to people coping with active SUD. Lastly, shelter is critical for wound healing; yet affordable, housing-first options for PWUDs remain rare. This leaves many of our participants no option but to care for their wounds on the street.

LOW-BARRIER, HARM REDUCTION WOUND CARE

At the WCC, we have responded to the paucity of evidence around effective treatments for xylazine-associated wounds by

pairing established wound care science with harm reduction principles, summarized in Table 1. The DIME framework offers an evidence-based approach to the systematic evaluation and treatment of wounds, focusing on Devalitized tissue, Infection management, Moisture balance, and the periwound Edge.¹⁰ Applying this framework, our priority is to debride nonviable tissue (eg, eschar) to decrease a wound’s bioburden and precipitate the healing cascade.¹¹ At the WCC, we use autolytic or enzymatic debridement using medical-grade honey (eg, Medihoney) or collagenase (eg, Santyl) paired with nonadherent dressings (eg, Adaptic) that minimize pain. Although in-clinic wound biopsy or culturing falls out of our scope of practice, in cases of infection, we treat with oral and topical antibiotics based on local microbiome guidance from public health and infectious diseases experts. Take-home supplies are offered to participants to encourage daily dressing changes that support moisture management and protect intact periwound tissue.

In keeping with a harm reduction model, our clinic operates on a walk-in basis adjacent to Philadelphia’s largest syringe exchange. All care and supplies are provided free of cost to patients through a combination of grants and public insurance billing. In collaboration with volunteer physicians, we offer prescribed antibiotics and topicals through in-person and virtual consultations. We also partner with a local pharmacy to dispense

antibiotics directly from the clinic, using lanyard-secured “pill pockets” to prevent loss or theft. Finally, we know that opioid induced-hyperalgesia and pain deter many PWUDs from regular dressing changes. Recognizing WCC patients as experts in their wounds’ sensitivities, we encourage them to take the lead in changing their own dressings and selecting wound care products that mitigate pain.

Despite the many challenges faced by WCC patients, we have found that our low-barrier model improves care engagement, can prevent the progression of, and even heal xylazine-associated wounds.

RE-ENVISIONING WOUND CARE

While attention to the suffering and stigma caused by xylazine-associated wounds is growing, a shift in focus toward practical, acceptable interventions could more directly help PWUDs. Research is urgently needed to understand wound etiology and optimal treatment strategies. Anecdotally, we have seen success with wounds treated by a local hospital burn team and improved retention in hospital care with the use of full-agonist opioids to treat withdrawal.¹² However, more work is needed on these and other novel approaches.

While cessation or reduction of substance use expedites wound healing, structural-level barriers to recovery and a fear of withdrawal from the potent unregulated drug supply are

TABLE 1. The Prevention Point Philadelphia Wound Care Clinic’s Approach to Care for Xylazine-associated Wounds

Stepwise Dressing Change	Dressing Products Used	Notes
Step 1: Premedicate if possible		In settings where available, advocate for adequate pain/withdrawal management before dressing change
Step 2: Remove soiled dressing		Soak soiled dressing with water/saline to decrease pain with removal. Offer patient option to remove their own dressing.
Step 3: Clean	Normal saline, generic wound washes For wounds with heavy burden of nonviable tissue: • Vashe, Dakins 0.125%	Test cleansers on small area of wound to assess tolerance.
Step 4: Debride	Enzymatic debridement • Santyl: Requires prescription; costly Autolytic: • Medihoney: Consider outdoor exposure and potential insect attraction • Hydrogel silver • Silver gel/Silver sulfadiazine • PHMB topical	Topicals may be applied to the primary dressing (step 6) to avoid directly touching sensitive wounds. Alert patient to the likelihood of increased drainage with use of topical debriding agents. Cross-hatching of eschar, if tolerated, promotes deeper penetration of topical debriding agents and may be appropriate in some settings.
Step 5: Apply other topicals	Skin protectant to periwound tissue (eg no-sting skin prep, A&D ointment, Coloplast Triad) Topical antibiotic if indicated and compatible (eg, Mupirocin)	Preservation of intact periwound tissue is priority, especially with necrotic and heavily exudative wounds. Systemic antibiotics do not penetrate above the wound bed, and a topical may be required to reduce the overall bioburden.
Step 6: Apply primary dressing	Based on assessment of wound drainage: • Wet/normal wound: Oil-emulsion (e.g. Adaptic) • Dry wound: Petroleum-based (e.g. Xeroform)	Cut to shape of wound to avoid coverage of periwound area, which can promote breakdown. Check compatibility of Xeroform and any topicals used.
Step 7: Apply secondary of dressing	Super absorbent dressing, layers of woven gauze, abdominal pads, or nonstick gauze	
Step 8: Secure	Gauze wrap secured with Tubigrip, IV netting, self-adherent wrap, or ACE bandage	Self-adherent or ACE bandages should be applied just tight enough to secure underlying dressings, not for compression. Self-adherent wrap may contribute to skin breakdown if not changed daily.

Harm reduction and trauma-informed care considerations

- Assess the patient’s history of wound care—what dressing supplies or strategies have and have not worked?
- Ask if patient would like to remove dressing themselves, to support engagement and autonomy and minimize pain.
- Recognize the distress and stigma often associated with wound odor—offer air freshener, aromatherapy inhalers, and change trash frequently.
- Dispense oral antibiotics or other oral medications in lanyard-attached container (eg, clear plastic badge holder) to prevent theft or loss (for unhoused individuals)
- Establish a wound dressing change schedule that is feasible for patient – provide dressing change supplies to accommodate several dressing changes when possible.
- Build relationships with local emergency medicine, internal medicine, infection disease and addiction medicine departments to facilitate warm handoffs of patients to and from hospitals

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prohibitive to many WCC patients. There is a critical need for low-barrier wound care programs that meet the needs of people who continue to use substances, staffed by professionals and peers who are sensitive to the healthcare trauma and marginalization experienced by PWUDs. Innovative harm-reduction grounded healthcare services such as the medical respite model trialed in Boston warrant significant attention and investment.¹³ Drug treatment programs must build their capacity to care for wounds to restore access to these essential treatment settings. In parallel, we advocate for the clinical and legal interrogation of skilled nursing facilities that discriminate against patients with SUD.¹⁴

Furthermore, we know that wounds are but one consequence of the increasingly adulterated unregulated drug supply. Elsewhere, the immense harms have motivated public investment in safe supply programs, both within and outside of traditional prescription models.¹⁵ There is ongoing, rich discussion among harm reductionists and public health experts on what “safe supply” should entail. We encourage clinician and policy leaders to engage with these experts in pursuit of a safe supply policy agenda that protects our communities.

Finally, as research and advocacy evolve to address the challenges from exposure to xylazine, we encourage recognition of the valuable insight that PWUDs have into local drug market dynamics and the feasibility of interventions. The community of PWUDs in Philadelphia sounded the alarm about xylazine long before it captured academic and media attention—let us mobilize our efforts in alliance with these experts.

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