WOUND MANAGEMENT

Evelyn Cook, RN, CIC
Associate Director,
NC Statewide Program for Infection Control and Epidemiology (SPICE)

1

OBJECTIVES

- Discuss skin changes as we age
- Describe infection prevention implications
- Discuss wound care management program

2

SKIN CHANGES RELATED TO AGING

- Thinner, more fragile-thickness decreases 20%
- Reduced dermal vascularity-Fewer nutrients so ability to heal is impaired
- Decreased collagen production
- Less adhesion between skin layers-tears more easily
- Redistribution of fat
- Decrease in sensation

Increased potential for skin break down, decubitus ulcers

- Decrease in sweat production-increase in dryness

Nursing2003:January 2003-Volume 33-Issue 1-84 Wound and skin care; Zulkowski, Karen RN, CWs, DNS

3

SKIN, SOFT TISSUE AND WOUND INFECTIONS

- A wound is a tissue injury caused by such trauma as cutting, piercing or tearing.
- Wounds are classified as acute or chronic.
  - Acute wounds usually close with minimal intervention
  - Chronic wounds require aggressive treatment and care

Infection Prevention Guide: To Long-Term Care:2nd edition: APIC

Table 6:2: Possible reasons for wounds
Surgery (infection is SSI)
Impaired blood flow from venous and arterial insufficiency
Neuropathy and impaired sensation form diabetes or multiple sclerosis
Pressure, usually over a bony prominence, resulting a pressure ulcer
Burns
Injury
Terminal illness
Falls

4

RISK FACTORS FOR PRESSURE INJURY DEVELOPMENT

- Fever
- Anemia
- Infection
- Hypotension
- Malnutrition
- Spinal Cord Injury
- Neurological disease
- Decreased body Mass index
- Chronic illness (diabetes)
- Immobility
- Skin conditions such as edema and pruritis
- Incontinence
- Increased metabolic rate
- Skin maceration
- Ischemia
- Advanced age
- Weakness
- Altered mental status
- Vascular disease
- History of pressure ulcer

Infection Prevention Guide: To Long-Term Care:2nd edition: APIC

5

Table 6.4:Interventions to Prevent Skin Breakdown	
Skin Care with a pH-balanced cleanser rather than soap	Assess skin integrity frequently
Application of a moisture barrier to the skin	Avoid friction and shearing forces
Changing pads frequently for incontinent residents	Optimizing blood supply and tissue perfusion
Repositioning every 2 hours	Providing enteral or parenteral support
Pressure-reducing mattress	Preventing muscle spasms that can lead to abrasions
Reducing edema	Preventing contracture that impede flexibility and mobility
Maintaining warmth and preventing chilling of the extremities	Use pressure-relieving cushions
Decreased body mass index	Maintaining glycemic control

Infection Prevention Guide: To Long-Term Care:2nd edition: APIC

6

SKIN AND SOFT-TISSUE INFECTIONS

- Pressure Ulcers (decubitus ulcers) occur in up to 25% of residents in LTCFs
- Associated with increased mortality
- Often are deep soft-tissue infections and may have underlying osteomyelitis
- Require costly and aggressive medical and surgical therapy

7

SKIN, SOFT TISSUE AND MUCOSAL INFECTIONS

Criteria	Comments
A. Cellulitis/soft tissue/wound infection At least **one** of the following criteria is present 1. Pus present at a wound, skin, or soft tissue site 2. New or increasing presence of at least **four** of the following sign/symptom sub-criteria a) Heat at affected site b) Redness at affected site c) Swelling at affected site d) Tenderness or pain at affected site e) Serous drainage at affected site **f) One** constitutional criteria	More than one resident with streptococcal skin infection from the same serogroup (e.g., A, B, C, G) in a LTCF may suggest an outbreak For wound infections related to surgical procedures: LTCF should use the CDC's NHSN surgical site infection criteria and report these infections back to the institution performing the original surgery Presence of organisms cultured from the surface (e.g., superficial swab culture) of a wound is not sufficient evidence that the wound is infected

8

SKIN INFECTIONS IN NURSING HOMES

- 100 cases skin infections:

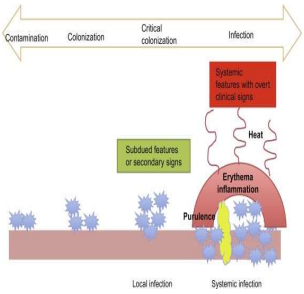
Type of infection	Number of cases
Non-purulent cellulitis	55
Wound infection	27
Infected ulcer	8
Cutaneous	7

- 95% treated with oral antibiotics only
- 26 cases did not meet Loeb criteria for antibiotic therapy
- Most initiated via phone order

Clinical Characteristics, Diagnostic Evaluation, and Antibiotic Prescribing Patterns for Skin Infections in Nursing Homes; Frontiers in Medicine; July 2016

9

BACTERIAL LEVELS IN THE WOUND



Contamination
bacteria present on surface but no issues

Colonization
bacteria attach to tissue and multiply

Infection
bacteria invade healthy tissue and overwhelm immune defenses
Local-healing stalls and tissue damage
Spreading-problems close to wound
Systemic-systemic illness

10

ORGANISMS OF CONCERN

- Sarcoptes scabiei var. hominis
  - Skin infestation scabies
- Methicillin-resistant *S. aureus*
  - Wound, respiratory, blood
- Multidrug-resistant gram-negative bacilli
  - Wound, urinary, respiratory, blood
- **Group A *Streptococci (GAS)***
  - Cellulitis, wound infection, conjunctivitis, impetigo and ***necrotizing fasciitis***
  - Pharyngitis, bronchitis and pneumonia
  - Bacteremia

11

ORGANISMS OF CONCERN

- Healthcare-associated transmission of GAS has been documented from residents to healthcare personnel and from healthcare personnel to residents
- *Contact or dispersal of respiratory secretions are the major modes of transmission in HC settings*
- Can cause severe, life-threatening invasive disease, including pneumonia, streptococcal toxic-shock syndrome (STSS) and necrotizing fasciitis.

https://www.cdc.gov/groupastrep/downloads/ltcf-decision-tool-508.pdf

12

GAS

Residents with suspected or confirmed GAS infection or colonization should be placed on appropriate transmission-based precautions pending culture results:

- **Wound**—Residents with GAS cultured from a wound, ostomy, or device-insertion site should remain on contact and droplet precautions until 24 hours after the initiation of effective antibiotic therapy and any wound drainage stops or can be contained by a dressing. HCP should then return to use of EBP.
- **Throat**—Residents with GAS cultured from their throat should remain on droplet precautions until 24 hours after the initiation of effective antibiotic therapy. Note: Continued use of a facemask by HCP during all wound care activities or when handling invasive medical devices is recommended until the outbreak is over.

https://www.cdc.gov/groupastrep/downloads/ltcf-decision-tool-508.pdf

13

WOUND MANAGEMENT PROGRAM

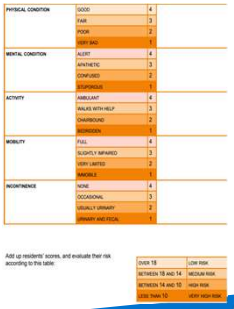
- Multidisciplinary approach
  - Medical Director: Provides oversight and support from prevention to treatment
  - Facility Administrator: Ensures availability of guideline treatments, provision of therapeutic surfaces, oversees PI activities and audits and collaborates with the Medical Director
  - Director of Nursing (DON): Consistency in wound rounds, turning regimens,
  - Certified wound specialist: Collaborates with all members of the wound team, provides wound prevention and management education to all clinicians, residents and families
  - Other Members:
    - Educator, Unit manager, all nursing staff, dietitians, nursing assistants and social services

Wound Care Management: Jeanine Maguire; *Today's Geriatric Medicine*; Vol. 7 No. 2 P.14

14

ASSESSING RISK FOR SKIN BREAKDOWN

- Risk Assessment Tools
  - Braden Scale Score *(score 18 or less = at risk)*
  - Norton Score *(score 14 or less = at risk)*
- Policy to define when risk assessment is repeated
- Interventions/Protocol to address risk elements



15

WOUND CARE POLICIES

- When sterile versus clean technique will be used
- What cleaning/disinfection practices are in place for equipment (i.e., beds, mattresses, whirlpool)
- Documented training and competencies (wound care nurse and other staff)
- Wound cleaning products
- Dressing type(s)
  - Alginates, Foams, Gauze, Hydrocolloids, Hydrogels, Transparent films
  - Negative pressure therapy using a wound VAC
  - Hyperbaric oxygen therapy, silver impregnated dressings.

16

DOCUMENTATION

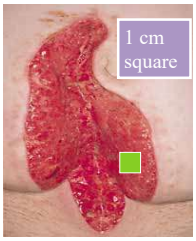
Document all aspects:

- Assessment
  - Patient
  - Wound specifics (pain, slough)
  - Identify modifiable risk factors for poor healing
- Objectives
  - Short- and long-term management/prevention
- Treatment
  - Underlying wound etiology
  - Modifiable factors
  - Education of resident/family
- Evaluation
  - Objectives/assess outcomes
  - Prevention Strategies

17

WOUND CULTURES

- Tissue biopsy
  - Gold standard; invasive; skill required
- Needle-aspiration
  - Requires skill and beyond scope of nursing practice
- Swab culture technique
  - Widely available
  - Clean wound prior to culture
  - Levine technique: Moisten swab with saline
  - Rotate swab over a 1 cm square area with sufficient pressure to express fluid from wound tissue
  - Has been correlated to tissue biopsy results



(Levine, 1976)

18

WOUND CARE - *ROLE OF ANTIBIOTICS*

- All wounds are colonized with microbes; however, not all wounds are infected.
- Antibiotic therapy is not indicated for all wounds and should be reserved for wounds that appear clinically infected.
- There is no published evidence to support antibiotic therapy as "prophylaxis" in noninfected chronic wounds.
- Clinical signs of wound infection that warrant antibiotic therapy include local (cellulitis, lymphangitic streaking, purulence, malodor, wet gangrene, osteomyelitis) and systemic (fever, chills, nausea, hypotension, hyperglycemia, leukocytosis, confusion) symptoms

https://www.uptodate.com/contents/basic-principles-of-wound-management

19

Wound management dressing guide

Type of tissue in the wound	Therapeutic goal	Role of dressing	Treatment options		
			Wound bed preparation	Primary dressing	Secondary dressing
• Necrotic, black, dry	• Remove devitalized tissue • Do not attempt debridement if vascular insufficiency suspected • Keep dry and refer for vascular assessment	• Hydration of wound bed • Promote autolytic debridement	• Surgical or mechanical debridement	• Hydrogel • Honey	• Polyurethane film dressing
• Sloughy, yellow, brown, black or grey • Dry to low exudate	• Remove slough • Provide clean wound bed for granulation tissue	• Rehydrate wound bed • Control moisture balance • Promote autolytic debridement	• Surgical or mechanical debridement if appropriate • Wound cleansing (consider antiseptic wound cleansing solution)	• Hydrogel • Honey	• Polyurethane film dressing • Low adherent (silicone) dressing
• Sloughy, yellow, brown, black or grey • Moderate to high exudate	• Remove slough • Provide clean wound bed for granulation tissue • Exudate management	• Absorb excess fluid • Protect periwound skin to prevent maceration • Promote autolytic debridement	• Surgical or mechanical debridement if appropriate • Wound cleansing (consider antiseptic wound cleansing solution) • Consider barrier products	• Absorbent dressing (alginate/CMC/foam) • For deep wounds, use cavity strips, rope or ribbon versions	• Retention bandage or polyurethane film dressing
• Granulating, clean, red • Dry to low exudate	• Promote granulation • Provide healthy wound bed for epithelialization	• Maintain moisture balance • Protect new tissue growth	• Wound cleansing	• Hydrogel • Low adherent (silicone) dressing • For deep wounds use cavity strips, rope or ribbon versions	• Pad and/or retention bandage • Avoid bandages that may cause occlusion and maceration • Tapes should be used with caution due to allergy potential and secondary complications
• Granulating, clean, red • Moderate to high exudate	• Exudate management • Provide healthy wound bed for epithelialization	• Maintain moisture balance • Protect new tissue growth	• Wound cleansing • Consider barrier products	• Absorbent dressing (alginate/CMC/foam) • Low adherent (silicone) dressing • For deep wounds, use cavity strips, rope or ribbon versions	
• Epithelializing, red, pink • No to low exudate	• Promote epithelialization and wound maturation (contraction)	• Protect new tissue growth		• Hydrocolloid (thin) • Polyurethane film dressing • Low adherent (silicone) dressing	
• Infected • Low to high exudate	• Reduce bacterial load • Exudate management • Odor control	• Antimicrobial action • Moist wound healing • Odor absorption	• Wound cleansing (consider antiseptic wound cleansing solution)	• Antimicrobial dressing	

The purpose of this table is to provide guidance about appropriate dressings and should be used in conjunction with clinical judgement and local protocols. Where wounds contain mixed tissue types, it is important to consider the predominant factors affecting healing and address accordingly. Where infection is suspected, it is important to regularly inspect the wound and to change the dressing frequently. Wound dressings should be used in combination with appropriate wound bed preparation, systemic antibiotic therapy, pressure offloading, and diabetic control.

https://www.uptodate.com/contents/basic-principles-of-wound-management

20

DOES *ALL* WOUND CARE NEED TO BE DONE WITH STERILE TECHNIQUE?

21

WOUND CARE ISSUES

- Present literature suggests that pressure ulcer dressing protocols may use clean technique rather than sterile, but that appropriate sterile technique may be needed for those wounds that recently have been surgically debrided or repaired.
- ©*National Pressure Ulcer Advisory Panel March 2014*

22

CONSIDERATIONS FOR CLEAN VERSUS STERILE TECHNIQUE

- The following factors should be considered when planning and selecting the use of clean versus sterile dressing technique for chronic wound care:
  - Hand hygiene
  - Factors that cause an impairment in normal immune defense mechanism
  - Invasiveness of wound care procedure
  - Role of biofilms
  - Solutions for cleansing/treatment
  - Equipment used to cleanse, debride or dress the wound

WOCN APIC

CLEAN VERSUS STERILE: MANAGEMENT OF CHRONIC WOUNDS

Wound, Ostomy, and Continence Nurses Society and the Association for Professionals in Infection Control and Epidemiology, Inc. (2024). Clean Versus Sterile: Management of Chronic Wounds. Mt. Laurel, NJ: Author.

23

STERILE TECHNIQUE

- Sterile is generally defined as meaning free from microorganisms.
- Reduce exposure to microorganisms and maintain objects and areas as free from microorganisms as possible.
- Meticulous hand washing, use of a sterile field, use of sterile gloves for application of a sterile dressing, and use of sterile instruments.
- Most appropriate in acute care hospital settings, for patients at high risk for infection, and for certain procedures such as sharp instrumental wound debridement.

24

CLEAN TECHNIQUE

- Clean means free of dirt, marks, or stains.
- Reduce the overall number of microorganisms or to prevent or reduce the risk of transmission of microorganisms from one person to another or from one place to another.
- Meticulous handwashing, maintaining a clean environment by preparing a clean field, using clean gloves and sterile instruments, and preventing direct contamination of materials and supplies.
- No "sterile to sterile" rules apply.
- This technique may also be referred to as non-sterile.
- Most appropriate for:
  - Long-term care, home care, and some clinic settings;
  - Patients who are not at high risk for infection;
  - Patients receiving routine dressings for chronic wounds such as venous ulcers, or wounds healing by secondary intention with granulation tissue.

25

GENERAL RULES FOR CHANGING DRESSINGS

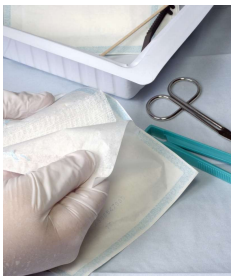
- ✓ Disinfect area around bedside where supplies are going to be placed (over bed table etc.,)
- ✓ Place trash bag near by
- ✓ Perform hand hygiene
- ✓ Gather all necessary supplies, equipment
- ✓ Don clean disposable gloves
- ✓ Remove tape and outer dressings and dispose of in trash container
- ✓ Assess the wound for color, edema, exudate, odor etc.,
- ✓ Remove soiled gloves, dispose of and perform hand hygiene
- ✓ Put on clean gloves
- ✓ Apply dressing and secure
- ✓ Dispose of all supplies
- ✓ Remove gloves and perform hand hygiene

26

WHAT ABOUT SCISSORS?

- Wound/bandage scissors are ***non-critical*** devices, i.e., contacts intact skin only.
- Disposable best option if feasible
- Dedicate to resident if on transmission-based precautions
- Must be cleaned and disinfected with an EPA registered healthcare disinfectant after each use.
- Scissors labeled as single use should be discarded after a single use.

If used for debridement or wound management (contact with wound) must be sterile



27

POINTS TO REMEMBER

- Contamination of the wound is minimized by not touching it. Blotting excess fluid that pools in the wound and cleaning the peri-wound skin with moist gauze is acceptable.
- Contamination of the wound from supplies is avoided by opening and preparing all that is needed before removing the dressing and putting on fresh clean gloves.
- Contamination of the local environment and supplies is avoided by organizing the procedure to ensure that anything in contact with the wound does not contact jars, bottles, tubes, bedside table or supplies to be kept for use later.
- **Residents with wounds should be placed on enhanced barrier precautions**

28

WOUND DRESSING CHANGE SUMMARY

- Dedicated wound dressing change supplies and equipment gathered/accessible prior to starting procedure
- Additional PPE worn to prevent body fluid exposure
- Multi-dose wound care medications (i.e., ointments, creams) should be dedicated to single resident whenever possible or a small amount of medication should be aliquoted into clean container for single-resident use
- Meds should be stored properly in centralized location and never enter a resident treatment area

29

WOUND DRESSING CHANGE SUMMARY

- Gloves should be changed and HH performed when moving from dirty to clean wound care activities
- Debridement or irrigation should be performed in a way to minimize cross-contamination of surrounding surfaces
- Any surface (including reusable medical equipment)in the resident's immediate care area contaminated during a dressing change should be cleaned and disinfected
- Wound care is documented
- Wound care supply cart should never enter the resident's immediate care area **nor** be accessed while wearing gloves or without performing HH first

30

Wound Dressing Change Observations

All supplies are gathered before dressing change [1]	HH performed before dressing change	Clean gloves donned before dressing change [2]	Multi-dose wound care meds are used appropriately [3]	Dressing change performed in manner to prevent cross-contamination [4]	Gloves removed after dressing change completed	HH performed after dressing change completed	Reusable equipment cleaned and/or disinfected appropriately [5]	Clean, unused supplies discarded or dedicated to one resident	Wound care performed /assessed regularly [6]	Wound care supply cart is clean [7]
○ Yes ○ No ○ NA*	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA
○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA
○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA
○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA
○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA	○ Yes ○ No ○ NA

NA = Not assessed

[1] Dedicated wound dressing change supplies and equipment should be gathered and accessible on a clean surface at resident's bedside before starting procedure

[2] Additional PPE (e.g., face mask/face shield, gown) should be worn to prevent body fluids exposure per facility policy

[3] Multi-dose wound care medications (e.g., ointments, creams) should be dedicated to a single resident whenever possible or a small amount of medication should be aliquoted into clean container for single-resident use; Meds should be stored properly in centralized location and never enter a resident treatment area

[4] Gloves should be changed and HH performed when moving from dirty to clean wound care activities (e.g., after removal of soiled dressings, before handling clean supplies); Debridement or irrigation should be performed in a way to minimize cross-contamination of surrounding surfaces from aerosolized irrigation solution; All soiled dressing supplies should be discarded immediately

[5] In addition to reusable medical equipment, any surface in the resident's immediate care area contaminated during a dressing change should be cleaned and disinfected; Any visible blood or body fluid should be removed first with a wet, soapy cloth then disinfected with an EPA-registered disinfectant per manufacturer instructions and facility policy; Surfaces/equipment should be visibly saturated with solution and allowed to dry for proper disinfection before reuse

[6] Wound care documentation should include wound characteristics (e.g., size, stage), dressing assessment (e.g., clean, dry), and date and frequency of dressing changes; Wound care is documented in medical records per facility policy

[7] Wound care supply cart should never enter the resident's immediate care area nor be accessed while wearing gloves or without performing HH first. These are important to preventing cross-contamination of clean supplies and reiterates the importance of collecting all supplies prior to beginning wound care.

Comments: Click here to enter text.

SPICE

31

https://spice.unc.edu/ask-spice/

SPICE

32