

Palliative Dilemmas: Wound Odour



by Cynthia A. Fleck

Abstract

Wound malodor is a subject vital to patients, caregivers and clinicians, yet it is sometimes underrated, not fully appreciated nor appropriately addressed. Exudating, odoriferous wounds are a complex clinical quandary.¹ Precise information concerning incidence and prevalence is unknown. Research has shown that wounds most commonly associated with odour include exudating wounds, chronic pressure ulcers, venous leg ulcers, diabetic/neuropathic ulcers, fungating,² cancerous or

malignant lesions and wounds with necrotic tissue.^{3,4}

Deodorizers, ventilation⁵ and charcoal dressings that absorb fatty acids⁶ seldom effectively control wound odours. Newer strategies, including prudent wound-bed preparation with the use of metronidazole gel and dressings utilizing cyclodextrin technology, can further boost the goal of destroying wound odour entirely. This article will outline the causes of wound odour and discuss treatment options.

The patient, Ms. R.L. is a 78-year-old female with chronic lower extremity venous disease (LEVD) and frequent ulcerations. She recently suffered a hip fracture after falling down her basement steps and was hospitalized for surgical repair and implantation. She is rehabilitating in a nursing home. She has consequently developed a Stage III pressure ulcer on her sacrum secondary to immobility. As the wound-care clinician, you are called in after the charge nurse notices that Ms. R.L.'s overall condition is beginning to decline and the staff are worried that she will develop more wounds or that her pressure ulcer will deteriorate. A patient-care conference is planned to discuss this with the interprofessional team.

The care conference uncovers some little known facts brought forward by one of Ms. R.L.'s nurses. The patient is very self-conscious of her wounds, the exudate they produce and, most of all, the odour she perceives. The staff have noticed that Ms. R.L.'s family has been bringing in room deodorizers, potpourri, perfume and the like. The family is anxious because of her condition and because of the smell in her room. Ms. R.L.'s daughter sheepishly admits to the social worker that, "No one

wants to come and see mom anymore. It smells terrible, like rotting flesh. We can even smell it on our clothes when we leave. Isn't there anything that you can do?" Ms. R.L. is constantly asking to take a shower. She refuses to go to the dining room, "because I stink." The nurse also confesses that the staff regularly flip coins to see who will have to care for her wounds since they "smell so horrible."

Impact

No one enjoys having or taking care of a putrid wound. Smell carries a social stigma and may cause patients to feel embarrassed or shameful. It can inhibit sexuality and intimacy with a loved one, further causing depression.⁷ The psychological effect of wounds can include depression, anxiety, poor body image, and diminished self-esteem. Add odour to the equation and it can have a profound effect. It can affect how the patient relates to his or her loved ones, disturb sleep patterns, cause a loss of appetite and present a distressing situation to both the patient and the caregiver(s).⁸

People with highly exudating wounds with malodor may be emotionally or psychologically humiliated and

Cynthia A. Fleck, MBA, BSN, RN, APN/CNS, ET/WOCN, CWS, DNC, DAPWCA, FCCWS, is a certified wound specialist and dermatology advanced practice nurse, author, speaker, Secretary/Treasurer of the American Academy of Wound Management (AAWM), Member of the Board of Directors of the Association for the Advancement of Wound Care (AAWC), and Vice President, Clinical Marketing for Medline Industries, Inc., Advanced Skin and Wound Care Division.

overwhelmed by the odour originating from the wound. They may choose to isolate themselves⁹ or use extreme actions to eradicate the smell. Individuals with malodorous wounds often make attempts to disguise the odour with candles, potpourri, room deodorizers, aromatherapy, perfume and frequent bathing or showering. They commonly verbalize feelings of being “dirty.” In addition, the need for frequent dressing changes, bulky dressings, or negative pressure devices to handle the exudate can significantly impact self-image and lifestyle as well as decrease mobility.¹⁰

Control of wound odour is imperative, especially for palliative patients, as it can significantly improve the quality of life for patients with non-healing wounds.¹¹

Causes

Research has shown that wounds most commonly associated with odour include exudating wounds, chronic pressure ulcers, venous leg ulcers, diabetic/neuropathic ulcers, fungating,² cancerous or malignant lesions and wounds with necrotic tissue.^{3,4}

Wound odour is largely due to tissue degradation and/or tissue death, or necrosis, or nonsporing anaerobic bacteria that colonize cutaneous lesions, releasing compounds such as putrescine, cadaverine, unstable sulphur compounds, and short-chain fatty acids as metabolic end products.¹² Aerobic bacteria such as *Pseudomonas* and *Klebsiella* species also can generate unpleasant odours.¹³ Odours that point to infection may be sweet, pungent, foul, strong, fecal or musty. A sweet odour may indicate a *Pseudomonas* infection, especially if accompanied by thin, foamy, green drainage. A strong pungent odour along with tissue necrosis or separation of the skin into paper-thin black-purple layers may indicate *Clostridium* and life-threatening, moist gangrene. Putrescine and cadaverine are frequently described as pungent-smelling. They tend to be constant and persistently evident.¹⁴ They are known to elicit the gag reflex and can cause vomiting. Certain dressings, such as hydrocolloids (one of the most frequently used advanced products) also tend to produce a characteristic odour due to their occlusive nature and the chemical reaction that takes place between the dressing and wound exudate.

Deodorizers, ventilation⁵ and charcoal dressings that absorb these fatty acids⁶ seldom effectively control wound odours.

Through an involuntary course of acclimatization, the body protects an individual from being inundated by

feeble stimuli in the form of smells or scents by desensitizing sensory cells.¹⁵ This can happen to patients with malodorous wounds, but not necessarily to caregivers. An inability to acclimate can have consequences such as increased sensitivity from recurring contact with the odour, which can become a stressor, and ultimately cause symptoms such as nausea and vomiting.¹⁶ This situation is commonly described by patients with fungating breast carcinomas. For many, consciousness of a specific smell frequently disappears rapidly, which may not be the case for chronic disagreeable odours.

Foul odour is usually caused by Gram-negative bacilli. *Pseudomonas* species have another specific odour that is characteristically described as “ripe” or “fruity.” Anaerobic bacteria cause a pungent or rotten odour. Foul odour is usually associated with the presence of anaerobes;¹⁷ the combination of anaerobic and aerobic bacteria is believed to be the most common cause of smelly wounds.¹⁸ Critically colonized wounds also may

continued on page 12

A Comprehensive Plan to Assess and Treat Wound Odour

A comprehensive plan to assess and treat wound odour is as easy as the A, B, C, D and Es and should include the following:

- **Assess** for and **Acknowledge** the report of wound odour from the patient, patient’s family and/or caregivers and the staff caring for the patient’s wound.
- **Bioburden.** Odour can indicate the presence of a high number of microorganisms. If a wound is odour-free and suddenly develops a bad smell, suspect an increase in wound bacterial load beyond colonization.¹ Address and treat wounds known to have heavy bioburden including venous hypertension wounds (heavily contaminated) and diabetic neuropathic wounds (increased potential for infection) and wounds in “dirty” areas such as the sacrum (which are particularly susceptible to fecal contamination). Broad-spectrum antimicrobials such as silver and PHMB can provide safe protection.²
- **Cleanse.** Consider cleansing the odiferous wound with an antimicrobial wound cleanser such as those containing quaternary ammonium compounds such as benzalkonium chloride (BZK) and benzethonium chloride (BC). These compounds further address overgrowth of pathogens and can safely be used for short periods of time in critically colonized or locally infected ulcers.
- **Dressings and Debridement.** Prepare the wound bed and debride those wounds with necrotic and devitalized material. Choose appropriate dressings, such as the new ones containing cyclodextrins, to address wound odour and exudate, thus nipping the smell at the source.
- **Explain** the measures, techniques and treatments to the patient and family. **Evaluate** the effectiveness of your odour-elimination efforts.

References

1. Jones V, Bale S, Harding K. Acute and chronic wound healing. In Baranoski S, Ayello EA, (eds.). *Wound Care Essentials: Practice Principles*. Philadelphia, PA: Lippincott Williams and Wilkins. 2003:72-73.
2. Fleck CA. Fighting infection in chronic wounds. *Advances in Skin and Wound Care*. 2006;19(4):184-185.

TABLE 1

Current Wound Odour Treatment Strategies

Treatment	Action	Effectiveness	Safety	Ease of Use
Deodorizers, ventilation, candles, potpourri, perfume	Attempts to mask or cover up odour.	Seldom control odours.	Safe but can cause sensitivity and allergic reaction in patient and others.	Simple to use; no prescription or clinical directive necessary.
Wound bed preparation (cleaning and debriding)	Preparing the wound bed through cleansing with commercial cleansers with or without BZK or BC. Thorough debridement of the wound. Utilizing silver and PHMB dressings to decrease critical colonization.	If the cause of the wound odour is an overgrowth of bioburden and/or devitalized material in the wound, prudent WBP measures and use of broad spectrum antimicrobials can be effective.	Benzalkonium chloride (BZK) and benzethonium chloride (BC) are extremely safe (can be used in the ophthalmic arena). Silver and PHMB are quite safe and have little issue with sensitivity and/or allergic reaction. They do not contribute to antibiotic resistance.	Simple to use with clinical directive. If infection is deep, may additionally require systemic antibiotics.
Metronidazole	Eradicates wound odours caused by anaerobic bacteria.	Effective against odour caused by anaerobes only.	Low or no resistance of anaerobes despite systemic use.	Simple to use at dressing change. Requires physician prescription and can be expensive.
Charcoal	Is designed to act like filters or traps to absorb odour-causing molecules. Activated charcoal works by absorbing many odour molecules onto a large surface area, which prevents the volatile odour molecules from reaching receptors in the nose.	Effectiveness decreases in the presence of wound exudates because serum proteins in the exudates deactivate the activity of charcoal.	Safety has been well established.	Simple to use. Charcoal is incorporated into some dressings to address wound odour.
Alpha sepiolite	Natural clay has absorptive qualities (e.g., kitty litter).	Can absorb some odours.	Safety in wounds has not been clearly defined.	No current commercial applications or dressings available.
Cyclodextrin dressings	Hydrated cyclodextrin (starch) molecule irreversibly captures odour molecules permanently neutralizing odour.	Cyclodextrins work optimally in the presence of wound exudates, and allow for effective odour capture and neutralization.	Cyclodextrins occur naturally and are proven safe to use in modern wound care.	Simple to use. Cyclodextrins are incorporated into new modern dressings such as hydrocolloids so there are no extra steps in addressing wound odour.

exhibit new and sudden odour with increased exudate production.¹⁹

Treatment

Strategies to combat odour include identifying the cause and working to eliminate it. A simple solution would include increasing wound cleansing and dressing-change frequency, although this can cause other problems. Cleansing odoriferous wounds with antimicrobial wound cleansers containing safe ingredients like benzalkonium chloride (BZK) and benzethonium chloride (BC), universal biocides that further address overgrowth of pathogens, is a practical primary measure.¹¹ Preparing the wound bed through debridement removes devital-

ized material, which can be a source of odour. Preventing or treating microbial colonization, critical colonization or wound infection that is causing the offensive smell may also achieve odour reduction. This can be accomplished using a variety of broad-spectrum antimicrobials such as silver or polyhexamethylene biguanide (PHMB). They offer a cost-effective, over-the-counter solution that kills a wide range of pathogens and does not contribute to antibiotic resistance.²⁰ If the infection is deep and/or systemic, a combination of topical antimicrobials and systemic antibiotics may be helpful.

Other effective options include the use of metronidazole gel to eradicate anaerobic infection. In a study of metronidazole use on malodorous wounds, all 16

patients had favourable responses, and nearly two-thirds experienced complete odour elimination within 24 hours.²¹ One caveat, however, is that some patients are sensitive and/or allergic to metronidazole. In addition, it is only effective against anaerobes.

Another novel dressing additive option that has been explored in the literature is alpha sepiolite, a natural clay mineral with powerful absorptive properties.²² It's what makes kitty litter absorb odour. Though kitty litter may offer support as a room deodorizer, there are no dressings currently available with this technology.

The use of odour-controlling dressings is another measure to manage wound odour. These products are designed to act like filters or traps to absorb odour-causing molecules. Some of these products incorporate charcoal that absorbs unpleasant smells from wounds. Activated charcoal is a widely used deodorizing agent. It works by absorbing many odour molecules onto the large surface area of the activated charcoal, which prevents the volatile odour molecules from reaching receptors in the nose.²³ Charcoal has been incorporated into some modern wound dressing for this purpose.

A new dressing technology has recently been introduced to the wound-care market specifically to address odour. Most odours are lipophilic (oil-loving). Novel dressing products utilize cyclodextrins (the same technology as in the fabric deodorizer Febreze®), a hydrated cyclodextrin (starch) molecule to irreversibly capture lipophilic odour molecules, thus neutralizing the odour. Cyclodextrins occur naturally and are proven safe to use in modern wound care. This carbohydrate molecule is safe enough for human consumption, so use in wounds is extremely reliable.

How do these newer odour-elimination dressings compare to the older technology of charcoal-based dressings? Cyclodextrins work optimally in the presence of wound exudate and need the wound's moisture to work effectively.²⁴

For odour control when utilizing negative-pressure adjunctive treatment, options include utilizing silver in the wound bed prior to placement of the negative pressure apparatus, adding a gel pack or povidone iodine in the canister and changing the canister when it is two-thirds full.²⁵

There is no debate that wound odour causes social embarrassment and has a destructive psychological impact on the individual with the wound, as well as causing feelings of unease or reluctance in the caregiver. Once identified, the cause of wound odour can be

effectively treated, removing or inactivating the inciting problem. More effective than simply attempting to mask the odour, easy tactics such as using an antimicrobial wound cleanser, debriding a necrotic wound or changing the dressing more frequently can be instituted. Newer strategies, including prudent wound-bed preparation with the use of metronidazole gel and dressings utilizing cyclodextrin technology, can further increase the chances of destroying wound odour.

Revisiting Ms. R.L.'s Case

Ms. R.L.'s case is not unique. Many patients have poor quality of life because of wounds that produce odour, which shift our concerns away from just healing and toward improved symptom control.

After meeting to discuss her case, the interprofessional team came away with an extensive plan of care, including eradicating wound odour. After discussing the strategy with Ms. R.L. and her family, the staff began utilizing a safe broad-spectrum antimicrobial cleanser containing benzethonium chloride (BC) at every dressing change. Since the wound did not produce signs and symptoms of critical colonization or infection, no further antimicrobials, such as silver, were considered; rather, a new hydrocolloid utilizing cyclodextrin technology was used, effectively eradicating the wound's odour at its source. Ms. R.L., her daughter and the nurses involved with her wound treatment immediately noticed the difference within the first few days and at the initial dressing change. The patient's mood was much more positive. She began going to the dining room again, and she even agreed to go to dinner on an out-pass with her family for Mother's Day. Success came by tackling this important palliative issue head-on.

No longer will patients, family and staff suffer wound odour silently. Simple solutions are available and can easily be incorporated into the facilities' plans of care. ☺

References

1. Grocott P. The palliative management of fungating malignant wounds. *Journal of Wound Care*. 1995;4(5):240-242.
2. Grocott P, Browne N, Crowley S. Quality of life: Assessing the impact and benefits of care to patients with fungating wounds. *WOUNDS*. 2005;17(1):8-15.
3. Thomas S, Fisher B, Fram PJ, Waring MJ. Odor absorbing dressings. *Journal of Wound Care*. 1998;7(5):246-250.
4. Benbow M. Malodorous wounds: How to improve quality of life. *Nurse Prescriber*. 1999;Feb:43-46.
5. Finlay IG, Bowszyc J, Ramlau C, Gwiedzinski Z. The effect of topical 0.75% metronidazole gel on malodorous cutaneous ulcers. *J Pain Symptom Manage*. 1996;11(3):158-162.

references continued on page 54

Palliative Dilemmas *continued from page 13*

6. Beckett R, Coombs TJ, Frost MR, McLeish J, Thompson K. Charcoal cloth and malodorous wounds. *Lancet*. 1980;2(8194):594-595.
7. Price E. Wound care: The stigma of smell. *Nursing Times*. 1996;88(20):71-72.
8. Grocott P. Assessment of fungating malignant wounds. *Journal of Wound Care*. 1995;4(7):333-336.
9. Boardman M, Mellor K, Neville B. Treating a patient with a heavily exudating malodorous fungating ulcer. *Journal of Wound Care*. 1993;8(5):216-218.
10. Langemo, DK. Quality of life and pressure ulcers: What is the impact? *WOUNDS*. 2005;17(1):3-7.
11. Fleck CA. Ethical wound management for the palliative patient. *Extended Care Product News*. 2005;100(4):38-46.
12. Moody M. Metrotop: A topical antimicrobial agent for malodorous wounds. *Br J Nurs*. 1998;7:286-289.
13. Hampson JP. The use of metronidazole in the treatment of malodorous wounds. *Journal of Wound Care*. 1996;5(9):421-425.
14. Van Toller S. Invisible wounds: The effects of skin ulcer malodors. *Journal of Wound Care*. 1994;3(2):103-106.
15. Gold GH, Pugh EN. The nose leads the eye. *Nature*. 1997;385:677-679.
16. Dalton P, Wysocki CJ, Brady MJ, Lawley HJ. The influence of cognitive bias on the perceived odor, irritation and health symptoms from chemical exposure. *Int Arch Occup Environ Health*. 1997;69:407-417.
17. Sapico FL, Ginunas VJ, Thornhill-Joynes M, Canawati HN, Capen DA, Klein NE. Quantitative microbiology of pressure sores in different stages of healing. *Diagn Microbiol Infect Dis*. 1986;5:31-38.
18. Lindholm C. Pressure ulcers and infection: Understanding clinical features. *Ostomy/Wound Management*, May 2003;49(5A):4-7.
19. Kingsley A. A proactive approach to wound infection. *Nursing Standard*. 2001;15(30):50-58.
20. Percival SL, Percival PG, Bowler PG, Russell D. Bacterial resistance to silver in wound care. *Journal of Hospital Infection*. 2005;60:1-7.
21. Kalinski C, et al. Effectiveness of a topical formulation containing metronidazole for wound odor and exudate control. *WOUNDS*. 2005;17(4):84-90.
22. Köse AA, Karabaglı Y, Kürkcüoğlu M, Çetin C. Alpha Sepiolite: An old clay mineral, a new dressing material. *WOUNDS*. 2005;17(5):114-121.
23. Ovington L. Bacterial toxins and wound healing. *Ostomy Wound Management*. 2003;49(7A):8-12.
24. Lipman RDA. Avery Dennison Medical. Odour absorbing hydrocolloid dressing for direct wound contact [Poster Number 82]. Wound Healing Society (WHS) 15th Annual Meeting, Chicago. May 18-21, 2005.
25. Fleck CA, Frizzell LD. When negative is positive: A review of negative pressure wound therapy. *ECPN*. 2004;92(2):20-25.