INFECTION PREVENTION AND CONTROL
PRACTICES IN RESIDENTS WITH CHRONIC
WOUNDS: MEETING CLINICAL AND
REGULATORY GUIDELINES

Faculty
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The Problem

What are some of the real issues that created the need for more stringent infection prevention and control practices and antibiotic stewardship in all care settings, but specifically for long-term care?

The Problem of Infection Risks for Older Adults

- Age and compromised immune systems
- Frequent hospitalizations and recent admissions to acute care facilities
- Shared and contained living environments
- Higher rates of comorbidities
  - Diabetes and other chronic illnesses
  - Chronic obstructive pulmonary disease [COPD]
- Overuse use of antibiotics
Why Difficult to Recognizing / Diagnosing Infections in the Elderly?

- Symptoms atypical or non-specific signs and symptoms
  - Altered mental status, function or behavior, and impaired fever response
- Outbreaks may involve multiple pathogens and cause similar clinical syndromes
- Rhinovirus, a significant cause of viral pneumonia difficult to diagnose & distinguish from other infections
- Potential new pathogens with multiple strains
- Limited diagnostic capability of cultures

Wound Bed Prep = D.I.M.E.S.

- Debridement
- Infection / Inflammation Control
- Moisture Regulation
- Migrating Wound Edges
- Periwound Skin

Framework For Chronic Wound Care
Bacteria in Wound Bed and Chronic Inflammation

- Bacteria in wound often at greater levels than host's ability to control
- Damage cells needed for wound healing
- Interfere and delay chemical reactions needed for wound closure
- Produce proteases (e.g., matrix metalloproteases [MMPs]) - destructive to new tissue
- Stimulus for high levels of MMPs being released from inflammatory cells that digest normal collagen scaffold in wound bed
All Chronic Wounds Have Bacteria

- All chronic wounds, including PU/PUs, have bacteria. Since bacteria reside in non-viable tissue, debridement of this tissue and wound cleansing are important to reduce bacteria and avoid adverse outcomes such as sepsis. The first sign of infection may be a delay in healing and an increase in exudates. In a chronic wound, the signs of infection may be more subtle. Signs may include the following:
  - Increase in amount or change in characteristics of exudate,
  - Decolorization and friability of granulation tissue,
  - Undermining,
  - Abnormal odor,
  - Epithelial bridging (a bridge of epithelial tissue across a wound bed) at the base of the wound, or
  - Sudden pain.

Infections in Pressure Ulcers

- A PU/P1 infection may be acute or chronic. In acute wounds, the classic signs of inflammation (redness, edema, pain, increased exudate, and periwound surface warmth) persist beyond the normal time frame of three to four days. In residents who are immunosuppressed, the signs of inflammation often are diminished or masked because of an ineffective immune response. Often the only observable symptom of infection is a complaint of pain.
Diagnosing Infection

- The physician diagnosis of infections present in a PU/PI are based on resident history and clinical findings, such as a wound culture. **Pus, slough or necrotic tissue should not be cultured.**
- Findings such as an elevated white blood cell count, bacteremia, sepsis, or fever may signal an infection related to a PU/PI area or a co-existing infection from a different source.
- The treatment of an infection will depend on the type of infection present.

Bacteria in Wound Bed and Chronic Inflammation

- Bacteria in wound often at greater levels than host’s ability to control
- Produce proteases (e.g., matrix metalloproteases [MMPs]) - destructive to new tissue
- **MMPs being released from inflammatory cells digest normal collagen scaffold in wound bed**
- Bacteria and chronic inflammation damage cells needed for wound healing
- Interfere and delay chemical reactions needed for wound closure
Bacteria and Biofilms

- Bacteria grow in 2 primary forms:
  1. **Planktonic**
     - Free floating
     - Antibiotics destroy fairly easily
     - Most antibiotic testing is on planktonic form
  2. **Biofilms**
     - Complex communities of bacteria, yeast, fungi, virus (microbial cities)
     - Adhere to solid surfaces
     - Create and embed themselves in self-generated extracellular polysaccharide matrix
Biofilms in the Bioburden Continuum

~80% of Chronic Wounds Have Biofilms


Wound Biofilm:
Current Perspectives and Strategies on Biofilm Disruption and Treatments

The publication uses subject to the MG/MBP peer review process.
What We Currently Know About Biofilms


- Biofilms exist and are prevalent in chronic wounds.
- Biofilms, in addition to other factors, are barriers to wound healing.
- Routine culture is not an effective means of identifying biofilm bacteria.
- Surgical or conservative sharp wound debridement is effective in removing biofilm from an open wound surface.
- Debridement opens time-dependent window for topical interventions.
- Biofilms have a natural ability to rebuild rapidly.
- Systemic antibiotics are of limited use in managing biofilm.
- Appropriate topical antimicrobial application can suppress biofilm reformation.
- Application of antimicrobials is time-dependent (within 24–48 hours).

Biofilm Characteristics in Open Chronic Wounds

- Unable to see it with naked eye
- Polymicrobial
  - Aerobic + non-aerobic bacteria
  - gram pos + gram neg
  - Fungus + virus
- Hydrophilic polymeric protective coating
- Quorum sensing -how cells communicate with one another; coordinates gene expression, and behavior of entire community
- Attached 2mm below wound bed surface
- Grows back in 48-72 hours
- Why repeated debridement important
Signs of Critical Colonization

- Progression towards closure **stalls**
- Granulation tissue
  - Absent or abnormal
  - Color-red/purple
  - Friability
- Odor – subtle or dramatic change
- Increased/high exudate levels in presence of granulation tissue
- Wounds attempt to “flush out” foreign particles, bacteria
Topical antimicrobial dressings are not indicated because bioburden is not causing clinical problems.

Topical antimicrobial dressings indicated

Combined systemic antibiotics and topical antimicrobial dressings indicated

Bacteria Housed in Biofilm Difficult to Kill

- Bacteria live comfortably in dormant or semi-dormant state within biofilm
  - **Antibiotics cannot penetrate biofilm**
  - Antibiotics not effective again bacteria in dormant/semi-dormant state
  - After antibiotic use, where some bacteria may be killed on periphery of biofilm, dormant bacteria begin to proliferate more aggressively to rebuild and grow bacteria community
**Cellulitis**

- Common, potentially serious bacterial skin infection
- Dermis and subcutaneous tissues affected
- S&S erythema, edema, pain
- More commonly seen on feet and hands; can occur anywhere on body
- Most often has a pre-existing lesion or ulcer
- Break in the skin barrier and a portal of entry for infection
Cellulitis-Bacterial Load Diving Deep and Spreading Out into Soft Tissues

Biofilm typically spreads perivascularly ...below the surface of the wound.

Wound Cleansing
Pressure
Scrubbing

Debridement!
Debridement!!
Debridement!!!

Reducing Bacterial Load & MMPs

Dressings/Devices
Absorb/remove contaminated wound exudate

Antiseptic Dressings
(eg iodine, honey, silver)

Protease (MMP) inactivators
Collagen Dressings
(bind & inactivate MMPs)

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Not Introducing Additional Microbes From Outside Environment- F880

- Clean work area
- Clean hands before and after each task during dressing changes
- Clean/sterile gloves
- Sterile instruments
- Appropriate handling and disposal of soiled dressings, instruments, supplies
- Appropriate isolation technique when highly infectious organism identified (PPE, private rooms, visitation control with education for family regarding isolation rules)

Effect of Wiping Only on Total and Biofilm Bacteria

Greg Schultz
NPUAP.org
Biofilm Webinar
Free
Larval Debridement Therapy

Question: What effects do microbicidal wound dressings have on mature biofilms grown on pig skin explants?

Answer: Most microbicidal wound dressings can reduce mature biofilms by 1-log (90%) to 2-loggs (99%) except cadexomer iodine dressing that eliminated 7-loggs (99.99999%) of biofilm bacteria

How Quickly Can Planktonic Bacterial Reform Protective Biofilms After Wound Debridement?

3 days

Greg Schultz
NPUAP.org
Biofilm Webinar
Free

ASSESSMENT OF BACTERIAL BURDEN
Antibiotics

- Antibiotics or antibacterials - type of antimicrobial used against bacteria for bacterial infections
- Potential for resistance
- Overgrowth of non-target bacteria
- Cultures and tissue biopsy help identify which bacteria growing to target specifically with antibiotics
- Must be used with deep tissue and systemic infections
- Topical versions available for local superficial infections

Nerds and Stones Mnemonic for treatment of bacterial burden

<table>
<thead>
<tr>
<th>NERDS (3 or more, treat topically)</th>
<th>STONEES (3 or more, treat systemically)</th>
</tr>
</thead>
<tbody>
<tr>
<td>❖ Nonhealing wounds</td>
<td>❖ Size is bigger</td>
</tr>
<tr>
<td>❖ Exudative wounds</td>
<td>❖ Temperature of 3º- F or more versus mirror image</td>
</tr>
<tr>
<td>❖ Red and bleeding wound surface granulation tissue</td>
<td>❖ Os (probe to or exposed bone)</td>
</tr>
<tr>
<td>❖ Debris (yellow or black necrotic tissue) on the wound surface</td>
<td>❖ New or satellite areas of breakdown</td>
</tr>
<tr>
<td>❖ Smell or unpleasant odor from wound</td>
<td>❖ Exudate, erythema, edema increased</td>
</tr>
<tr>
<td>❖ Smell increased</td>
<td>❖ Smell increased</td>
</tr>
</tbody>
</table>

Infection: Clinical Picture

- Swelling
- Induration
- Erythema >3cm beyond wound edge
- Warmth
- Pain
- Odor

Amputation Great Toe
Signs and Symptoms of Infection

Methods of Wound Culture

- Biopsy
- Levine’s Swab
  Culture Technique

Lab assessing culture growth
Quantitative Tissue Biopsy

- Historically “gold standard” - at least best practice
- Painful (may need anesthetic)
- Skill Intensive
  - Unavailable in many settings
- Used more in research than clinical practice
- Greater than $10^5$ (100,000) colony-forming units (CFU) per gram of tissue considered to be infected

Improve Swab Technique

- Thoroughly cleanse wound surface with non-preserved saline/cleanser
- Do not cleanse with antimicrobial wash
- Don't swab:
  - Through dressing residue
  - Old exudate
  - Necrotic tissue
  - Blood
- i.e. SWAB Viable Tissue Only!!!
- Don’t bother with dry surfaces
- Place in carrier, transport ASAP

Photo Curtsey: Dot Weir, RN, CWON
Levine’s Technique

- Surface swab of a one cm² area of **healthy tissue** in the wound
- Press & roll swab into wound bed to obtain culture fluid
- Cultures and biopsies tell which drugs to use for which bacteria

Location, Location, Location....

- Swab viable, clean tissue **ONLY**
- Swab here after thorough cleansing/debridement

Photo Credit: Dot Weir, RN, CWON, CWS

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Repeated Sharp/Surgical/Mechanical Debridement

- Very **few products penetrate biofilms**
- Critically important to perform adequate debridement to remove necrotic tissue and biofilm
- Necrotic tissue feeds bacteria and contributes to biofilm formation
- Sharp/surgical debridement removes biofilm
- Have 3-day window to treat with antimicrobials before biofilm reforms

### Complex
- Surgical-scalpel, hydrotherapy
- Sharp-scalpel, curette, scissors
- Ultrasound-contact
- Mechanical-wound scrubbing, pulsed lavage/irrigation, wet-to-dry
- Biologic-maggots
- Enzymatic
- Autolytic

### Simple

Attribution: Dr. Lisa Gould
It’s ALL about the biofilm!!!
Panel members acknowledged that while debridement is one of the most important treatment strategies against biofilm, it does not remove all biofilm or prevent biofilm regrowth, partly because biofilm typically spreads perivascularly below the surface of the wound.

**Antibiotic Use**

- General **overuse of antibiotics** has created super bugs which have mutated causing common antibiotics to become ineffective
- Growth of resistant strains (MRSA, VRE)
- Morbidity associated with overuse of antibiotics

**Topical Antimicrobials**

- Include both antiseptics and antibiotics
  - Antibiotics should be used with caution and specificity for growing organisms whenever possible
  - In the absence of advancing cellulitis, bacteremia fever or pain, **topical treatment** may provide best first-line therapy
Dakin’s Does NOT Penetrate Biofilm

- 60 minutes of exposure to Dakin’s solution-bleach and water
- Many bacteria in this biofilm were dying \((\text{green cells})\)
- Many cells in the interior of the biofilm were still alive \((\text{orange cells})\)
- Costerton, SciAm, 2001

Reduction

- Bacterial Load & MMPs
- Protease (MMP) inactivators
- Collagen Dressings (bind & inactivate MMPs)

Dressings/Devices
- Absorb/remove contaminated wound exudate
- Antiseptic Dressings (eg iodine, honey, silver)

Debridement
- Debridement!
- Debridement!!
- Debridement!!!

Wound Cleansing
- Pressure
- Scrubbing
Not Introducing Additional Microbes From Outside Environment- F880

- Clean work area
- Clean hands before and after each task during dressing changes
- Clean/sterile gloves
- Sterile instruments
- Appropriate handling and disposal of soiled dressings, instruments, supplies
- Appropriate isolation technique when highly infectious organism identified (PPE, private rooms, visitation control with education for family regarding isolation rules)

Examples of Dressings to Treat Locally Inflamed and/or Infected Wounds (NOTE: Dressing/Products Listed Not ALL Inclusive of Every Type of Topical Treatment)
Polyhexamethylene Biguanide (PHMB)

- Chlorhexidine most commonly used biguanide
  - Possibly cytotoxic for use in wounds
- PHMB more biocompatible
  - 0.2 – 0.3% bound in dressing
  - Effective barrier to bacterial contamination
    - Effective against wide range of wound pathogens
    - Contained in Kerlix, Telfa, XCELL, Excilon

Cadexomer Iodine

- Cadexomer starch as a carrier of 0.9% iodine
- 1 gram absorbs up to 6 ml of fluid
- Slow release of iodine during uptake of fluid
- No evidence of resistance
- **Penetrates biofilm**
- Active against MRSA, *S. aureus, P aeruginosa*, and other relevant pathogens
- Changed every 1-3 days
Question: What effects do microbicidal wound dressings have on mature biofilms grown on pig skin explants?

Answer: Most microbicidal wound dressings can reduce mature biofilms by 1-log (90%) to 2-logs (99%) except cadexomer iodine dressing that eliminated 7-logs (99.99999%) of biofilm bacteria

Antibacterial Absorptive Wound Dressing

- Polyvinyl alcohol (PVA) sponge with organic pigments
  - Methylene blue
  - Crystal (Gentian) violet
- Antimicrobial dressing
- Changed every 1 – 3 days
- Trade name- Hydrofera Blue®
Antimicrobial Action of Ag+

- Broad spectrum of antimicrobial action
  - Gram Positives
  - Gram Negatives
  - Aerobes / Anerobes
- Ag+ can kill antibiotic-resistant bacteria
  - MRSA, VRE
- Effective against fungi
- Anti-inflammatory
  - Loss of rubor/redness

Mechanism of Action for Ag+

Ag+ targets nucleic acid (DNA)

Ag+ disrupts proteins in cell membrane resulting in loss of cell integrity

Ag+ inhibits the function of some bacterial enzymes
Medical Grade Manuka Honey

- Pollen gathered from flowers of Leptospermum trees – medicinal plant exclusive to New Zealand and parts of Australia
- Eradicate more than 250 clinical strains of bacteria including:
  - MRSA (methicillin resistant Staphylococcus aureus)
  - MSSA (methicillin sensitive Staphylococcus aureus)
  - VRE (vancomycin-resistant enterococci)

Antimicrobial Skin and Wound Gel

- Antibacterial, fungicidal, virucidal, and sporicidal properties
- Action from sodium hypochlorite
- No known microbial resistance
- Use
  - Partial to full-thickness wounds of all etiologies
  - Infected wounds
Dialkyl Carbamoyl Chloride (DACC)

What Happens to the Bound Bacteria?

- They get inactivated = their metabolism is slowed down
- They no longer replicate (Ljungh et al)
  - The formation of bacterial toxins is also slowed down or stopped
  - Supports the wound healing process

Summary

- When it comes to wound infections and stalled wounds consider the impact of biofilms
- Present in >80% chronic wounds
- Impair healing
- Stimulate ongoing chronic inflammation causing elevated levels of MMPs that degrade proteins and cells receptors essential for healing
- Complex communities of microbes encased in self-produced polysaccharide matrix with high tolerance of innate antibodies, antibiotics, and antiseptics
- Several topical dressings reduce biofilm & should be used in conjunction with good debridement practices

PREVENTION TRANSMISSIONS OF WOUND PATHOGENS DURING DRESSING CHANGES
Final Rule-Implementation Time Frames
Correlates to F880, F881, F882 previously F441

<table>
<thead>
<tr>
<th>Regulatory Section</th>
<th>Phase</th>
<th>Implementation Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>§483.80</td>
<td>Phase 1</td>
<td>November 28, 2016</td>
</tr>
<tr>
<td>Infection Prevention and Control (IPCP)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antibiotic Stewardship Program</td>
<td>Phase 2</td>
<td>November 28, 2017</td>
</tr>
<tr>
<td>Infection Preventionist (IP)</td>
<td>Phase 3</td>
<td>November 28, 2019</td>
</tr>
<tr>
<td>IP participation on QAA committee</td>
<td>Phase 3</td>
<td>November 28, 2019</td>
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</tbody>
</table>

F880
§483.80 Infection Control
The facility must establish and maintain an infection prevention and control program designed to provide a safe, sanitary and comfortable environment and to help prevent the development and transmission of communicable diseases and infections.

§483.80(a) Infection prevention and control program.
The facility must establish an infection prevention and control program (IPCP) that must include, at a minimum, the following elements:

§483.80(a)(1) A system for preventing, identifying, reporting, investigating, and controlling infections and communicable diseases for all residents, staff, volunteers, visitors, and other individuals providing services under a contractual arrangement based upon the facility assessment conducted according to §483.70(e) and following accepted national standards;

§483.80(a)(2) Written standards, policies, and procedures for the program, which must include, but are not limited to:

(i) A system of surveillance designed to identify possible communicable diseases or infections before they can spread to other persons in the facility;
Qualifications of Infection Preventionist

IP must:

1. Have primary professional training in nursing, medical technology, microbiology, epidemiology, or other related field;
2. Be qualified by education, training, experience or certification;
3. Work at least part-time at the facility;
4. Has completed specialized training in infection prevention and control.
Focus on Breaking the Chain of Infection

- Must have these six elements to have transmission of infections
- Goal: Break the chain of infection

INFECTION CONTROL POLICIES AND PROCEDURES

F880

- Facility policies and procedures must include:
  - How to use standard precautions and how and when to use transmission-based precautions (i.e., contact precautions, droplet precautions, airborne isolation precautions).
Who Are We Protecting?

Standard Precautions
Protect Healthcare Worker (HCW)

Transmission–Based Precautions
Protect other residents and HCWs

Standard Precautions Principle

- All blood, body fluids, secretions, excretions except sweat, regardless of whether they contain visible blood, non-intact skin, and mucous membranes may contain transmissible infectious agents.

- Equipment or items in the patient environment likely to have been contaminated with infectious body fluids must be handled in a manner to prevent transmission of infectious agents.

- Use at ALL times because you don’t KNOW if the patient/resident has a bug that can be transmitted to YOU
**Standard precautions include but are not limited to:**

- "Hand hygiene; use of gloves, gown, mask, eye protection, or face shield, depending on the anticipated exposure; safe injection practices, and respiratory hygiene/cough etiquette."
- **Standard precautions:**
  - Hand hygiene
  - Wearing appropriate PPE as needed
  - How to handle patient equipment/supplies/medications (think dressing change setup)
    - Over-the-bed tray, wound cleanser, scissors, medication/topical treatments for wounds, extra gloves, dressings
  - Safe injection practices
  - Respiratory hygiene/coughing etiquette
  - Handling of laundry

---

**Hand hygiene (HH) (e.g., hand washing and/or ABHR):**

- Consistent with accepted standards of practice such as the use of ABHR instead of soap and water in all clinical situations except when hands are visibly soiled (e.g., blood, body fluids), or after caring for a resident with known or suspected *Clostridium (C.) difficile* or *norovirus* infection during an outbreak, or if infection rates of *C. difficile* infection (CDI) are high; in these circumstances, soap and water should be used.

- **NOTE:** According to the CDC, strict adherence to glove use is the most effective means of preventing hand contamination with *C. difficile* spores as spores are not killed by ABHR and may be difficult to remove even with thorough hand washing.

For further information on appropriate hand hygiene practices see the following CDC website: [http://www.cdc.gov/handhygiene/providers/index.html](http://www.cdc.gov/handhygiene/providers/index.html)
Most Common Modes of Transmission in Wound Care

Direct Contact
- Person to person
- Touching
- Fecal-oral

Indirect Contact
- Inanimate objects
- Portal of exit for pathogens
- Portal of entry for pathogens

Means of transmission
- Contaminated gloves or hands, equipment, environment (indirect contact)

Direct Contact Transmission

Microorganisms transferred from one person to another without a contaminated intermediate object or person

- Person to person
  - Touching
  - Fecal-oral

- Wounds
  - Portal of exit for pathogens
  - Portal of entry for pathogens

- Means of transmission
  - Contaminated gloves or hands, equipment, environment (indirect contact)
Indirect Contact Transmission

- Transfer of an infectious agent through a contaminated inanimate object or person.

“Transmission-based precautions” (a.k.a. “Isolation Precautions”)

- Actions (precautions) implemented, in addition to standard precautions, that are based upon the means of transmission (airborne, contact, and droplet) in order to prevent or control infections.

- Never use transmission-based precaution INSTEAD of Standard precautions.

- NOTE: Although the regulatory language refers to “isolation,” the nomenclature widely accepted and used in this guidance will refer to “transmission-based precautions” instead of “isolation.”
An Example of Severity Level 2 Non-Compliance: No Actual Harm with Potential for more than Minimal Harm that is not Immediate Jeopardy includes but is not limited to:

- “The facility failed to ensure that a staff member implemented appropriate processes related to handling and storing wound care supplies.
- As a result, the potential existed for transmission of organisms between residents who received dressing changes.
- A staff member who was providing wound care, was observed to place dressing supplies on one resident’s bedding…and after completing the dressing change, placed the supplies, which are used for other residents, in the unit’s dressing cart.”

PPE per F880

- “Personal protective equipment (PPE)”: protective items or garments worn to protect the body or clothing from hazards that can cause injury and to protect residents from cross-transmission.
Standard Precautions: Equipment

- “Equipment or items in the patient environment likely to have been contaminated with infectious body fluids must be handled in a manner to prevent transmission of infectious agents (e.g., wear gloves for direct contact, properly clean and disinfect or sterilize reusable equipment before use on another patient).”
- Use anytime healthcare worker may come in contact with:
  - Blood or body fluids
  - Mucous membranes
  - Non-intact skin

The Environment

- Room cleaned after patient discharged
- Culture taken before new patient admitted to room
- X represents contaminated surfaces with VRE not eliminated by cleaning practices

Dressings and Treatments per F686

- Evidenced-based practice suggests that PU/PI 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.

- Clean technique (also known as non-sterile) involves approved hand hygiene and glove use, maintaining a clean environment by preparing a clean field, using clean instruments, and preventing direct contamination of materials and supplies.

- Clean technique is considered most appropriate for long-term care; for residents who are not at high risk for infection; and for residents receiving routine dressings for chronic wounds such as venous ulcers, or wounds healing by secondary intention with granulation tissue.

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Wound Management Tracer

This document can guide you in preparation for your survey around wounds care practices related to infection control for 2018.

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Wound Management Tracer-Surveyor Checklist-1

- Hand hygiene is performed before a wound procedure.
- Gloves are worn during the dressing procedure.
- A gown is worn if healthcare personnel contamination is anticipated during the dressing procedure (e.g., excessively draining wounds).
- Reusable dressing care equipment (e.g., bandage scissors) must be cleaned and reprocessed (i.e., disinfected or sterilized according to manufacturer’s instructions) if shared between residents.

- Refer to current CDC guidelines

Wound Management Tracer-Surveyor Checklist-2

- Clean wound dressing supplies are handled in a way to prevent cross contamination between residents (e.g., wound care supply cart remains outside of resident care areas; unused supplies are discarded or remain dedicated to resident).
- Dressing change conducted per physician/practitioner orders.
- Multi-dose wound care medications (e.g., ointments, creams) should be dedicated to one resident whenever possible.

- NOTE: If multi-dose wound care medications (e.g., ointments, creams) are used for more than one resident, then the medications should be stored in a central medication area and should not enter the resident treatment area. For example, a small aliquot of medication should be dispensed into a clean container for single-resident use.
Wound Management Tracer-Surveyor Checklist-3

☐ Wound care documentation in resident’s medical record reflects the condition of the wound and includes the following:
   a. Type of dressing
   b. Frequency of dressing change
   c. Wound description (e.g., measurement, characteristics)

NOTE: F686 has many more parameters listed for complete wound care documentation. Take your guidance for wound documentation from F686.

Thank you!!!
References

- Woo K, Ayello E, Sibbald RG, The Edge Effect: Current Therapeutic Options to Advance the Wound Edge. Advances in Skin & Wound Care. 2007 Volume 20 No 2
References


References

References

- NPUAP.org
  - Battling Biofilms: Winning the War Against Pressure Injuries
  - November 17, 2016
  - Presenter: Gregory Schultz, PhD

Literature and Tools on the CDC Website

- [https://www.cdc.gov/longtermcare/prevention/](https://www.cdc.gov/longtermcare/prevention/)
- Core Elements
- Checklist of Core Elements
- Leading Antibiotic Stewardship in Nursing Homes [PDF - 379 KB]
- Creating A Culture to Improve Antibiotic Use in Nursing Homes [PDF - 331 KB]
- Infection Prevention in Aging: Resources
  These infection prevention and control resources were created for a patient-centered research study in nursing homes.
- A Targeted Infection Prevention (TIP) Intervention in nursing home residents with indwelling devices: a randomized clinical trial.
- AHRQ's Nursing Home Antibiotic Stewardship Tools and Guide Project
Resources

- Advancing Excellence infection control toolkit: https://www.nhqualitycampaign.org/goalDetail.aspx?g=inf
- Centers for Disease Control (CDC) toolkit for long-term care facilities: http://www.cdc.gov/longtermcare/index.html
- Centers for Disease Control (CDC) Core Elements of Antibiotic Stewardship for Nursing Homes http://www.cdc.gov/longtermcare/prevention/antibioticstewardship.html

Federal Initiatives for Antibiotic Resistance

- White House Forum on Antibiotic Stewardship
- National Action Plan for Combating Antibiotic-Resistant Bacteria
- Executive Order - Combating Antibiotic-Resistant Bacteria
- National Strategy to Combat Antibiotic-Resistant Bacteria
- PCAST Report on Combating Antimicrobial Resistance
Resources
DEPARTMENT OF HEALTH & HUMAN SERVICES
Centers for Disease Control and Prevention

General Infection Prevention
- CDC Infection Prevention Resources for Long-term Care: http://www.cdc.gov/longtermcare

Healthcare Personnel Safety
- Occupational Safety & Health Administration (OSHA) Bloodborne Pathogen and Needlestick Prevention Standard: https://www.osha.gov/SLTC/bloodbornepathogens/index.html

Resources
- Wound Care Guidelines:
- (AAWC) Association for the Advancement of Wound Care
  www.aawconline.org
- (AAWM) American Academy of Wound Management
  www.aawm.org
- (ABA) American Burn Association
  www.ameriburn.org
- (ACFAS) American College of Foot and Ankle Surgeons
  www.acfas.org
- (ADA) American Diabetes Association
  www.diabetes.org
- (AMDA) American Medical Directors Association
  www.amda.com
- (APIC) Association for Practitioners in Infection Control
  www.apic.org
- (APMA) American Podiatric Medical Association
  www.apma.org
- (APTA) American Physical Therapy Association
  www.apta.org
- (APWCA) American Professional Wound Care Association
  www.apwca.org
- (CAWC) Canadian Association of Wound Care
  www.cawc.net
Resources

- (EPUAP) European Pressure Injury Advisory Panel
  www.epuap.org
- (ETRS) European Tissue Repair Society
  www.etrsc.org
- (EWMA) European Wound Management Association
  www.ewma.org
- International Wound Infection Institute
  http://www.woundinfection-institute.com
- (NLN) National Lymphedema Network
  www.lymphnet.org
- (NPUAP) National Pressure Injury Advisory Panel
  www.npuap.org

- (UHMS) Undersea & Hyperbaric Medical Society
  www.uhms.org
- Wound Care Institute
  www.woundcare.org
- (WMAOI) Wound Management Association of Ireland
  http://www.wmaoi.ie/
- (WOCN) Wound Ostomy and Continence Nurses Society
  www.wocn.org
- Wound Healing Foundation
  www.woundhealfoundation.net
- (WUWHS) World Union of Wound Healing Societies
  www.wuwhs.org