Wisconsin HAI Long-Term Care Education Series

March 28, 2024

WISCONSIN DEPARTMENT of HEALTH SERVICES

Wound infection prevention

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Translational scientist, family nurse practitioner, wound specialist

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Objectives

1. Describe the four steps of wound hygiene and how they contribute to infection prevention
2. Compare treatment recommendations for wounds with suspected infection
3. List sequelae of wound infection
4. Review practical tips for infection prevention in the administration and delivery of care

Long term care stats – in context

- 65,600 regulated long-term care facilities (LTCF) in the US
- ~70% of people turning 65 are expected to need long-term care at some point in their life
- 18% of the older persons will spend over a year in a nursing facility
- 58% of adults receive nursing home care after age 50

Source: Burdsall 2017; USDHH 2013; Wagner 2014; Block 2023

Uneven distribution of risk

However, the lifetime risk of receiving paid care is not evenly distributed across the population.

Lengthy spells of severe LTSS needs and paid care are much more common among older adults with few financial resources than their wealthier counterparts.

Source: Burdsall 2017; USDHH 2013; Wagner 2014; Block 2023

Infection prevention and control in LTC

- Healthcare associated infections account for as many as 380,000 deaths annually
  - Acute care facilities estimates are 1.7 million infections and 99,000 associated deaths each year

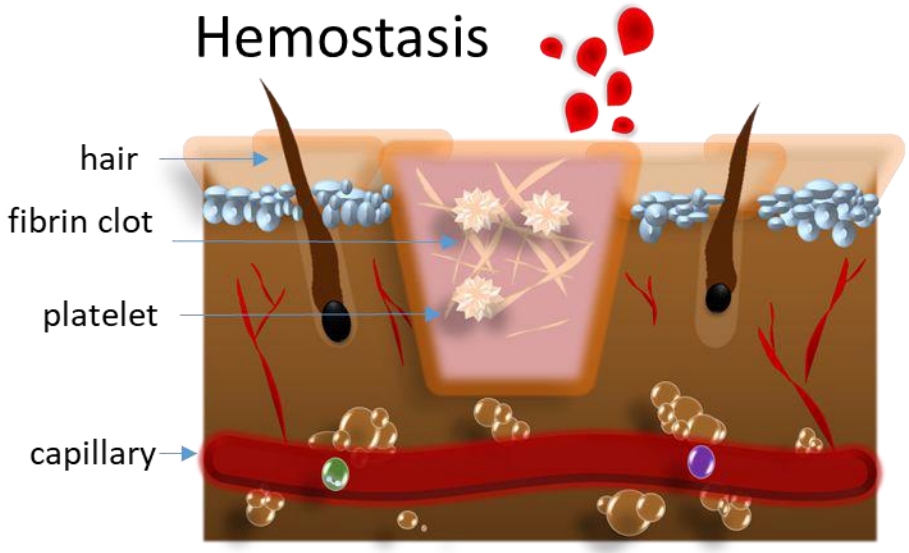
- Infection prevention and control (IPC) guidelines are well-defined in the acute care setting, evidence of effectiveness for long-term care facilities (LTCF) is missing

- Both residents AND staff have increased risk of infection

Source: Burdsall 2017; USDHH 2013; Wagner 2014; Block 2023

Stages of Wound Healing

Hemostasis

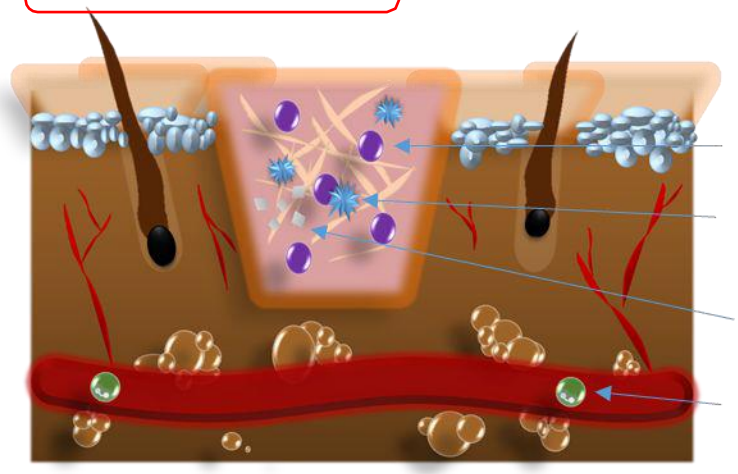


epidermis

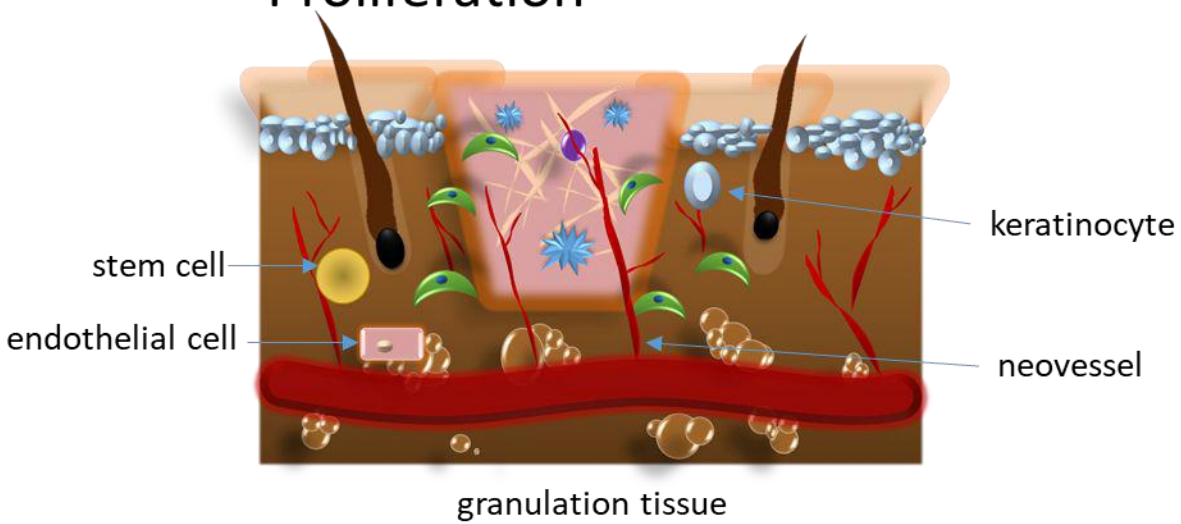
dermis

subcutaneous

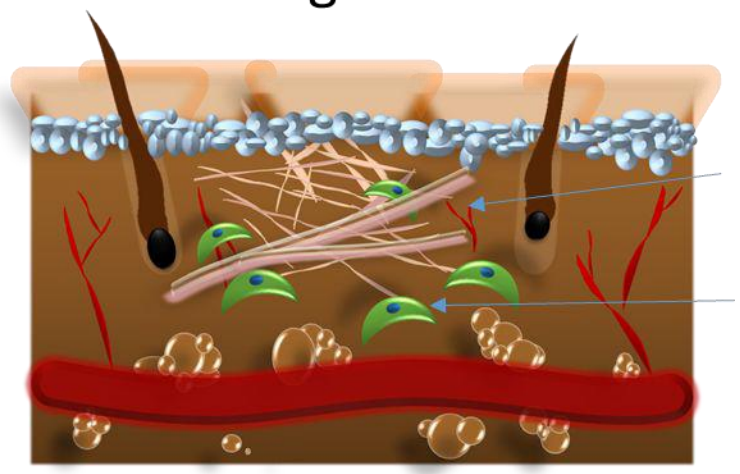
Inflammation



Proliferation



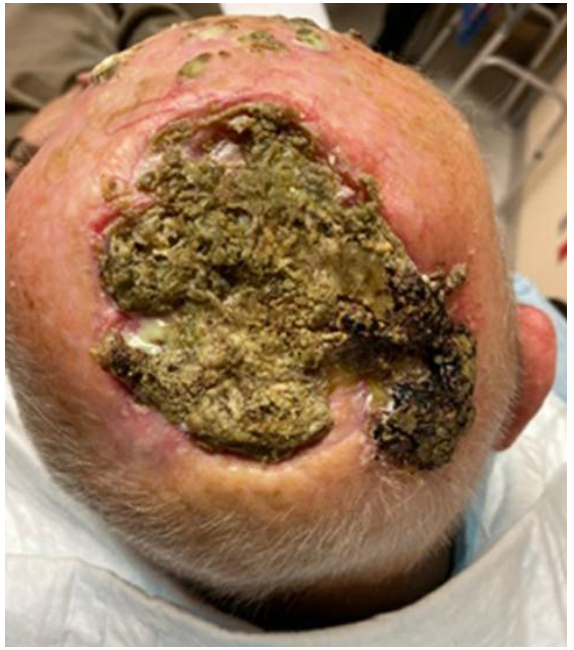
Remodeling

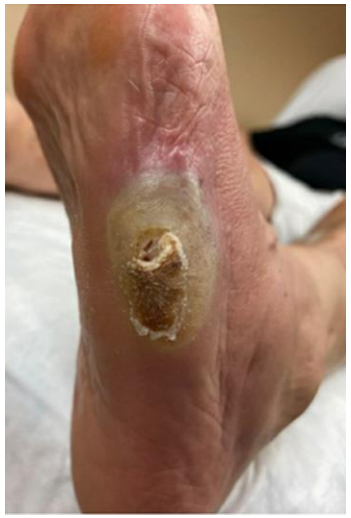


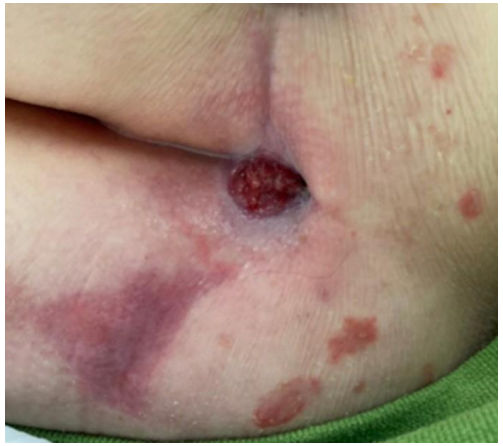
Spectrum of delayed wound healing

Modifiable and non-modifiable

- Comorbid conditions
- Nutritional adequacy
- Habits and physical capabilities
- Wound environment







Conditions that contribute to delayed wound healing

Systemic Factors affecting wound healing		
Nutrition and Hydration	Deficiencies, swallowing difficulties	Fluid restrictions
Medications	Steroids, anticoagulants, chemotherapy	
Systemic Infection	Vasopressors, increased metabolic demand	
Incontinence	Fecal, urinary, frequency	
Immobility	Use of calf muscles, repositioning	
Comorbid disease states	Endocrine disorders	Diabetes, thyroid disorder
	Hematologic	Anemia, systemic sclerosis, polycythemia, myeloproliferative disorders
	Cardiopulmonary problems	COPD, CHF
	Circulatory disease	Peripheral arterial disease, venous insufficiency , lymphedema, HTN, history of DVT or CVA
	Gastrointestinal	Inflammatory bowel disease, malnutrition, gastroparesis
	Autoimmune	Rheumatoid arthritis, lupus, inflammatory bowel disease
	History of radiation, sun exposure, smoking	

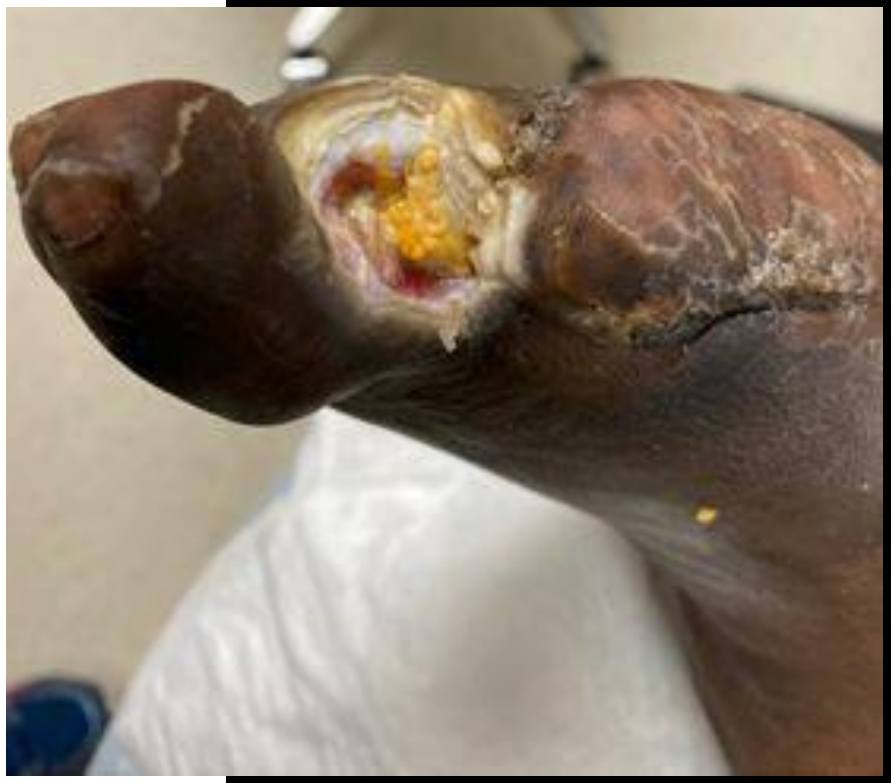
All patients undergo a comprehensive exam including:

- complete history
- physical assessment

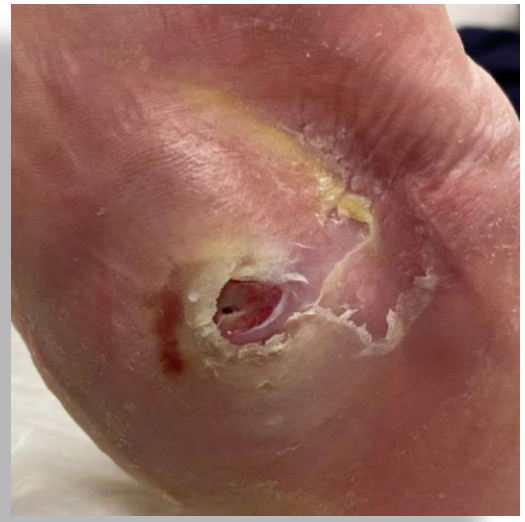
Source: McGuire

Components of Wound Assessment

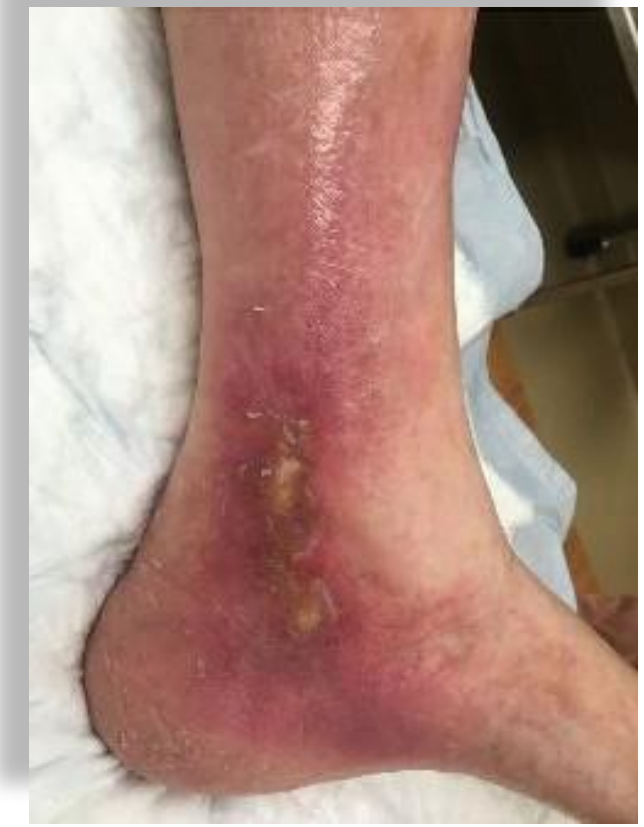
- Location
- Size (tunneling/undermining)
- Drainage
- Wound tissue
- Odor
- Peri-wound
- Edges/Margins
- Full thickness or partial thickness



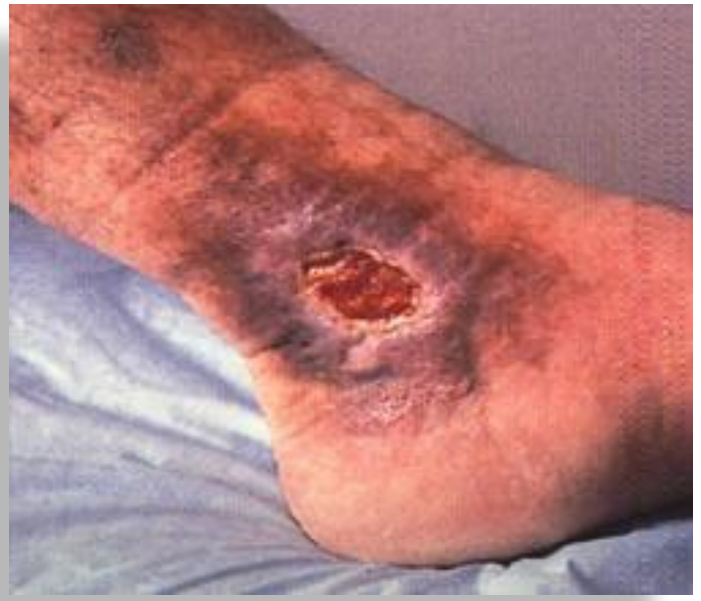
Peri-wound



Maceration – softening of the tissues; is due to excess moisture and is considered an abnormal finding. It presents as white tissue at the edges of the wound

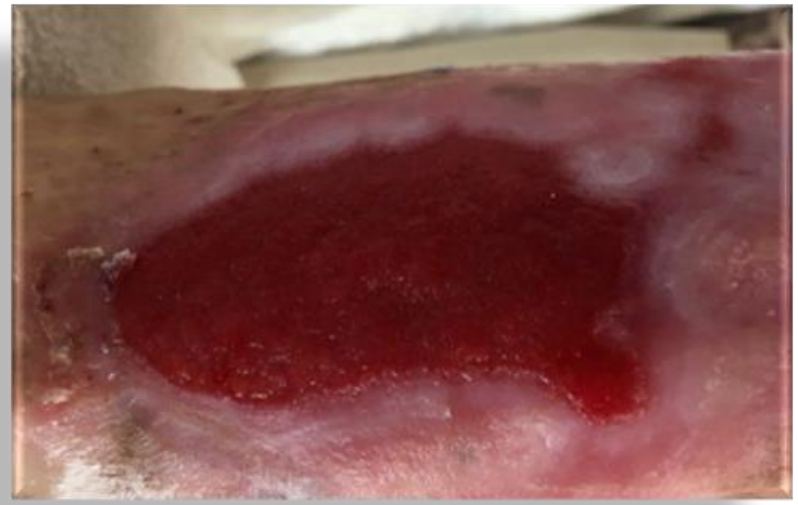


Erythema – redness; not necessarily from infection

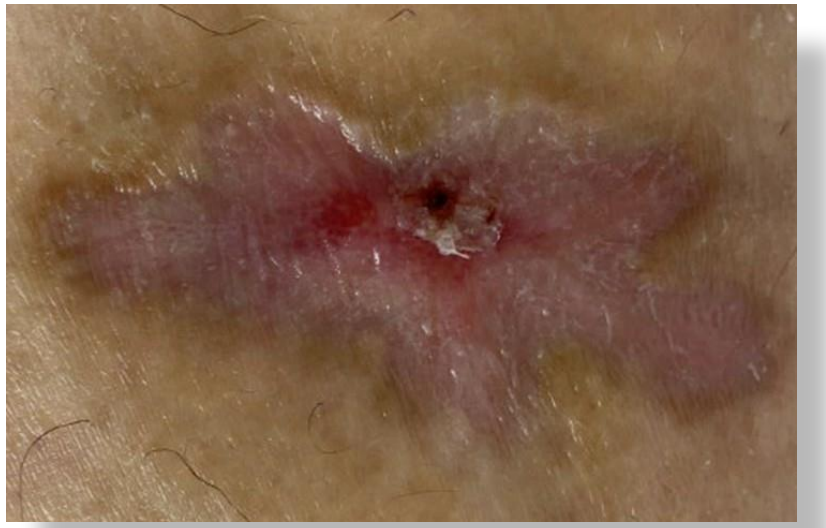


Hyperpigmentation/hemosiderin staining
heme = blood
sid= iron
Permanent staining

Tissue Types

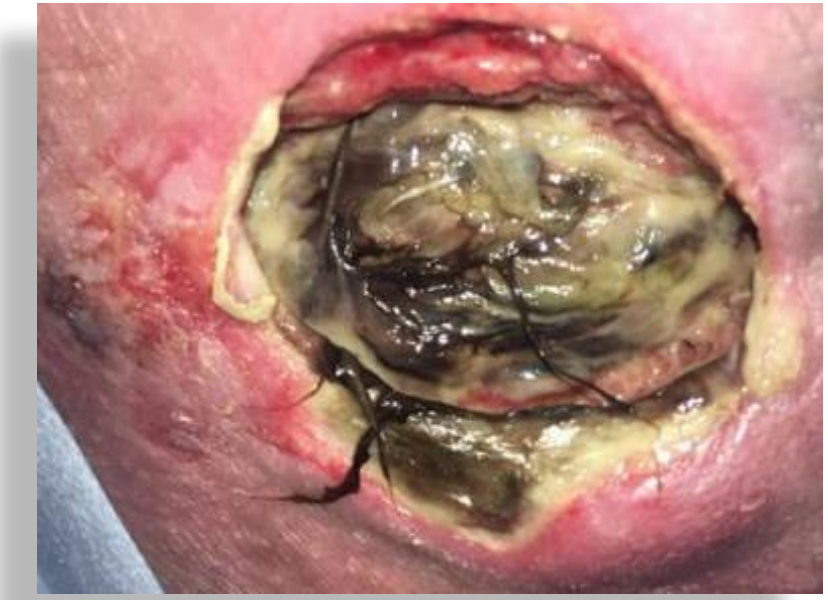


Granulation – tissue composed of new blood vessels, connective tissue, fibroblasts and inflammatory cells which fills an open wound when it starts to heal; typically appears deep pink or red with an irregular, granular surface

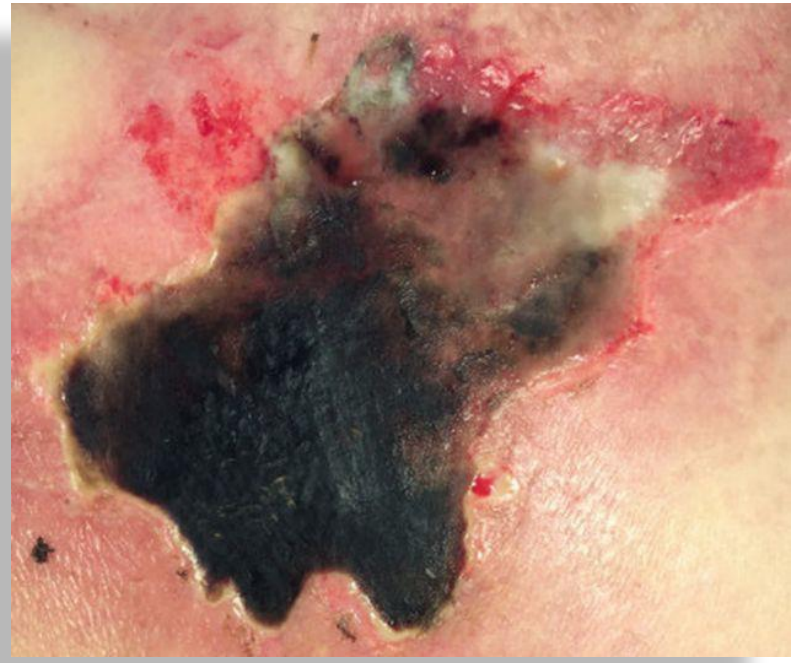


Epithelialization-Regeneration of epidermis across a wound surface. The color of the epithelium ranges from pearly to pink

Tissue Types continued

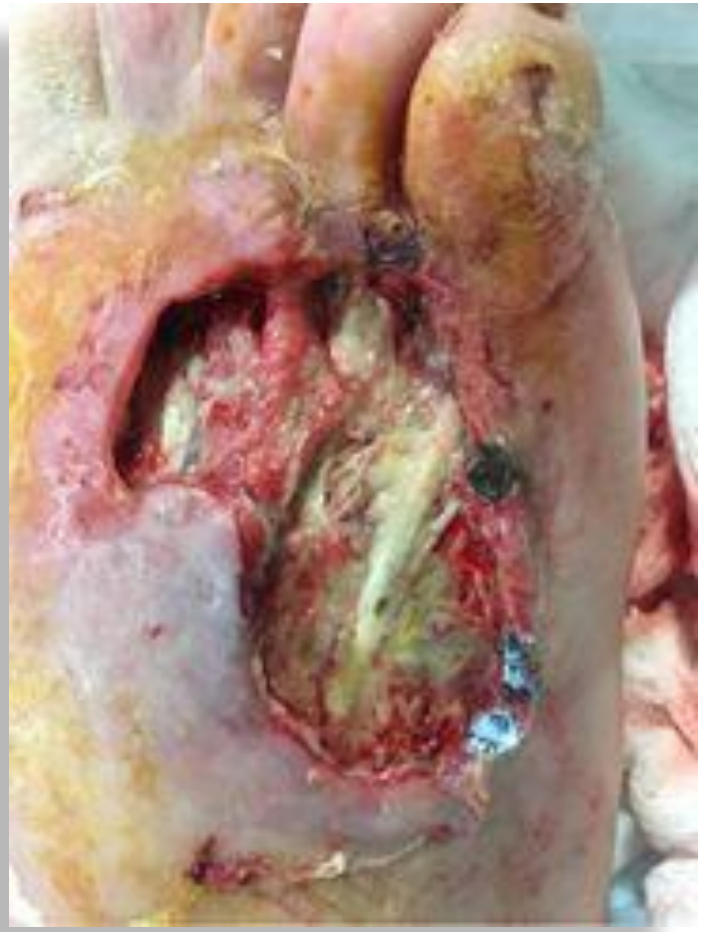


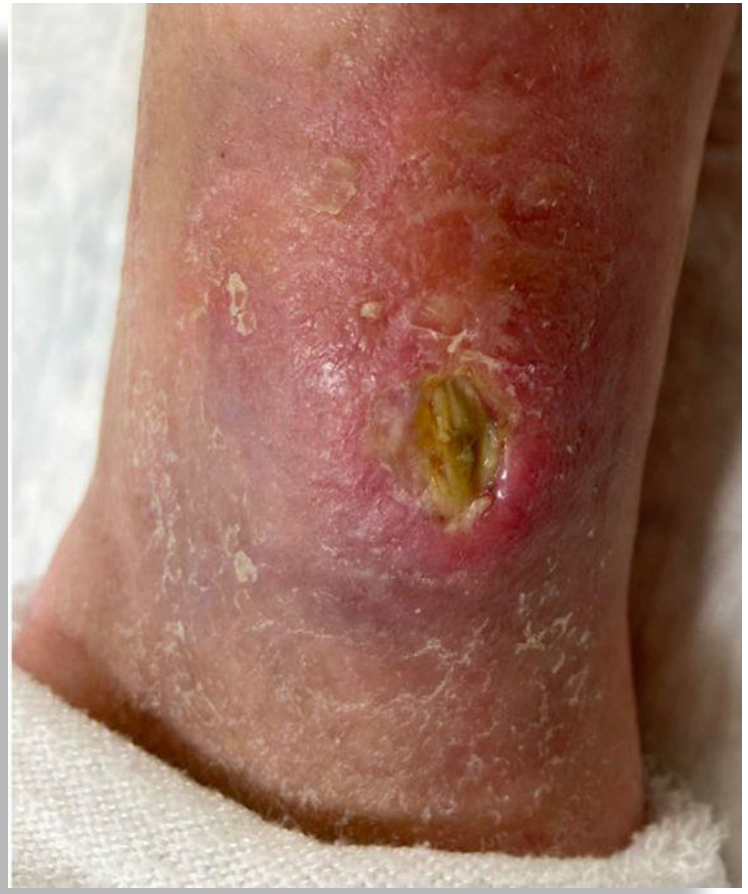
Slough – soft moist avascular (devitalized) tissue; may be loose or firmly adherent



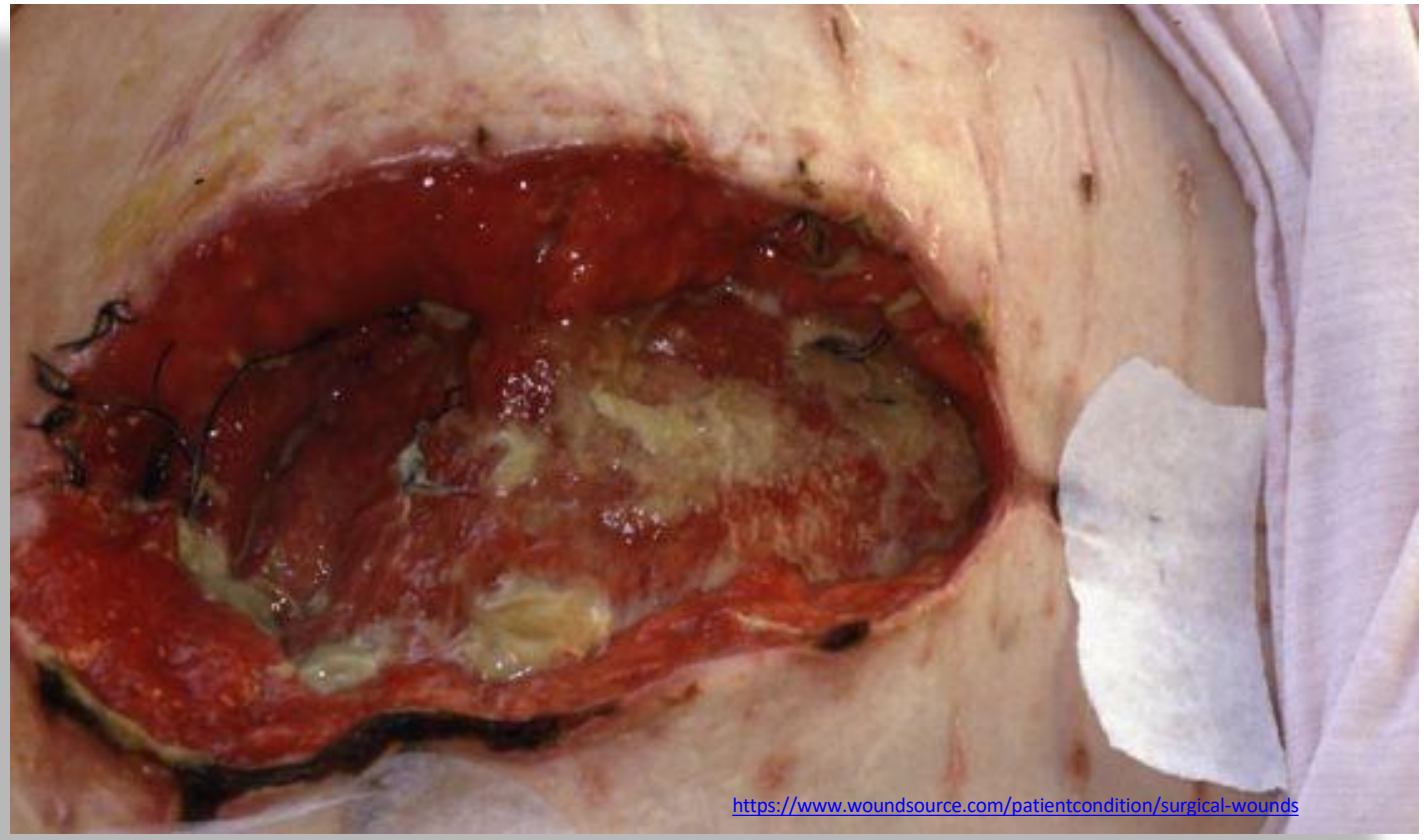
Eschar – Black necrotic devitalized tissue; tissue can be loose or firmly adherent, hard, soft or soggy

Tendon/ fascia



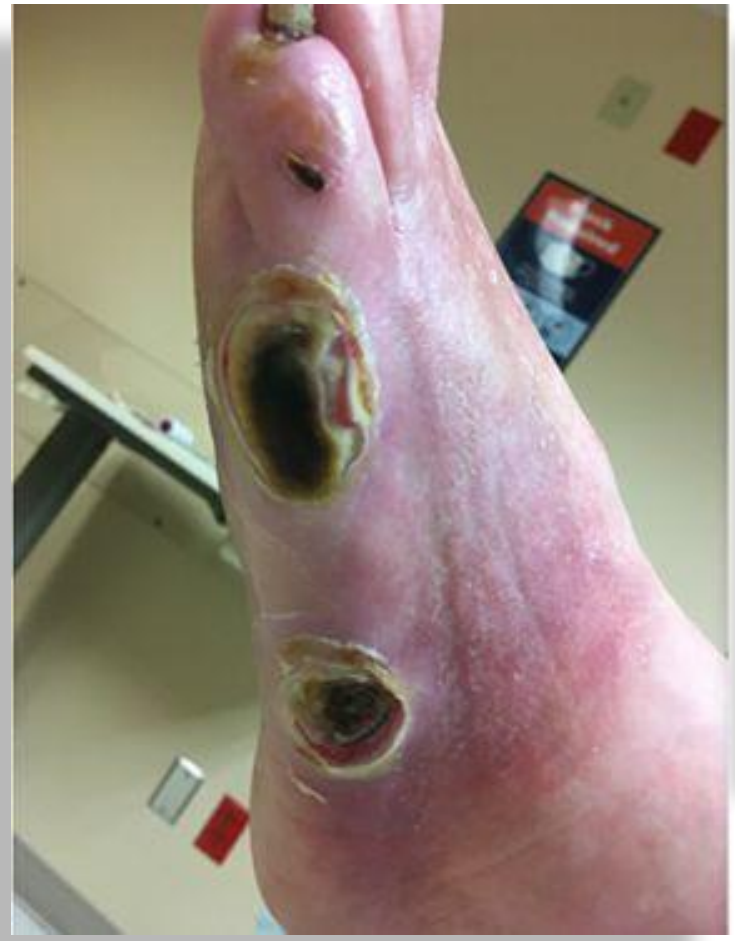


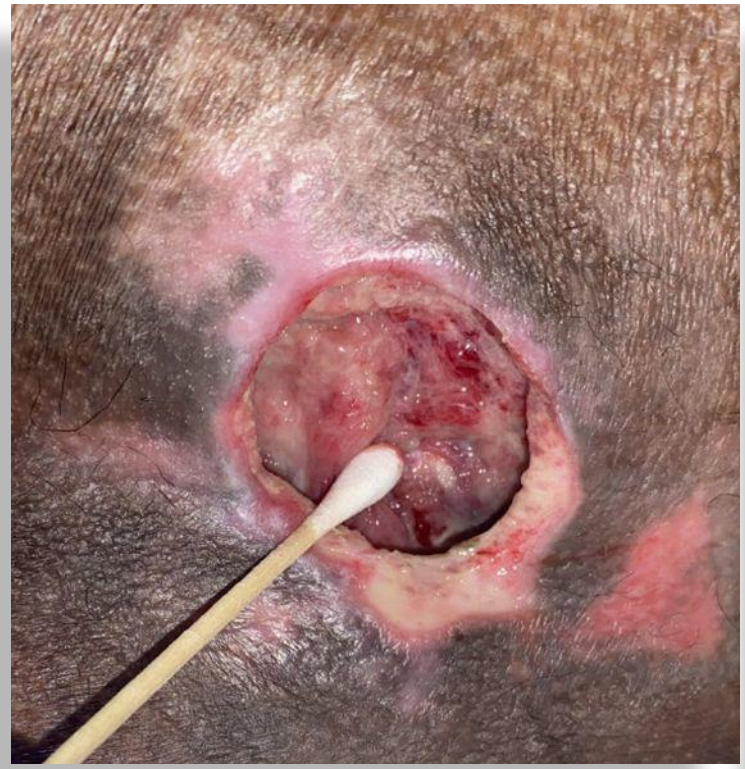
Organ and vessel

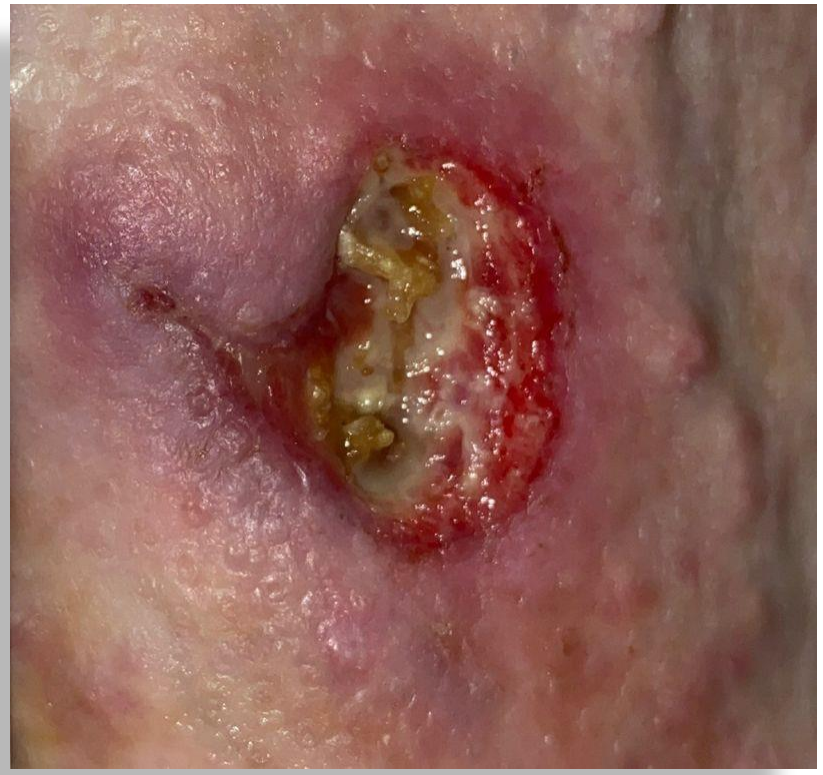


https://www.woundsource.com/patientcondition/surgical-wounds

Bone





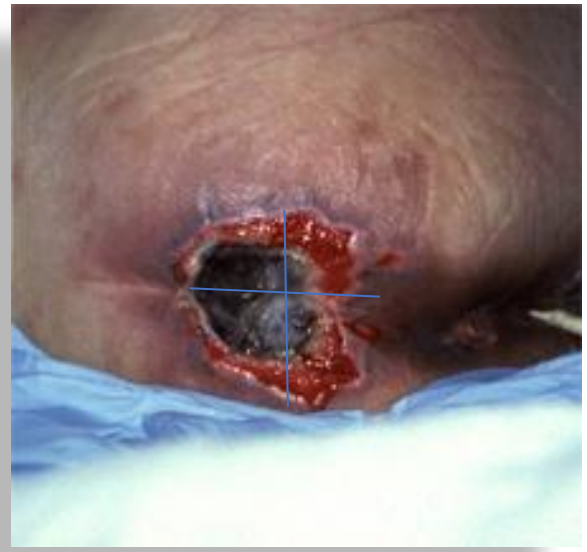


Probe to bone

- Using a sterile blunt metal tool gently search the base of the wound for hard, gritty surfaces
- Screening tool in conjunction with the patient's pretest probability
- Reliability may vary by the ulcer location and the expertise of the clinician performing the test
    - Best on the foot and evidence is on DFUs
- Systematic review evaluating the performance of the probe-to-bone test (using bone histopathology or culture as the reference standard):
    - pooled sensitivity 87%
    - specificity 83%

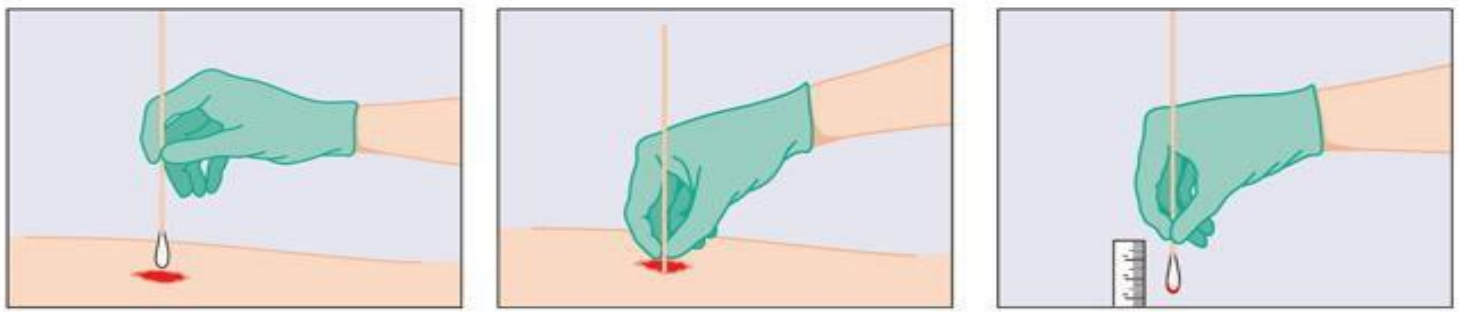
Sources: Lipsky 2004; Butalia 2008; Grayson 1995; Alvaro-Afonso 2014; Garcia Morales 2011; Lam 2016; Senneville 2016

Wound Measurement

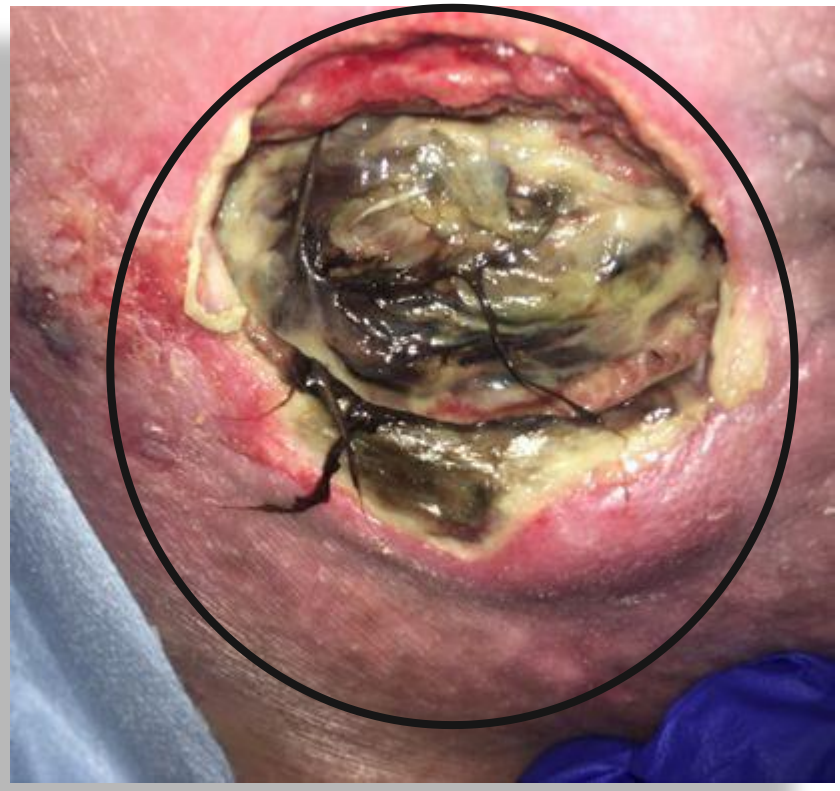


Do not estimate size by comparing to an object
(e.g. wound is about the size of cheeseburger)

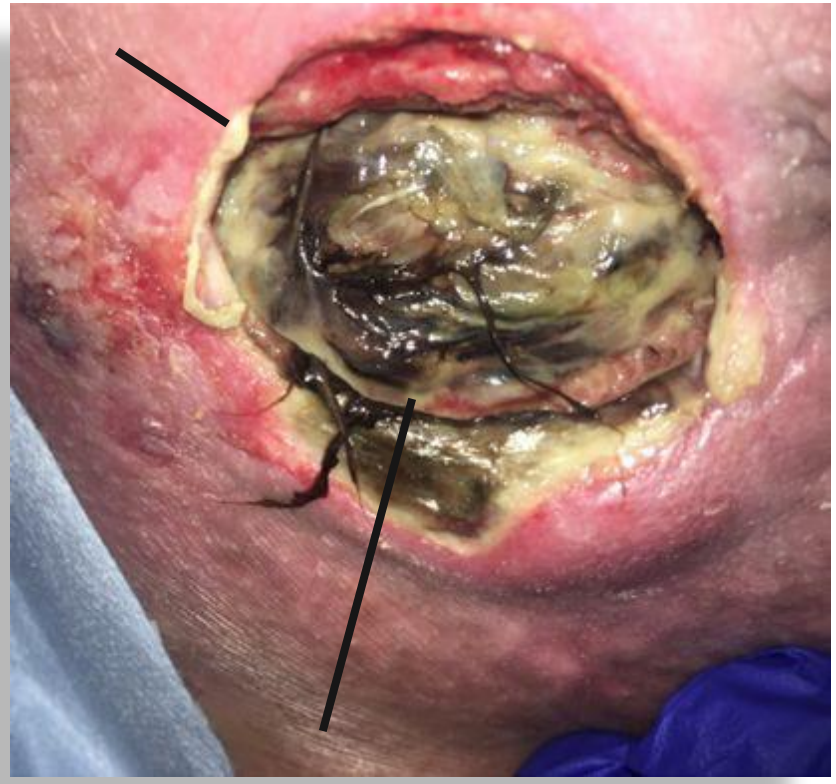
1. Length=longest length from patient head to toe position
2. Widest=widest width from patient side to side position
3. Depth (if >0.1cm) = gently place cotton tipped applicator into deepest part of wound



Undermining versus Tunneling

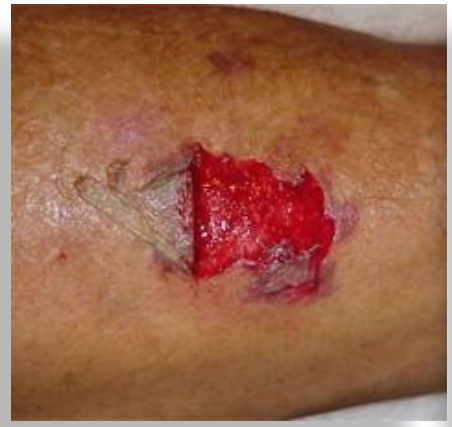
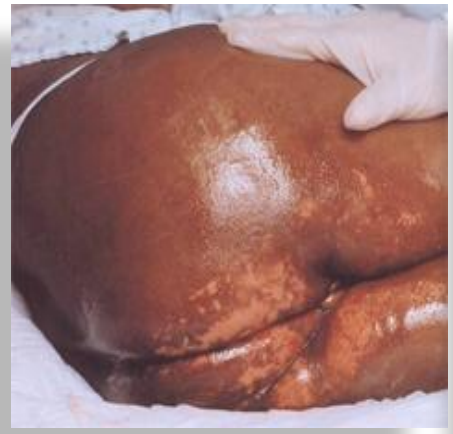


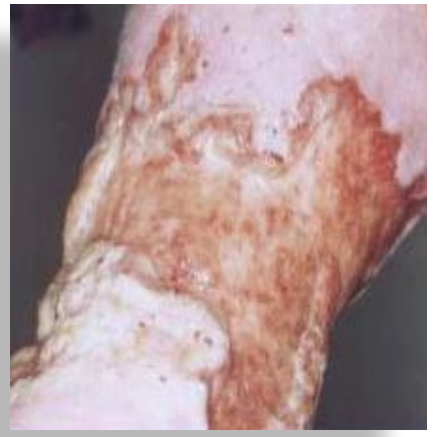
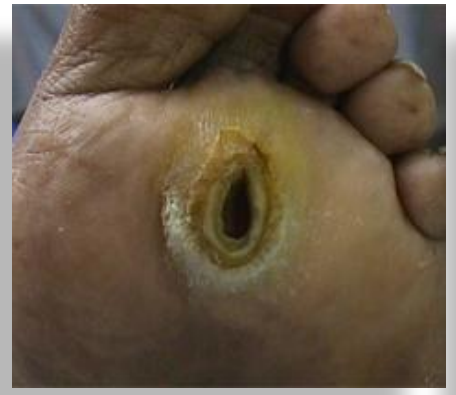
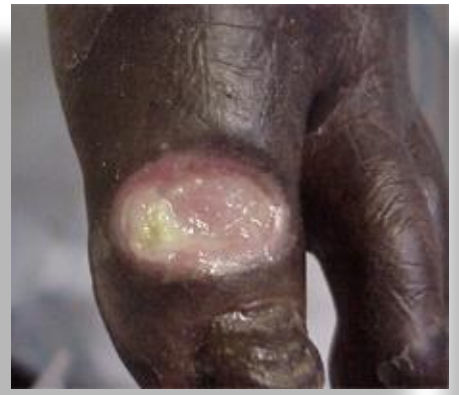
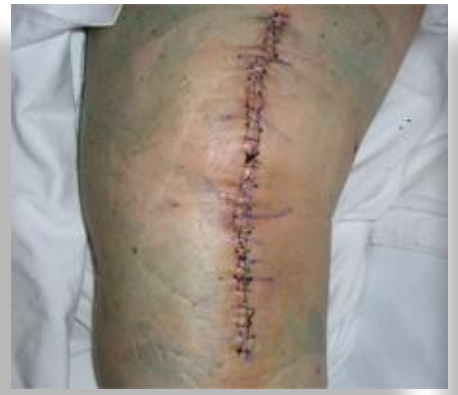
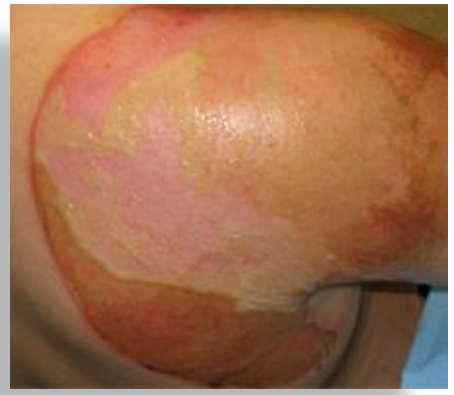
Undermining



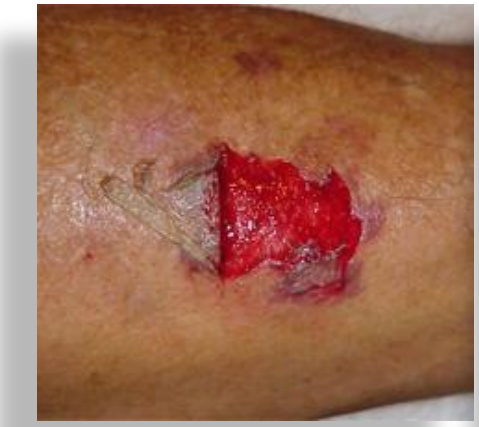
Tunneling

Wound types

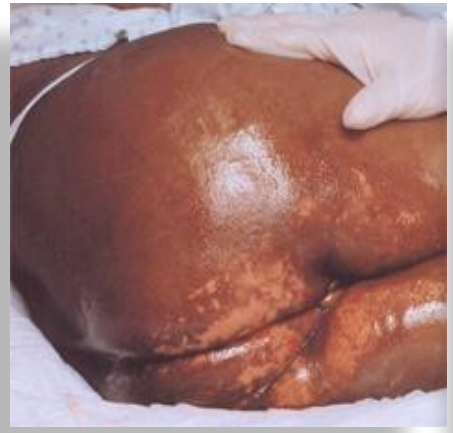



Wound types

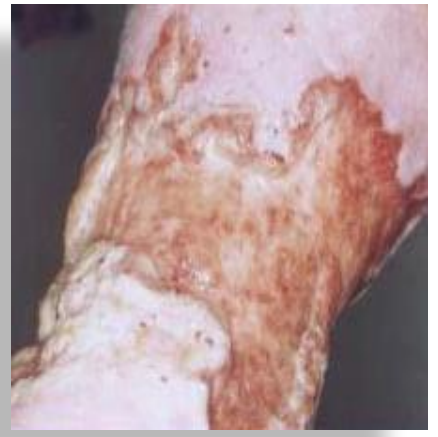


Skin Tear

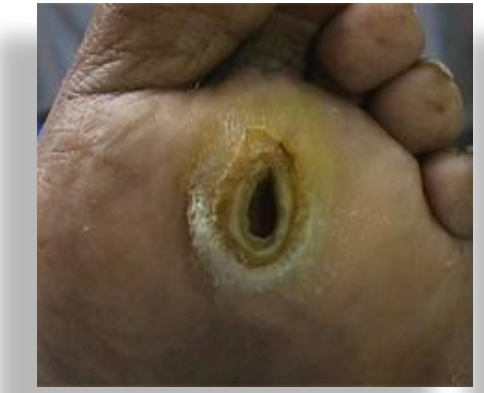


Perineal Dermatitis

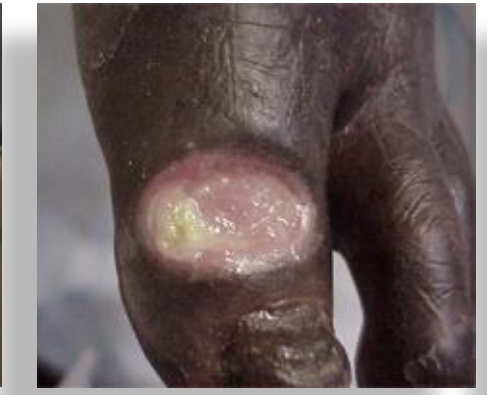
Pressure Ulcer



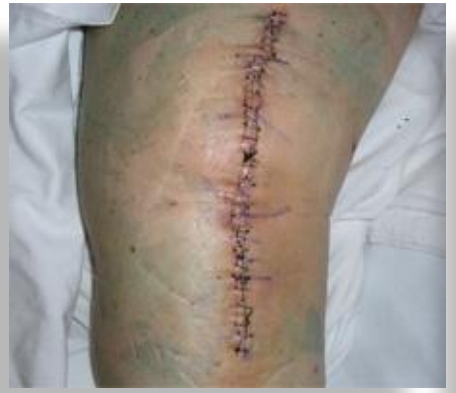
Venous Ulcer



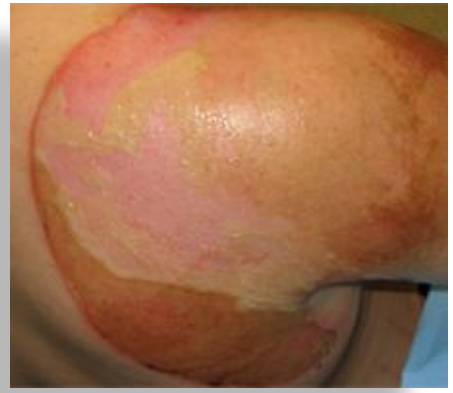
Diabetic Ulcer



Arterial Ulcer



Surgical Wound



Burn

Wound Hygiene

- A protocol of care that is delivered every time wound care is provided
- 4 simple steps
- Implemented world-wide

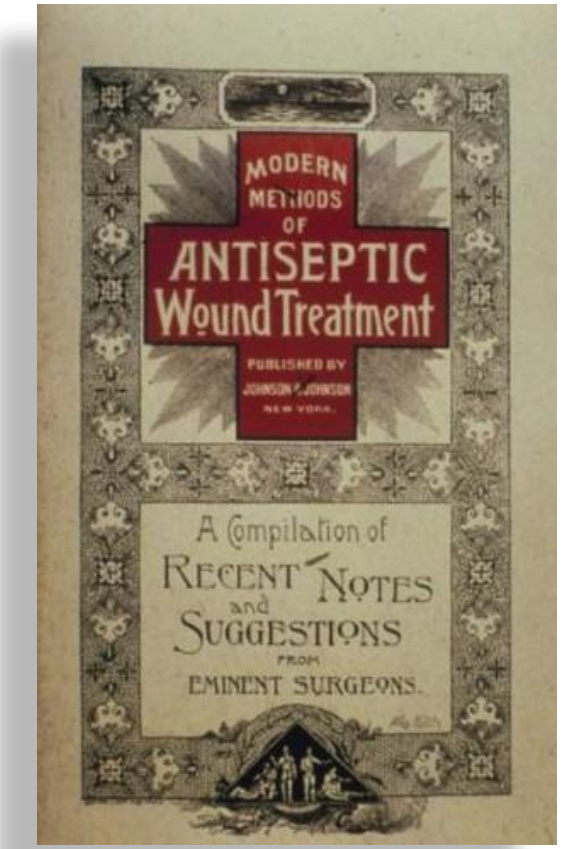
Source: Murphy 2020

Wound Hygiene

1. **Cleanse**
2. Debride
3. Refashion
4. Dress

Cleanse

Non Cytotoxic Cleansers:	Cytotoxic Cleansers:
• Normal saline • Hypochlorous acid • Soap (mild) and water	• Non-dilute bleach solutions • Povidone Iodine Solution • High dose silver (silver sulfadiazene, certain contact layers) • Chlorhexidine Gluconate • Hydrogen Peroxide
Cytotoxicity: the dose makes the poison	



Sources:
Punjataewakupt

Effective/safe antimicrobials

- Hypochlorous Acid (HClO)
- Same molecule secreted by neutrophils
- Non-toxic to fibroblasts
- A 15-second soak leads to 7 log reduction in pathogenic bacteria including:
  - *K pneumonia;*
  - *E faecalis,*
  - *S aureus* including *MRSA*
  - *S epidermis*
  - *A baumanii*
  - *P aeruginosa*
  - *E coli*
  - *C albicans*

Effective/Safe antimicrobials

- Methylene Blue/Gentian Violet
- Medical-Grade Honey
- Silver & Copper
- DACC
- PHMB
- Cadexomer Iodine*
    - * betadine is potentially cytotoxic and should not be used on open wounds as better choices are usually available.

•All are available in advanced topical wound dressings

How to Cleanse Wounds

- ✓Wash the wound, peri-wound, and the entire extremity
- ✓Sterile water/normal saline = tap water
- ✓Don’t need to excessively scrub,
  -but moderate pressure as tolerated
- ✓Use gauze or clean wash cloth

How to Cleanse Wounds

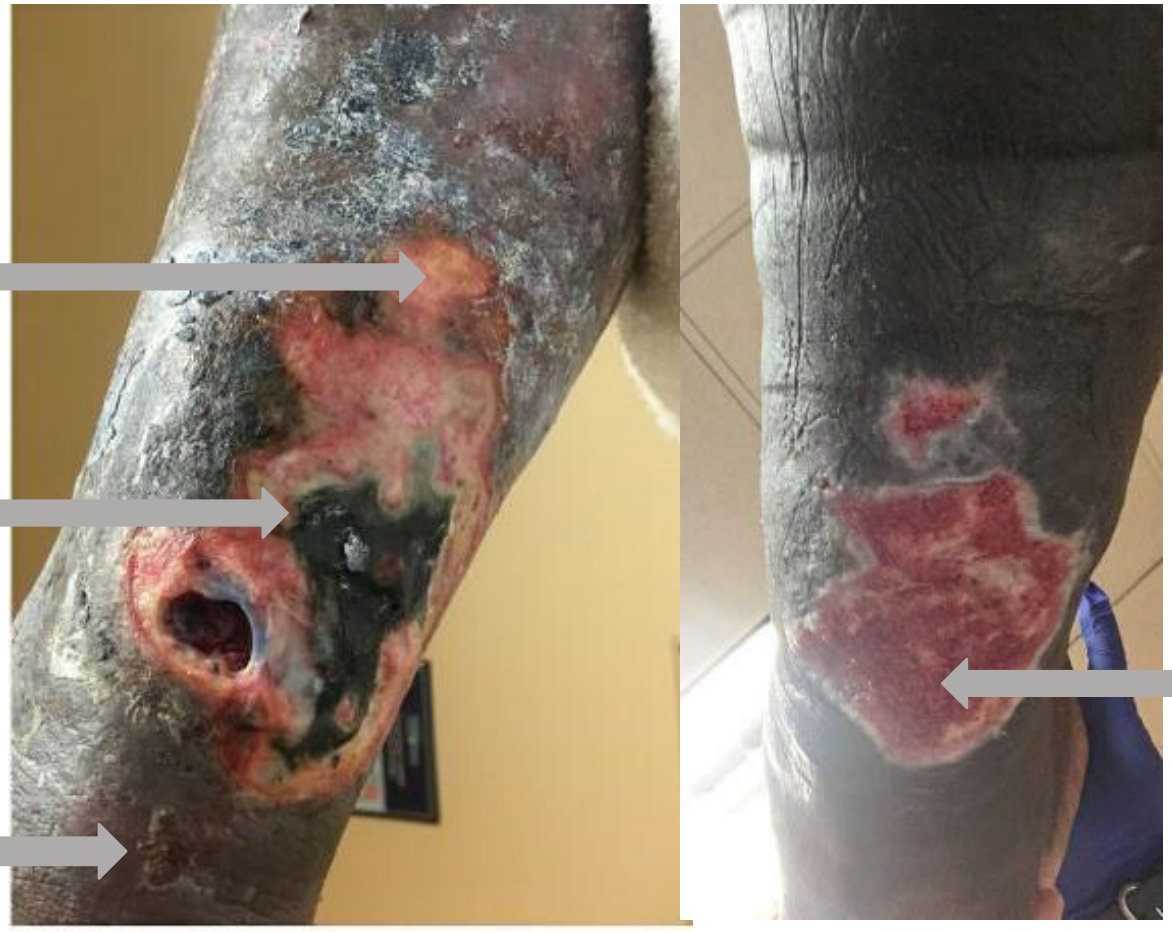
- Decrease bacteria/fungus, optimize skin integrity
- <u>Don’t let patients soak their wounds!</u>
- Moisturize (eczema, diabetic autonomic neuropathy)

Wound Hygiene

1. Cleanse
2. **Debride**
3. Refashion
4. Dress

Bioburden

the bacteria and inflammatory contents (proteases, pro-inflammatory cytokines) of a wound that potentiates the inflammatory stage and limits healing



slough

eschar

hyperkeratotic plaques

granulation

* Debridement of hard-to-heal wounds is standard of care

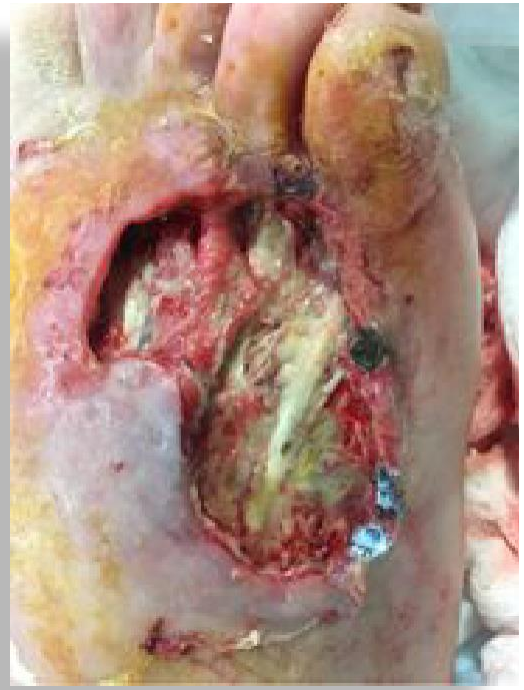
Sources: Doughty

Forms of debridement

Faster

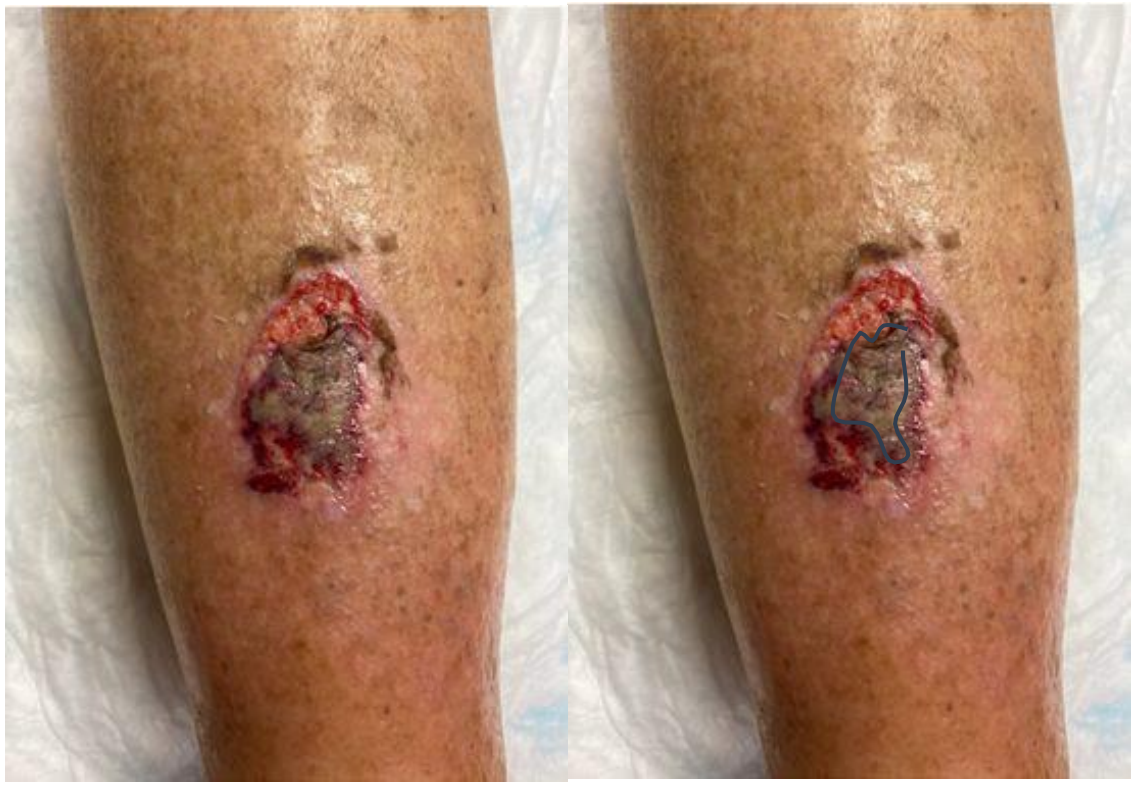
Slower

- Sharp
- Biological
- Conservative sharp
- Mechanical
- Chemical
- Enzymatic
- Autolytic

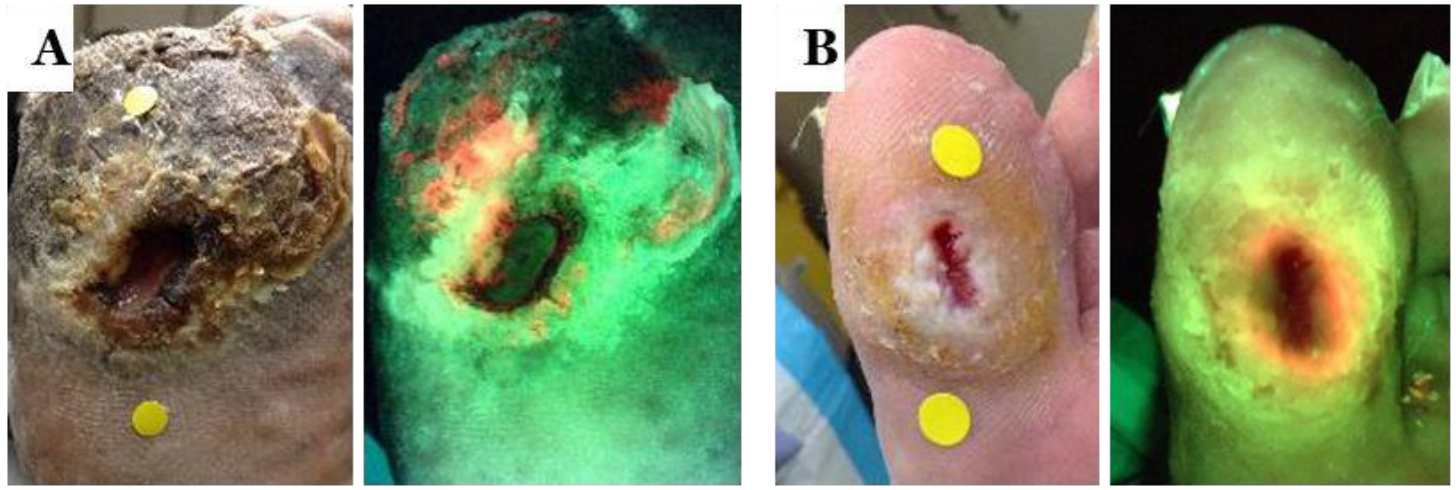


Debridement

- Removes necrotic tissue, which minimizes proteolytic enzymes
- Removes biofilm
- Decreases bacterial bioburden
- Decreases inflammation
- Promotes epithelial edge advancement

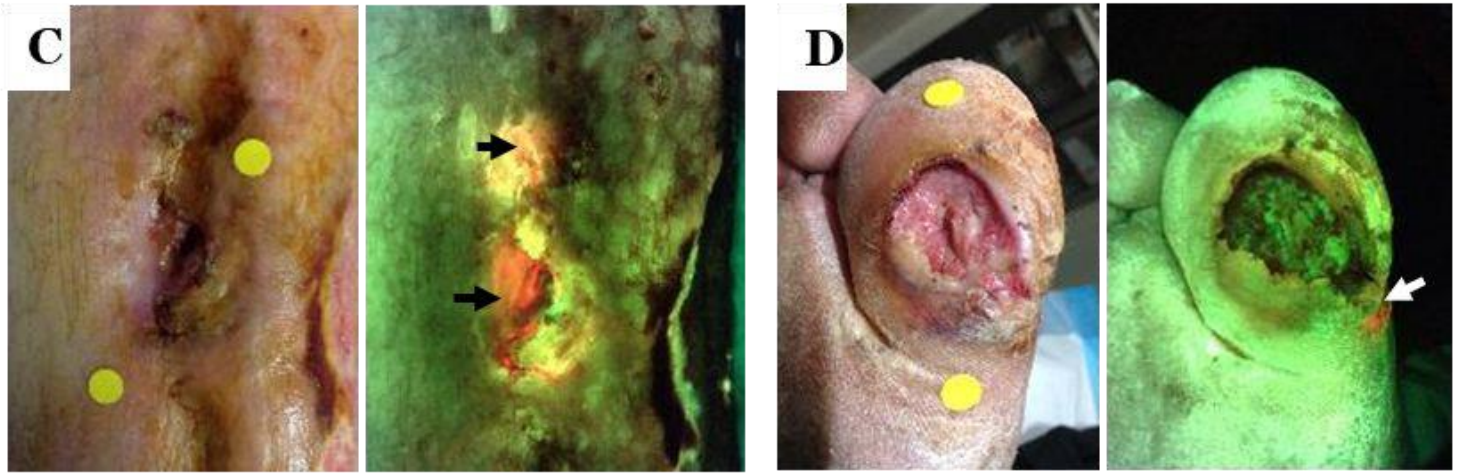


Fluorescence imaging reveals hidden load



Serratia marcesens and mixed anaerobes (heavy growth)

Proteus mirabilis (light growth)



Mixed bacteria (heavy growth)

Mixed bacteria (heavy growth)

Green = matrix components from tissues
Red/pink = bacteria (>10^4 CFU/g)

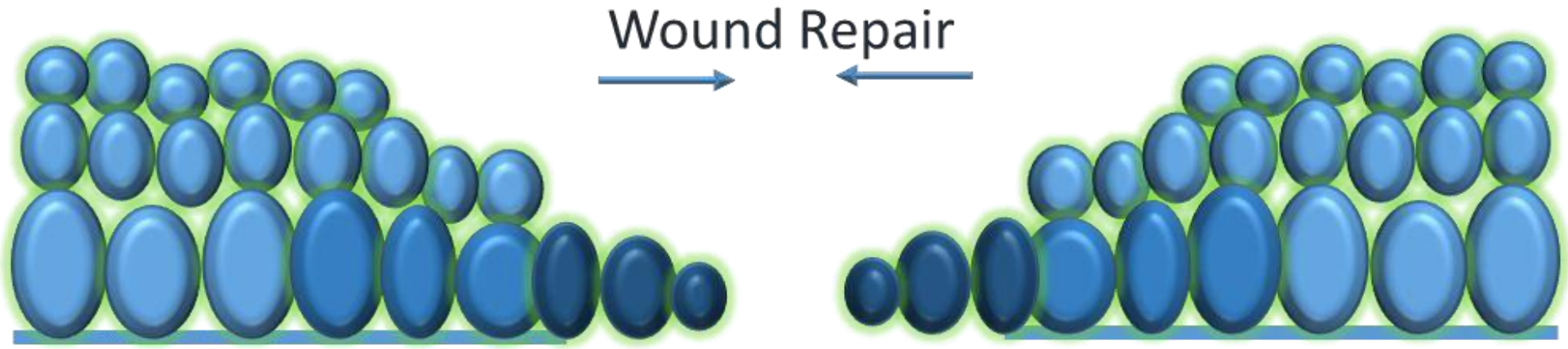
Wound Hygiene

1. Cleanse
2. Debride
3. **Refashion**
4. Dress

Refashion edges

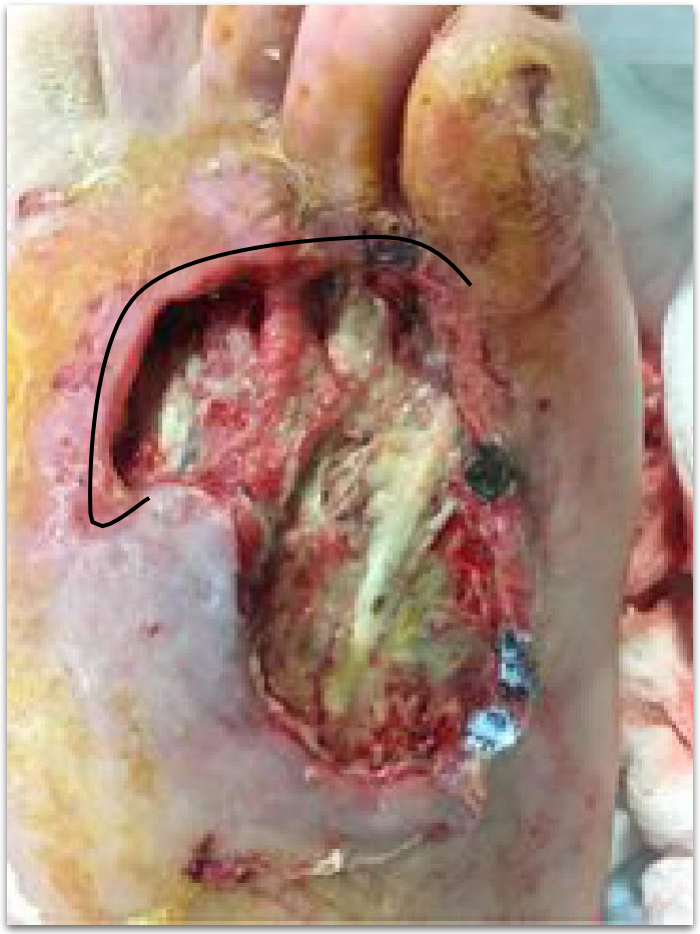
Goals:

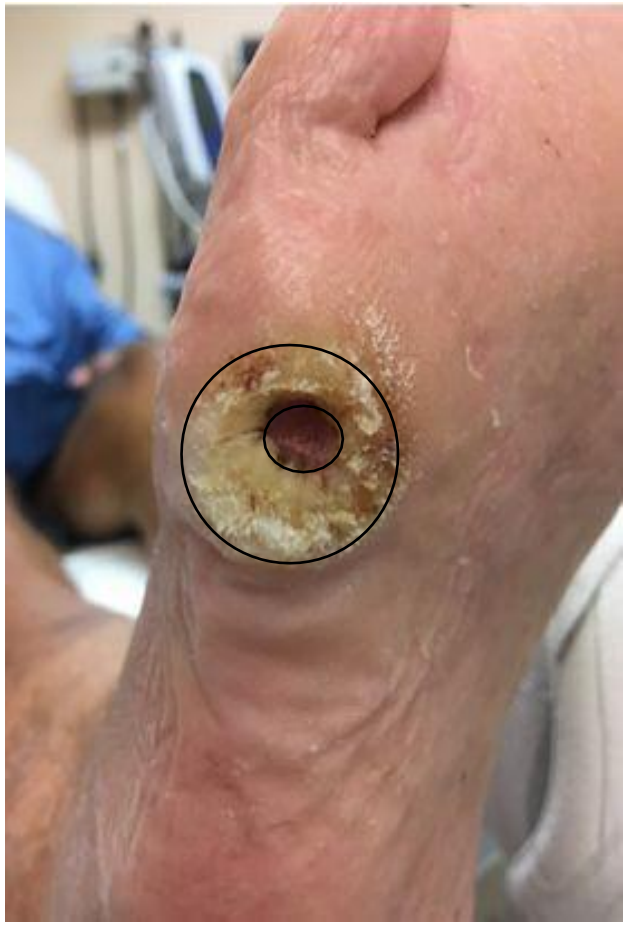
- attached edges
- “cereal bowl” shaped wound
- epithelial edge advancement



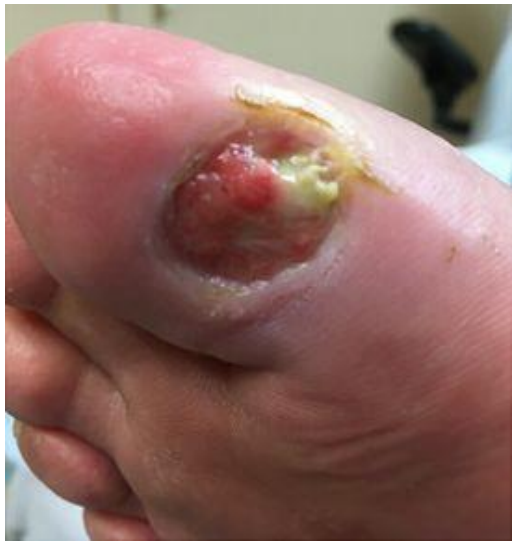
Source: Pilcher, 1999

Refashion edges

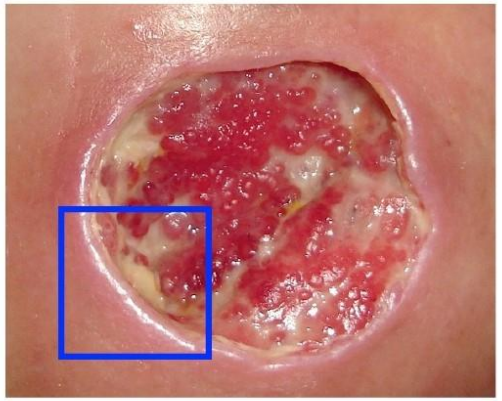




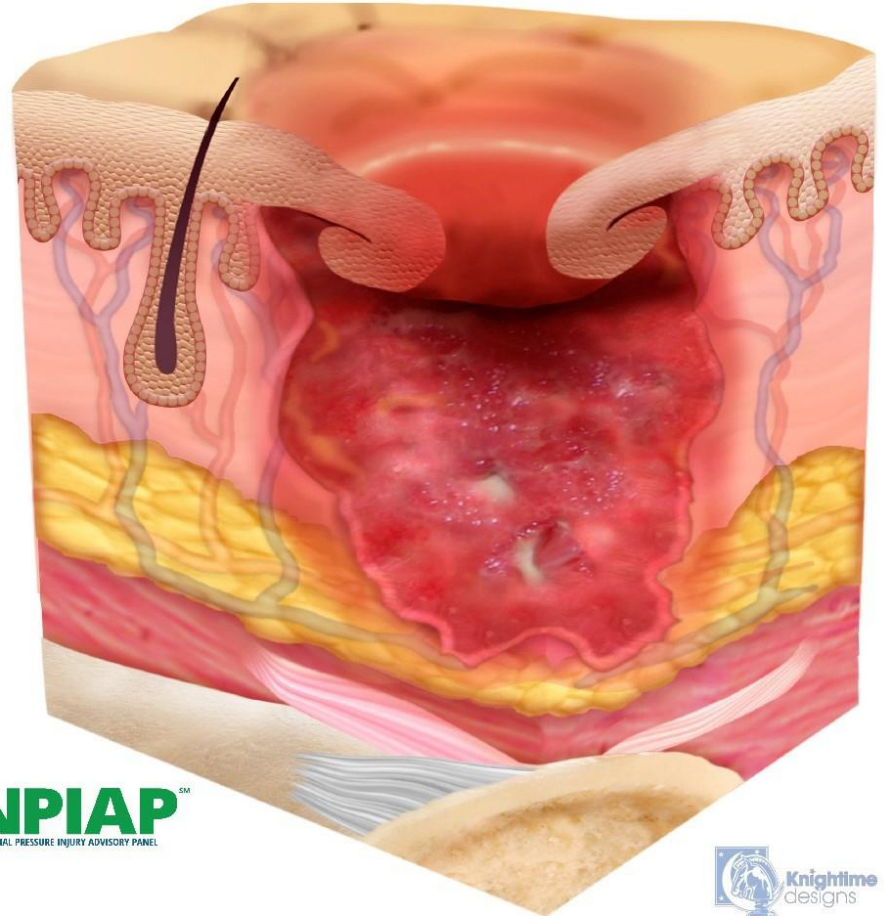
- Epibole
- Callus
- Hyperkeratosis
- Un-attached edges



Epibole



Area of Focus



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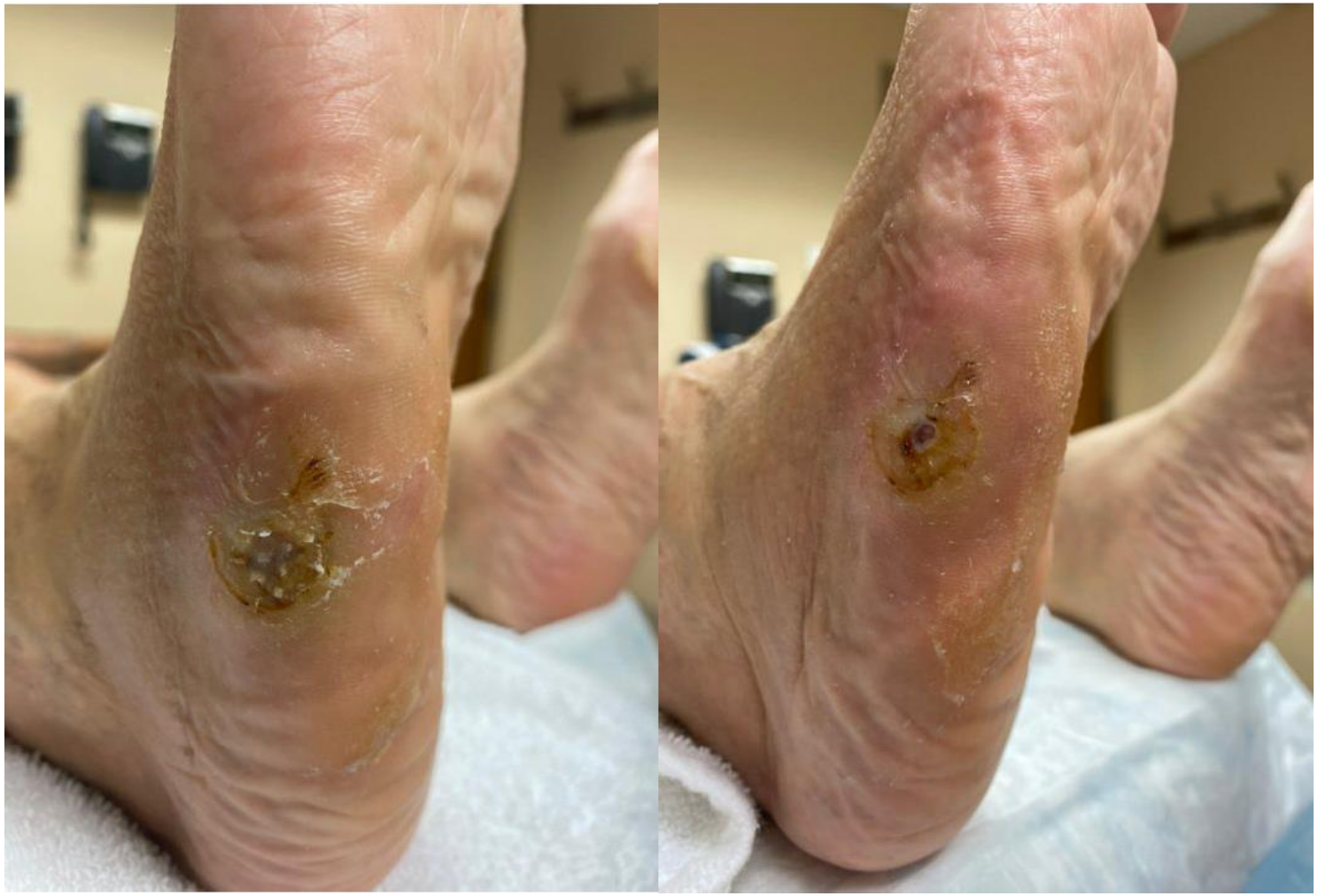
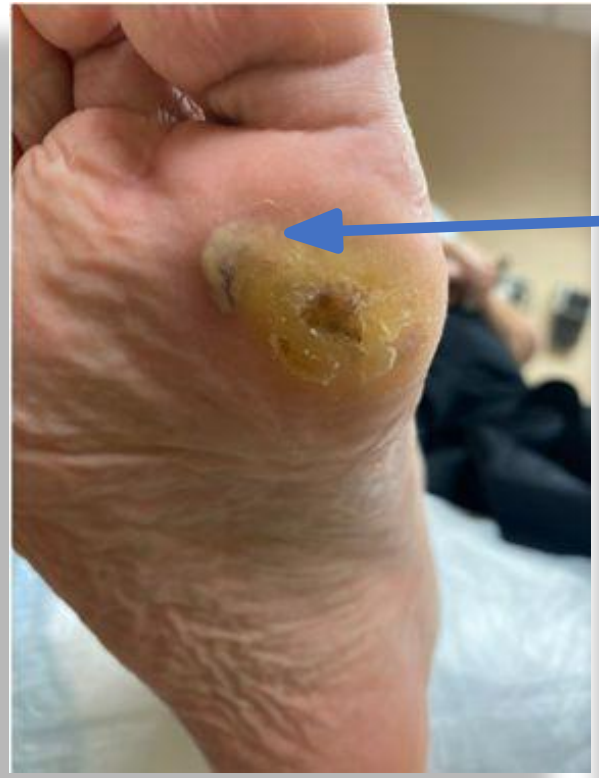
Knightime designs

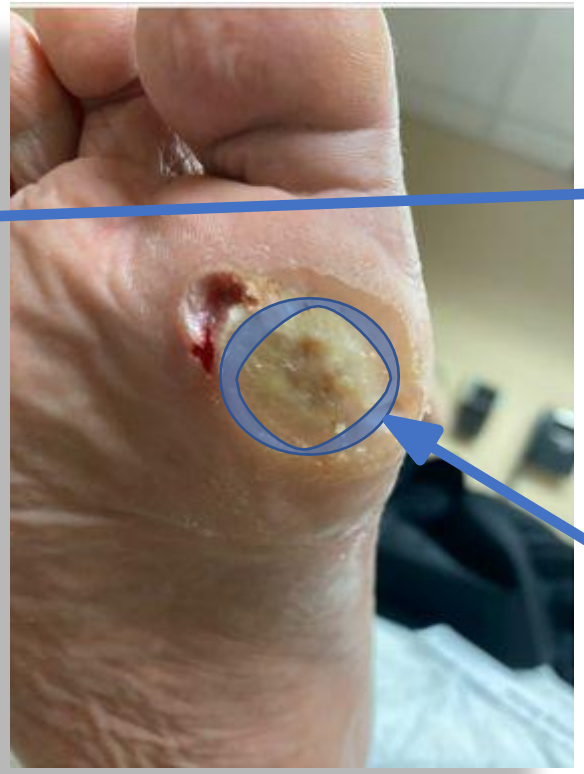
Refashion Edges

- Diabetic foot ulcer presentation to wound clinic after 3x/week RN dressing changes and non-contact low frequency ultrasound.
- Presented with wound bed obscured by hyperkeratosis.
- Curette callus to go layer by layer - allows investigation of whether ulcer is present



Removal of blister and callus reveals wound base





- H/o neuropathic ulcer to site
- with new bullae
- Fluctuant area where we know there is a pocket of non-viable tissue and/or fluid
  - scalpel
  - curette
- Curette remaining callus to go layer by layer
  - allows investigation of whether ulcer is present

Wound Hygiene

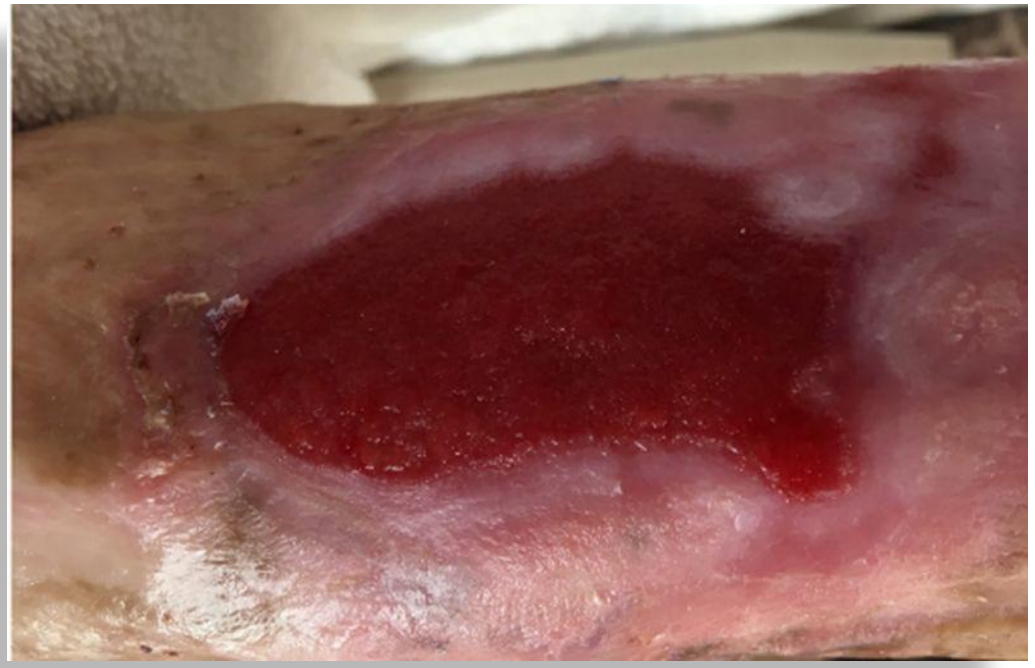
1. Cleanse
2. Debride
3. Refashion
4. **Dress**

Dress = Moist Wound Healing

Published in Lancet by Dr. Winter in 1962

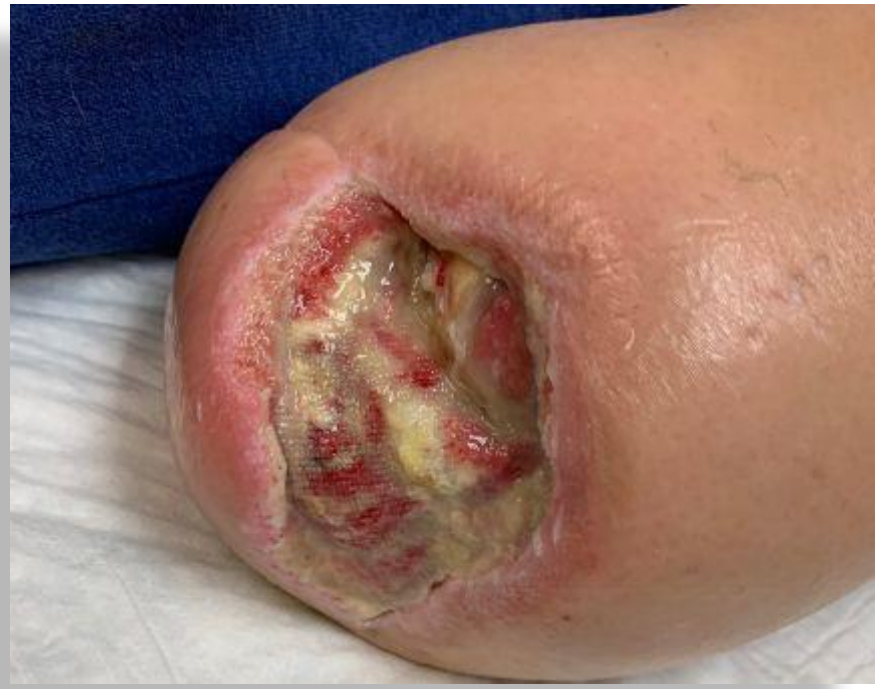
Moist wounds heal:

- ✓ Faster
- ✓ With less scarring
- ✓ With fewer infections
- ✓ More cost effectively
- ✓ And less pain



Source: Winter 1962

- No soaking!
- Don't leave open to air
- Wounds don't need to "air out"
- Caveat: eschar on ischemic limbs

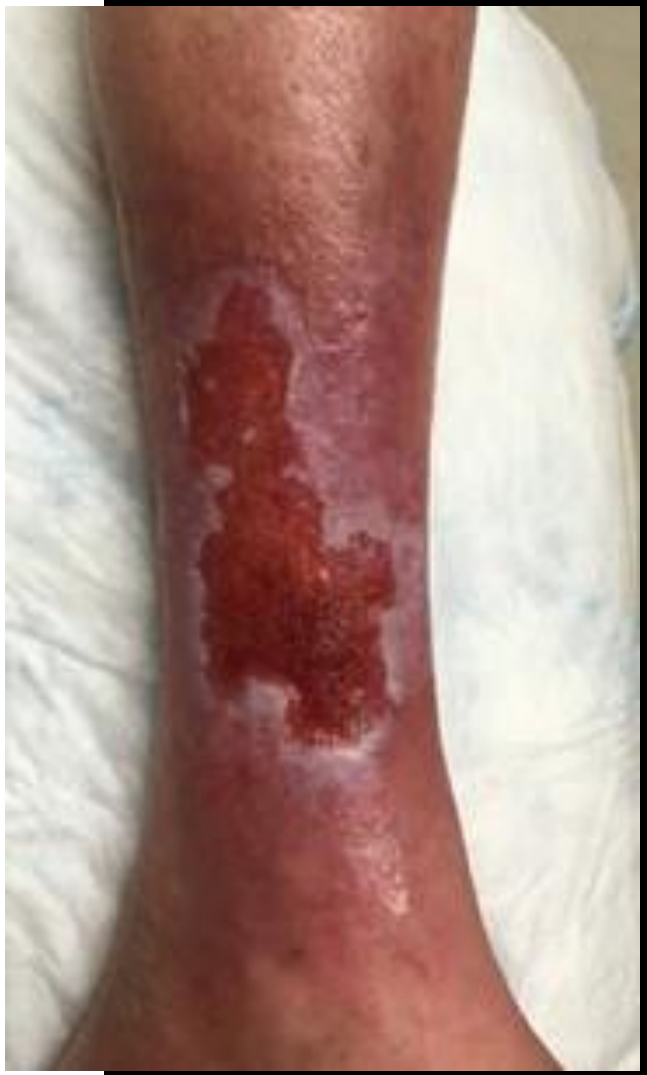


Winter GD. Formation of the scab and the rate of epithelization of superficial wounds in the skin of the young domestic pig. Nature. 1962;193:293-294. doi:10.1038/193293a0

Moisture balance

- Wound drainage is irritating to surrounding skin = skin breakdown and dermatitis

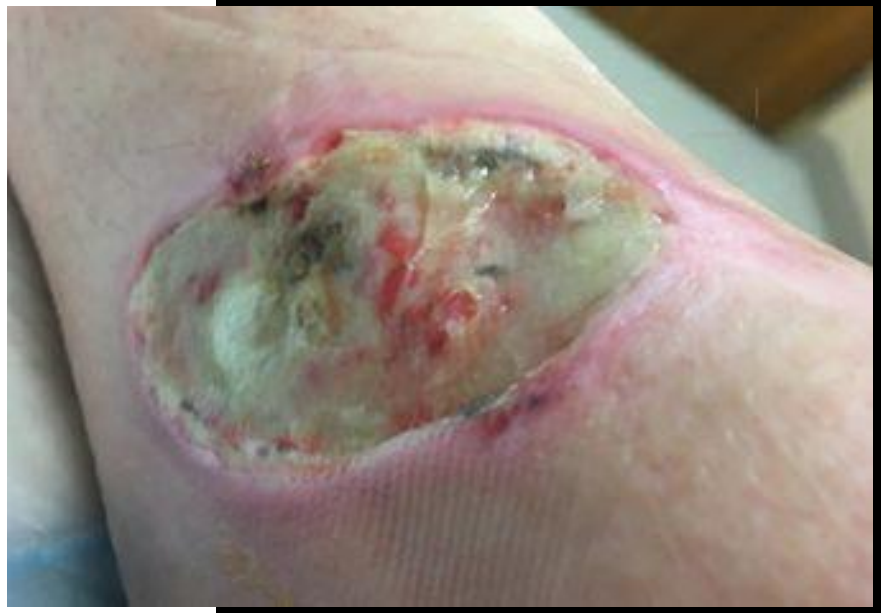
- Too much drainage?
  - Step up dressing absorbency
  - Skin protectant
  - Increase dressing change frequency



Cover up!

Covering a wound with a protective dressing:

- ✓ Maintains a moist wound environment
- ✓ Minimizes bacterial contamination
- ✓ Maintains normothermia
- ✓ Protects wounds from trauma



1. Gauze doesn't protect the wound from bacterial contamination.
   - bacteria can penetrate 60 layers of gauze!

2. Gauze potentiates inflammation
   - foreign body reaction
   - doesn't remove bacteria, cytokines, and proteases in drainage

3. Doesn't hold fluid away from wound
   - has to be changed daily
   - causes local hypothermia

4. Gauze is used in the lab to grow biofilm!

Sources: Ovington 2001, de Wert 2016,

Typical Wound Regimen

1. Cleanse the wound, and the whole extremity (foot/leg/arm) with warm soapy water.
2. Spray with hypochlorous acid and let sit for 5 minutes.
3. Pat the skin around the wound dry.
4. Apply a foam bordered dressing
5. Change 2-3 times per week dependent on drainage.
6. Address etiology:
    - Diabetic/neuropathic foot ulcers: offload (don't walk on it, wear appropriate footwear, urinal, wheelchair, knee scooter)
    - Venous leg ulcers: compression, 30-40mmHg
    - Pressure Ulcer: offload (no donut cushions, use waffle/gel/roho cushions, reposition, micro reposition, limit time in chair, heel protectors)

Acute infection (planktonic) v chronic infection

Infection

Studies show that between 30% - 50% of in-patient antibiotic use is either unnecessary or inappropriate

16.4% of all antibiotic prescriptions are for wounds

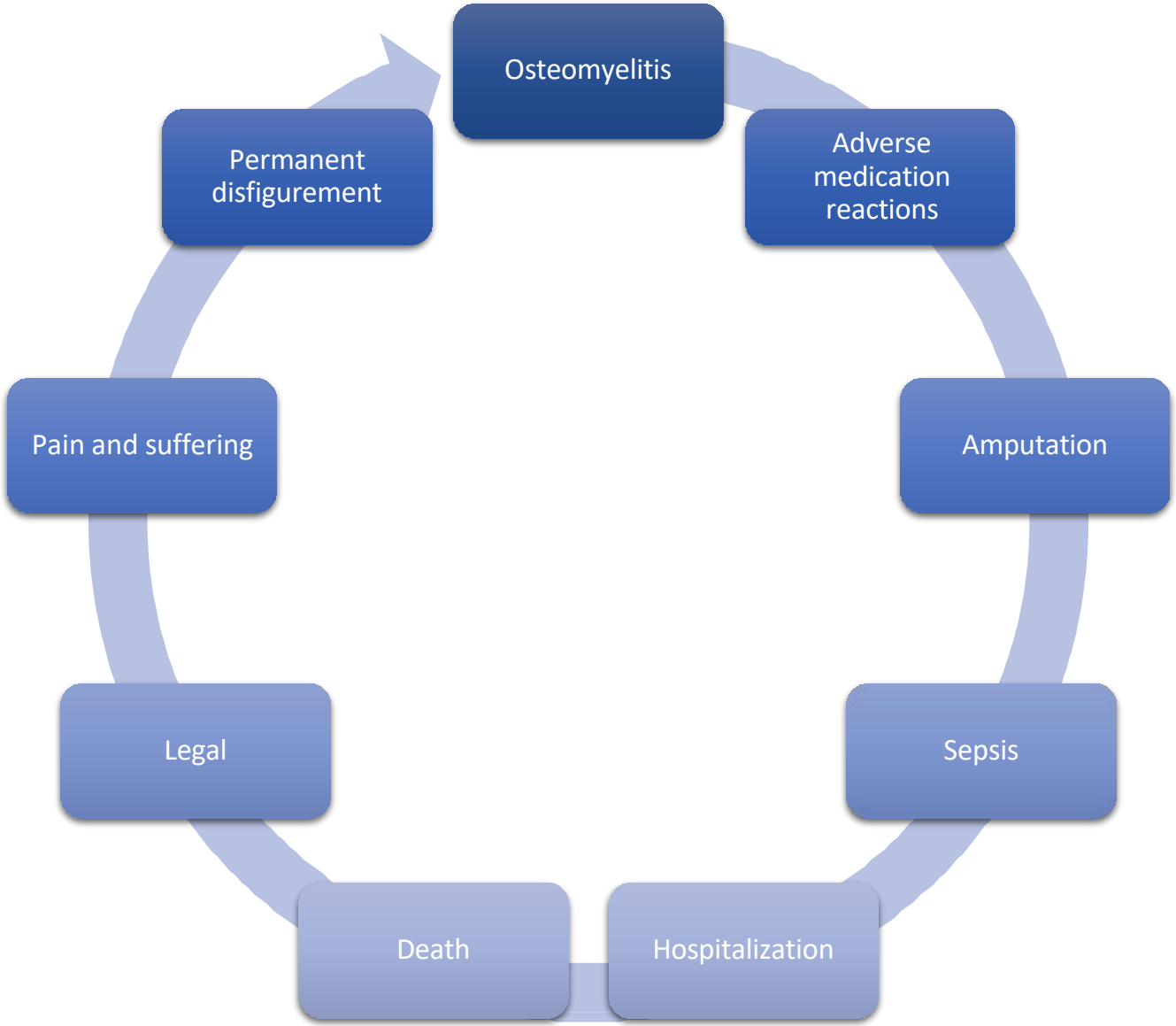
53-71% of patients are prescribed at least one course per chronic wound

2.8 million antibiotic-resistant infections occur in the United States each year

More than 35,000 people die from these infections

Sources: Dolk 2018; Biggest Threats & Data, 2020; Siddiqui 2010; CDC 2016; Caputo 2022

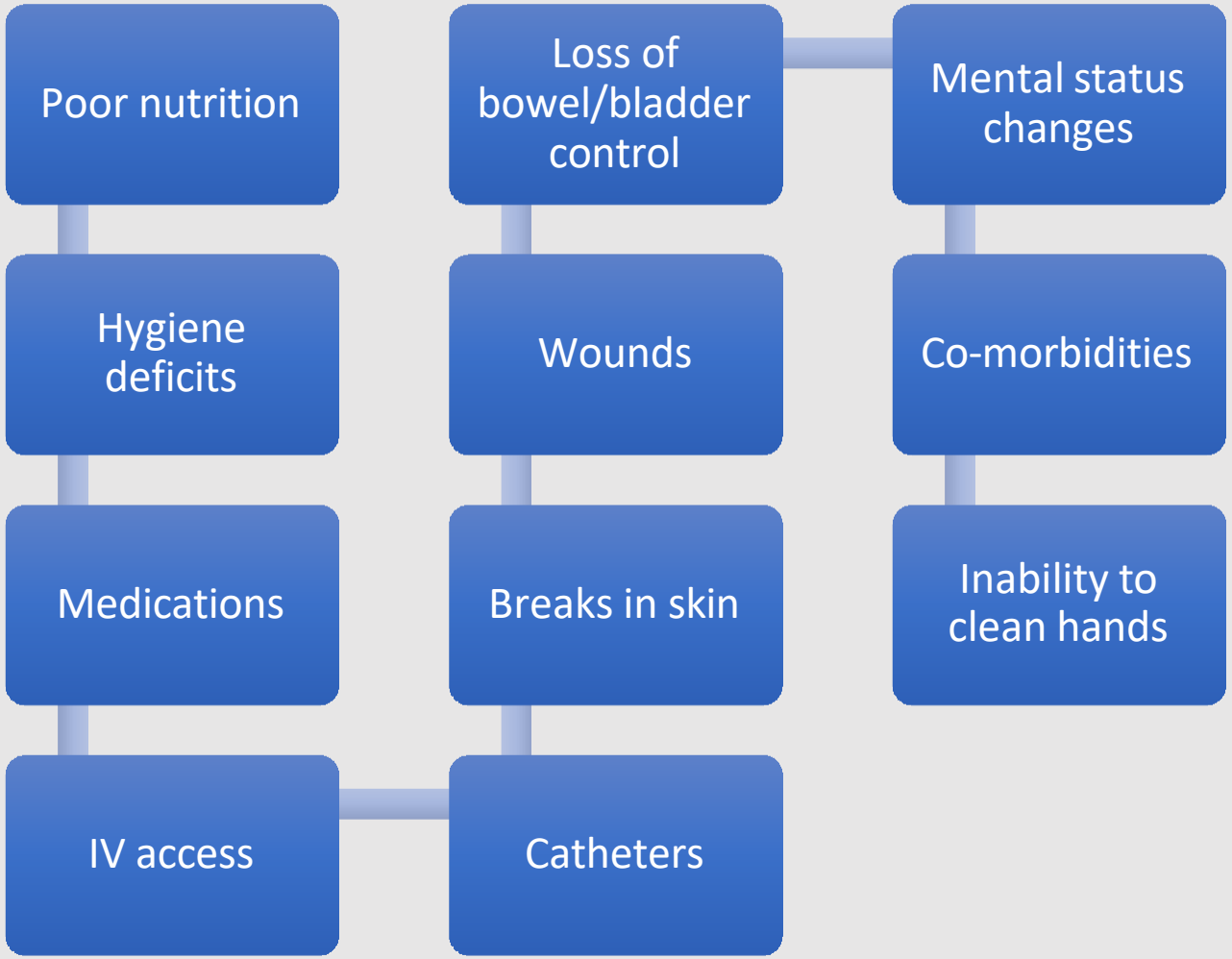
Complications of wound infection



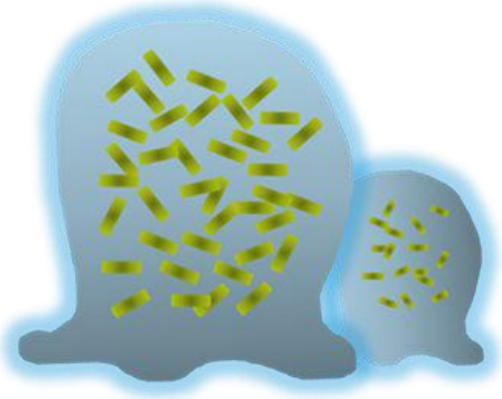
Wound infection risk with aging

- Aging causes accumulation of disease and pharmaceuticals that affect our ability to heal and our immune system, increasing risk for infection
- People who live or work together are more likely to share microbes (eg long term care environment)
- Many infections <u>can be prevented</u> with basic infection prevention and control

Wound infection risk with aging

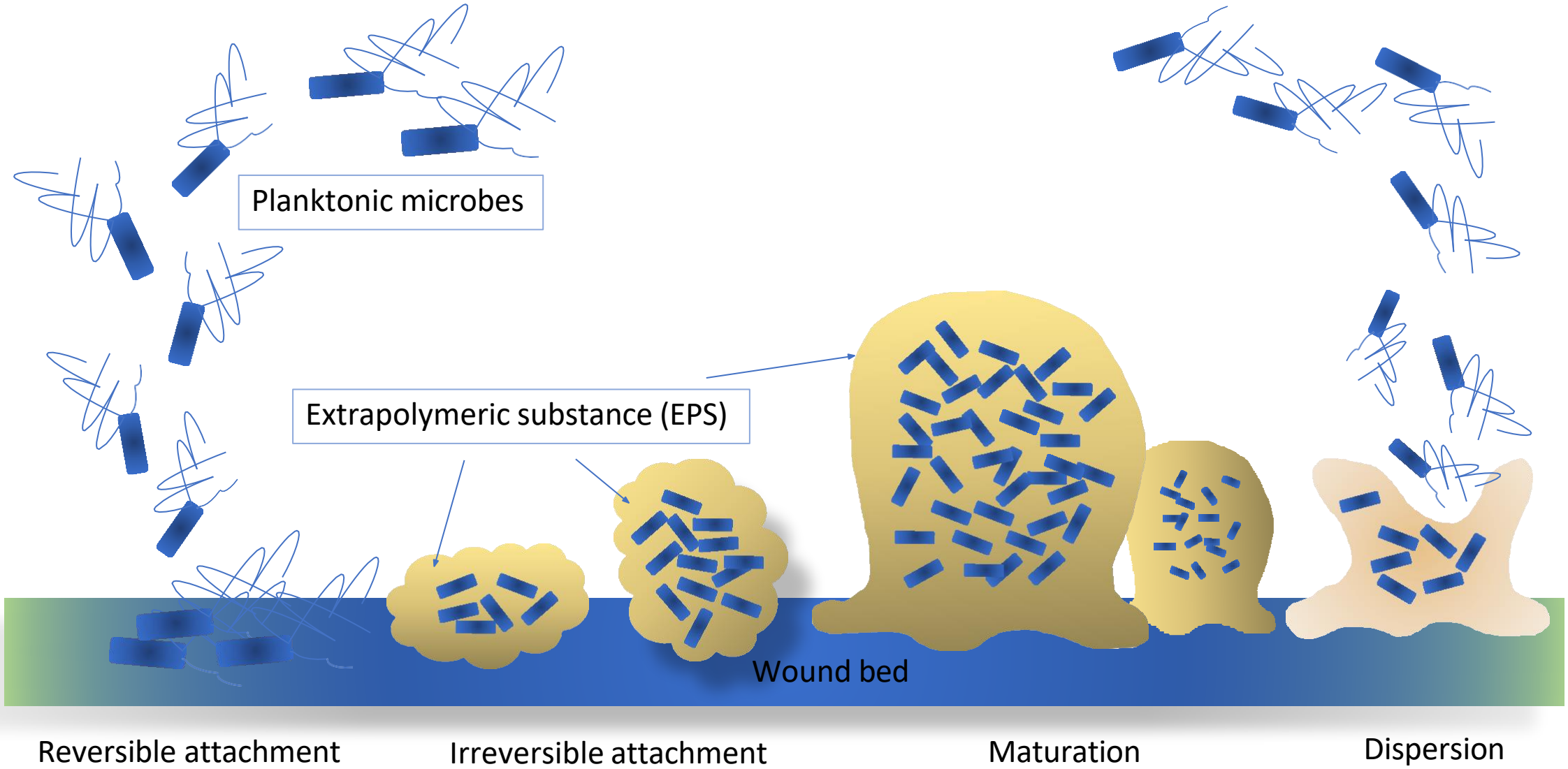


What is colonization?



Carrying microbes without causing disease / causing undetectable disease

When you’re colonized you can still spread the microbes to others and cause disease

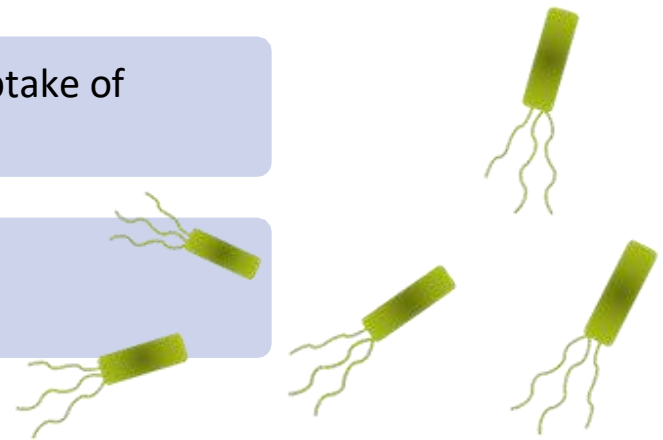


Biofilm is a complex, often polymicrobial, structure that can form on an array of surfaces including: teeth, the hull of ships, implanted medical devices, showers and bathtubs, and notably chronic and hard-to-heal wounds

Source: Swoboda 2022

Biofilm *You can't see it; it's present in most wounds; best removed through sharp debridement

- Protects Bacteria and Fungus in a EPS (usually polysaccharide)
- Begins to reform in 24-48 hours even after surgical removal
- Is tolerant to most topical antibiotics and antimicrobials
- Allows bacteria to share resistance genes/nutrients through quorum sensing
- In sessile/biofilm phenotype not metabolically active = Decreased uptake of bacteriocidal mechanisms
- <u>Delays wound healing</u>

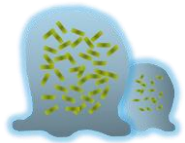


Sources: Swoboda 2022; Metcalf 2013;

Chronic Inhibitory Bacterial Load (CIBL)

Bacteria in biofilm delay wound healing even when not causing acute infection

Treating with oral or systemic ATB and NOT addressing biofilm is not enough



Source: Armstrong 2023

Wound infection s/s

Sign – what you can observe

Increased drainage

Wound getting larger

Unhealthy tissue

Redness

Swelling

Pus

Odor

Symptom- what the resident tells you

Pain

Subjective fevers

Subjective size or appearance

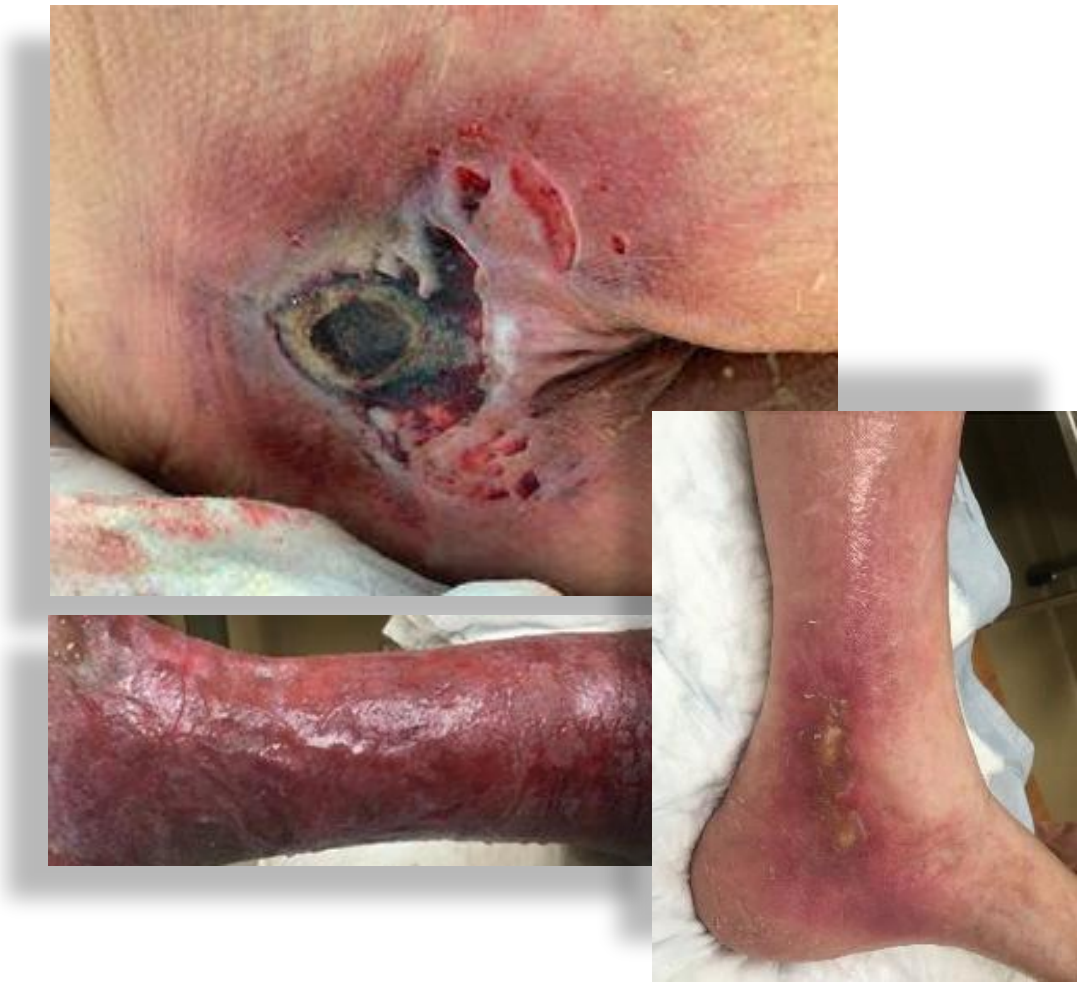
Reported odor

Source: Ciaccia 2011; Haalboom 2019

Inflammation

Limitations: differentiating infectious inflammation from other forms

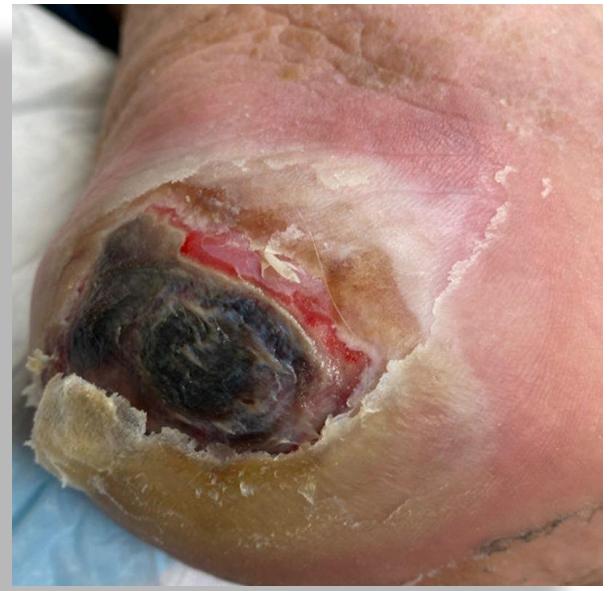
- autoimmune diseases
- reperfusion injuries
- pressure
- venous dermatitis
- DVT
- Burn, expected healing rim
- Contact or irritant dermatitis
  - Eg. Moisture/ drainage on periwound



Source: Ciaccia 2011

Limitations of clinical s/s of infection

- Substantial variability in how wounds are assessed and deemed infected or not
- Disease states limit clinical s/s: diabetes, PAD,
- Skin tone limitations
  - Erythema



Source:Haalboom 2019;

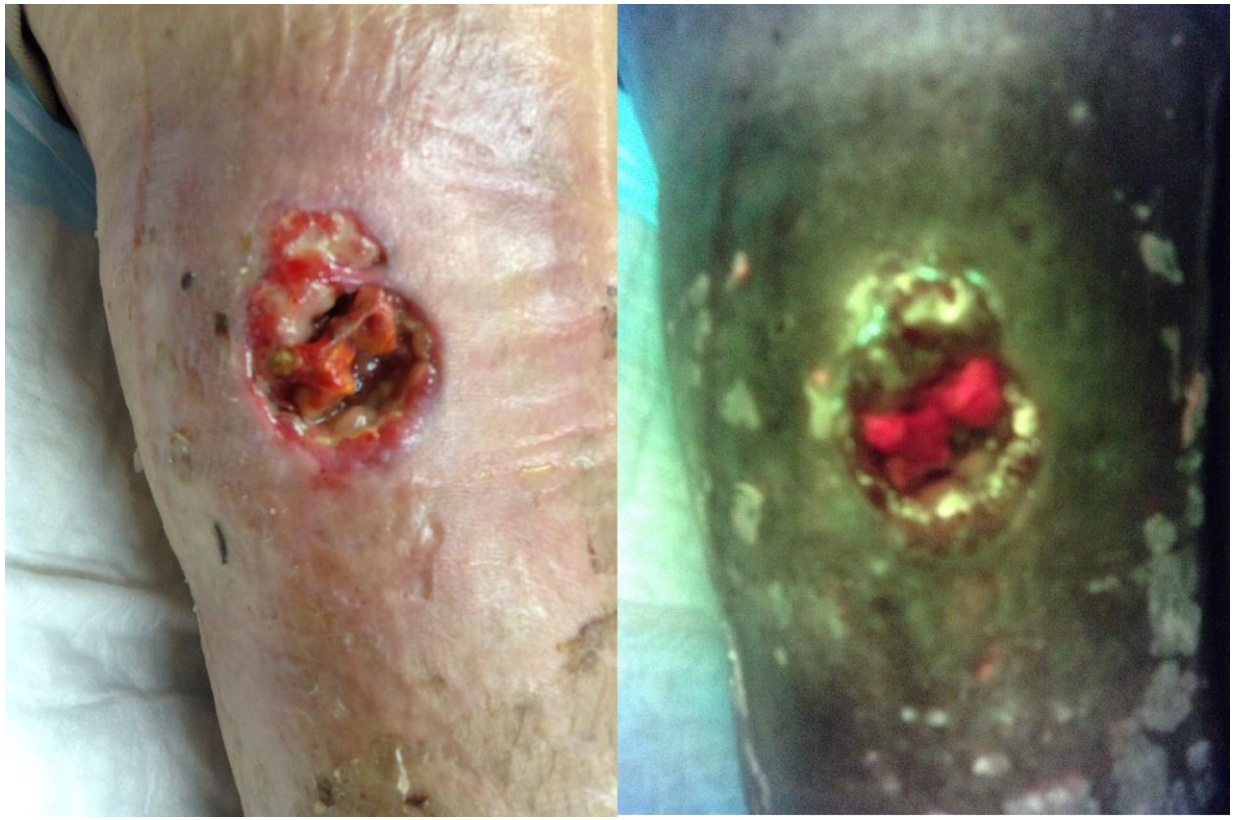
Fluorescence Guided culturing

Violet light with filter causes bacteria at greater than 10^4 CFU/g) that produce porphyrins to glow red

Green = matrix components from tissues

Culture to specific location based on imaging

More sensitive than clinical s/s alone



Sources: Serena 2019

Culturing Wounds

Levine technique

How to culture:

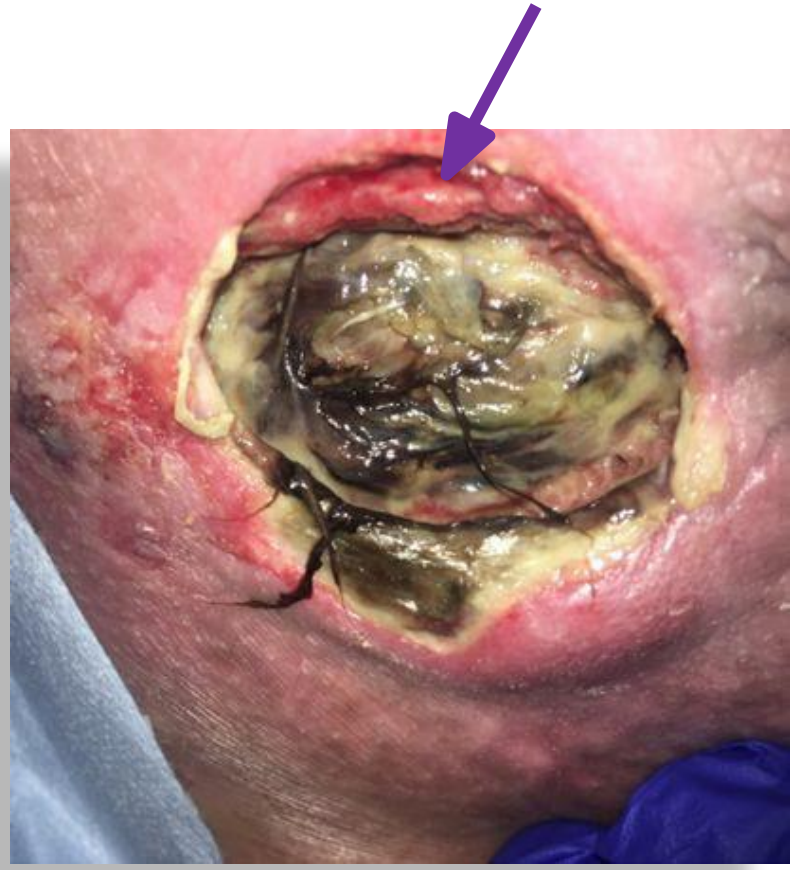
- Clean the wound with soap and water or normal saline
- Do not culture pus or frank necrotic tissue
- Culture intact tissue
- Push down in one place to express fluid from the wound bed

When to culture:

- When you suspect wound infection and culture would guide antibiotic selection

When NOT to culture:

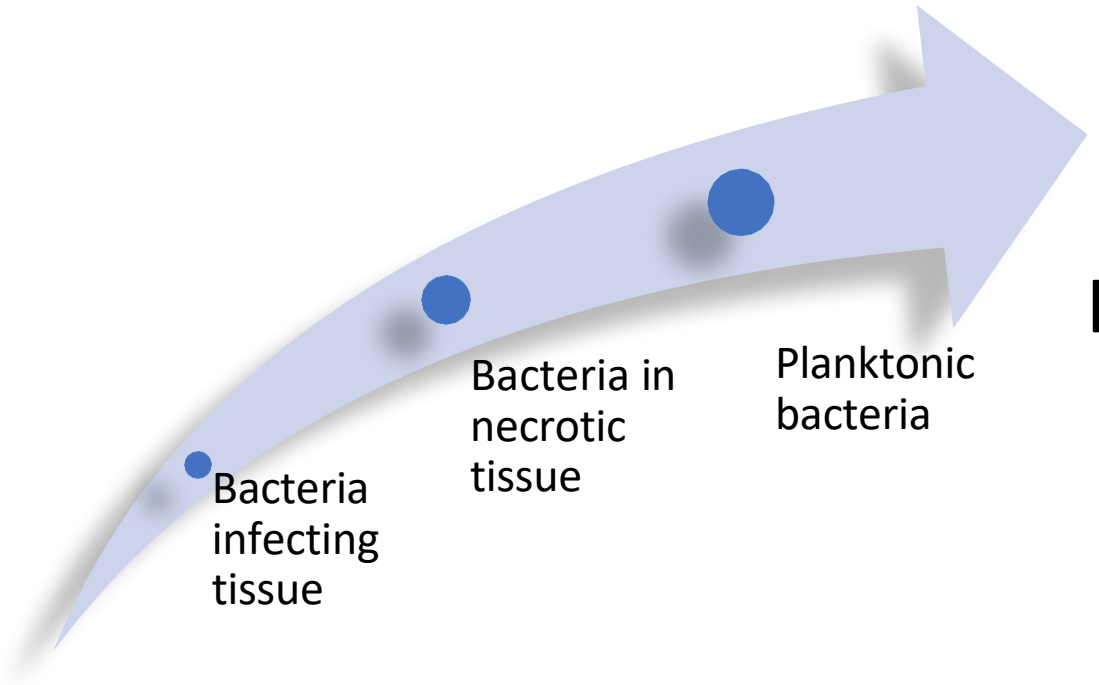
- If you don't suspect infection



Sources: Stallard 2018; Copeland-Halperin 2016; Swoboda 2022

Source: James 2008

Bacteria in Necrotic Tissue v Healthy Tissue:



Cultured bacteria

≠

Infecting bacteria


clinical s/s of infection
culture
treat

Topical antibiotics in wound care

Topical antibiotics = antibiotic resistance + allergic skin reactions

More likely to develop an allergy when used on skin

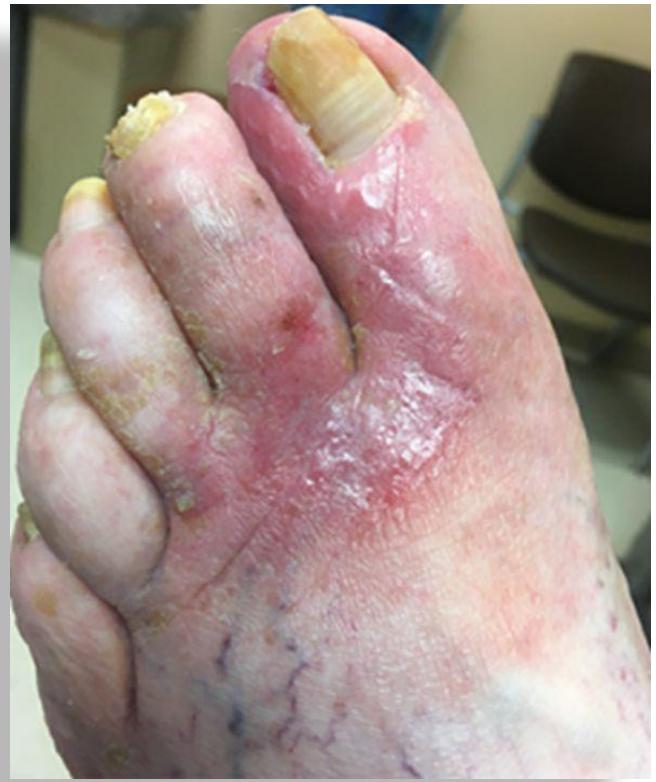
Former allergens of the year:

- bacitracin
- neomycin

Allergies and resistance can apply to oral and parenteral form

Does not penetrate biofilm

- *Planktonic bacteria that develop resistance can share resistance genes into biofilm via quorum sensing*



Sources: Dire 1995; Langford 1997; Delves 1998; Bryant 2012; Biggest Threats & Data. 2020; Jacob 2003; Focus On: Bacitracin Allergen of the Year 2003; Sasseville 2010; Neomycin Sulfate 2020

Burns and silversulfadiazene (SSD) cream

- 450,000 people receive medical attention for burns annually
- 45,000 people are hospitalized for burns
- Systematic reviews of SSD in burns show it can actually increase infection rates and hospital length of stay
- Burn wounds don’t need prophylactic antibiotics
- Good dressings for burns are hydrogels and hydrogel sheets, which can reduce pain

Sources: Ramos 2017; Barajas-Nava 2013; Norman 2017; Nimia 2019; Nesporova 2020

Antimicrobial stewardship

Antibiotic resistance is one of the biggest public health challenges of our time.

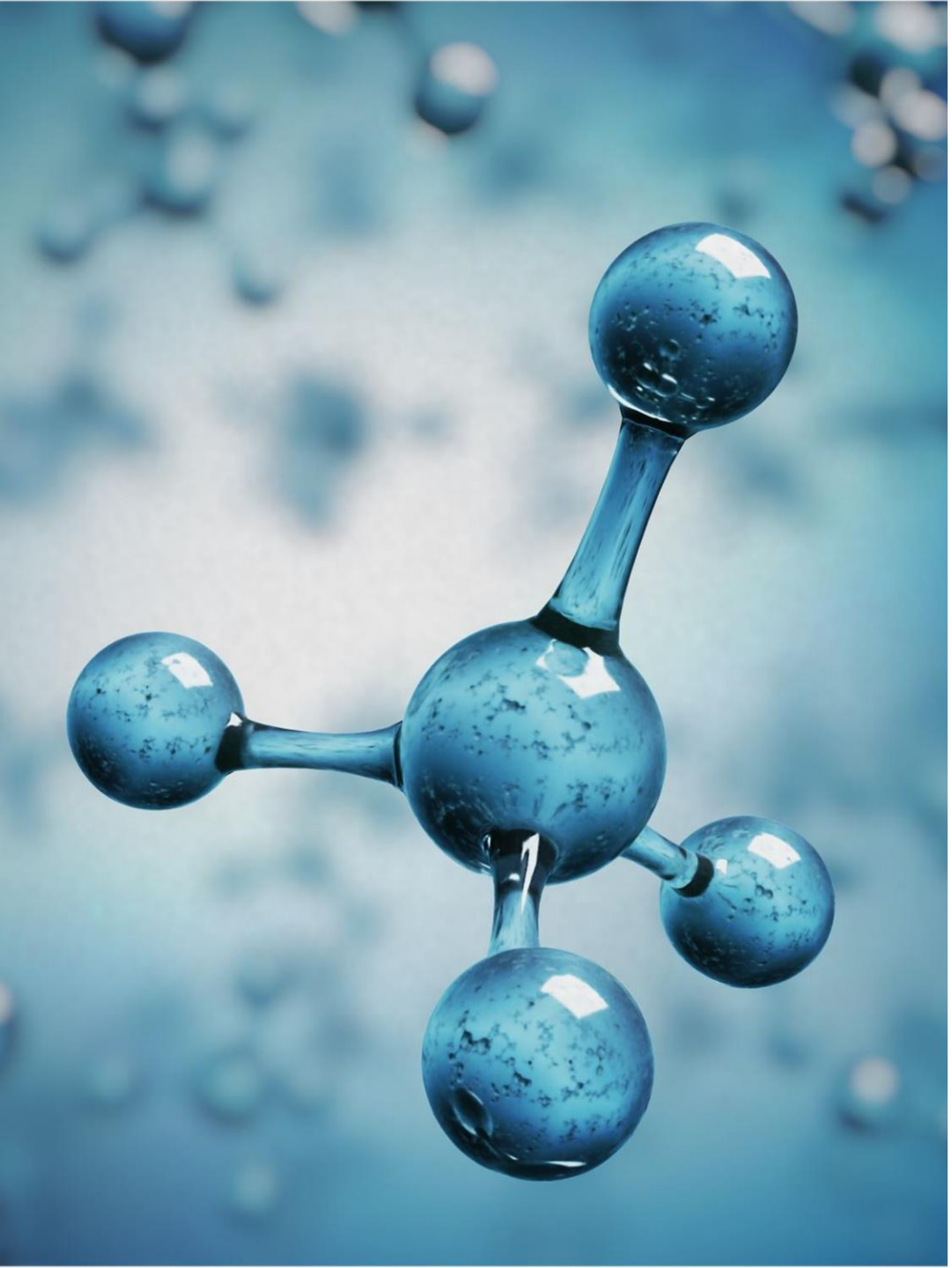
It is on the rise worldwide.

- killing 1.27 million globally
- associated with nearly 5 million more deaths

Antibiotic use eliminates non-resistant bacteria, increasing the proportion of resistant bacteria that remain.

Sources: Werth 2022; McNally 2016

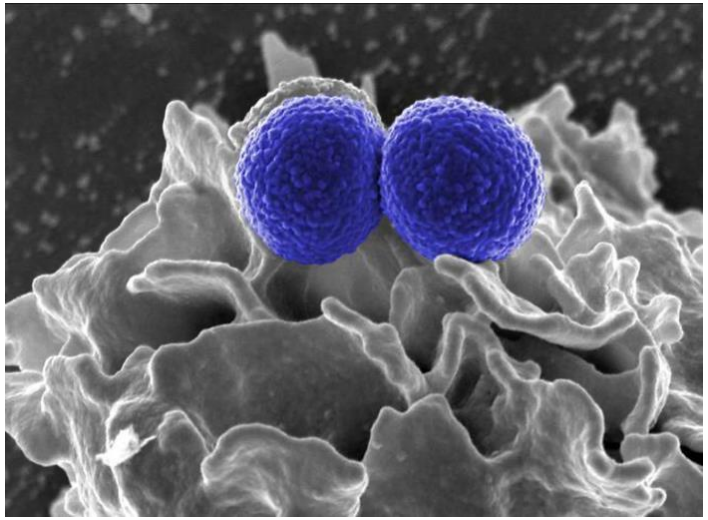
Wounds without evidence of soft tissue or bone infection do not require antibiotic therapy.



Safe antimicrobials

- Silver in dressings and gels
  - Next gen silver dressings have BEC and EDTA
- Copper dressings
- Manuka honey
- Methylene blue and gentian violet dressings
- Cadexomer iodine
- Biofilm disruptors
- Hypochlorous acid

Considerations in the use of antimicrobials



- Cytotoxicity
- Lack of resistance
- Works via multiple mechanisms
- Allows for early intervention and avoidance of atb’s and antifungals

Multi-Drug Resistant Organisms:

Microorganisms, predominantly bacteria, that are resistant to one or more classes of antimicrobial agents

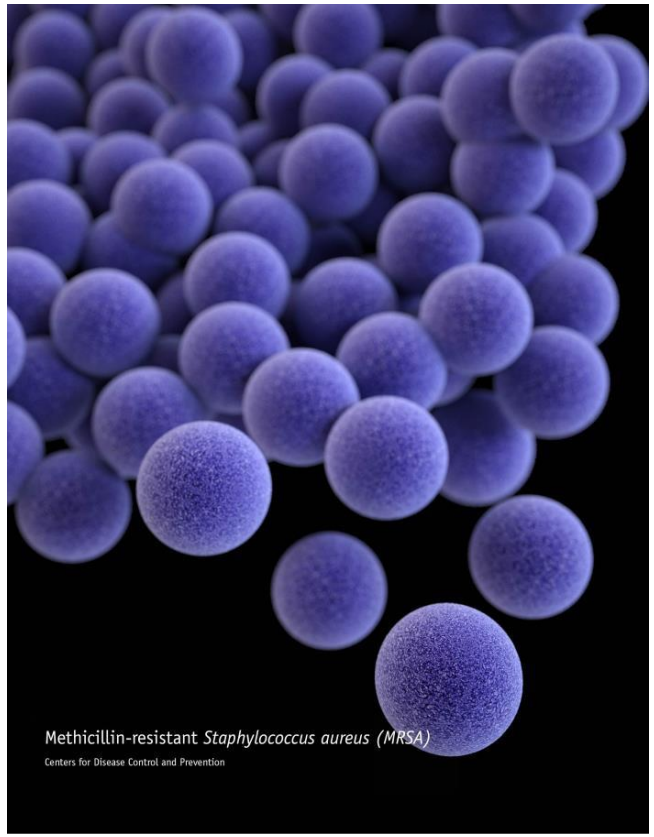
Bacteria have adapted and are no longer killed by an antibiotic

Make it more difficult to treat an infection

Examples of MDRO

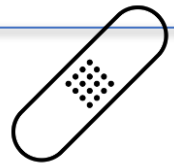
- MRSA (methicillin-resistant staphylococcus aureus)
- VRE (vancomycin-resistant Enterococcus)
- C. Difficile (Clostridium difficile)
- ESBL (extended spectrum beta lactamase) bacteria
- CRE (carbapenem-resistant Enterobacteriaceae)

Highest risk of MDRO:



Indwelling medical devices and/or lines.

Presence or history of chronic wounds.



History of residing in congregate living settings.

History of out-of-state or international health care.

History of frequent surgeries or procedures.

Frequent or prolonged stays in hospitals or long-term care facilities.

Underlying chronic medical conditions.

Sources: CDC 2022

MDRO characteristics

- In most instances, MDRO infections have clinical manifestations that are similar to infections caused by susceptible pathogens
- Antimicrobial resistance rates are also strongly correlated with hospital size, tertiary-level care, and facility type (e.g., LTCF)
- Options for treating often extremely limited
- Increased LOS
- Cost
- Mortality

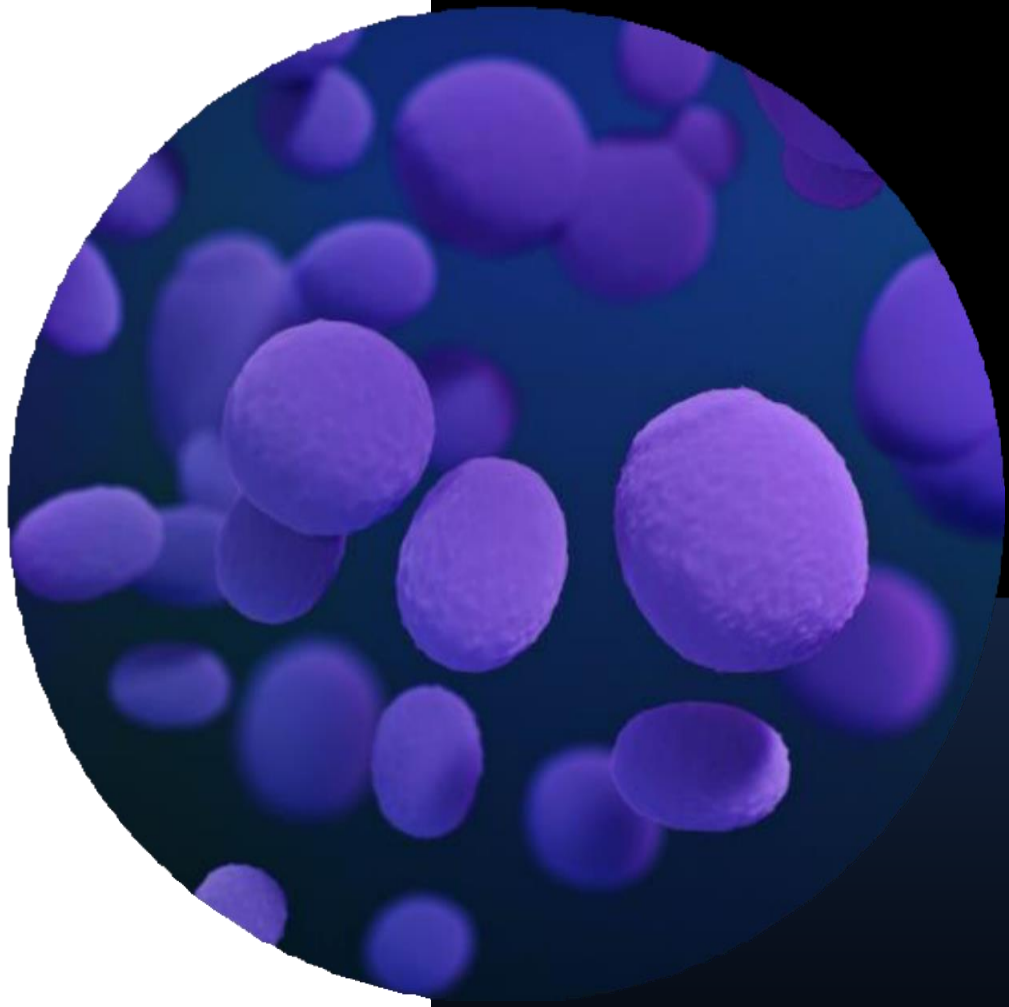
Sources: CDC 2022

MDR Candida Auris

Cases have more than tripled from 2022 to 2023

Drivers:

- overall antifungal use,
- subtherapeutic drug levels at sites of infection/colonization,
- drug sequestration in the biofilm matrix,
- in the setting of outbreaks, suboptimal infection control.



Sources: Arendrup 2017

MDRO Prevention & Control

Nearly all studies reporting successful MDRO control employed a median of 7 to 8 different interventions concurrently or sequentially

Source: CDC 2015

Prevent and control MDRO spread

- Follow infection prevention best practices
- Appropriate clinical practices incorporated into routine patient care
- Accurate diagnosis of infectious etiologies
- Judicious antimicrobial selection and utilization

Sources: CDC 2022

There is ample epidemiologic evidence to suggest that MDROs are carried from one person to another via the hands of HCP

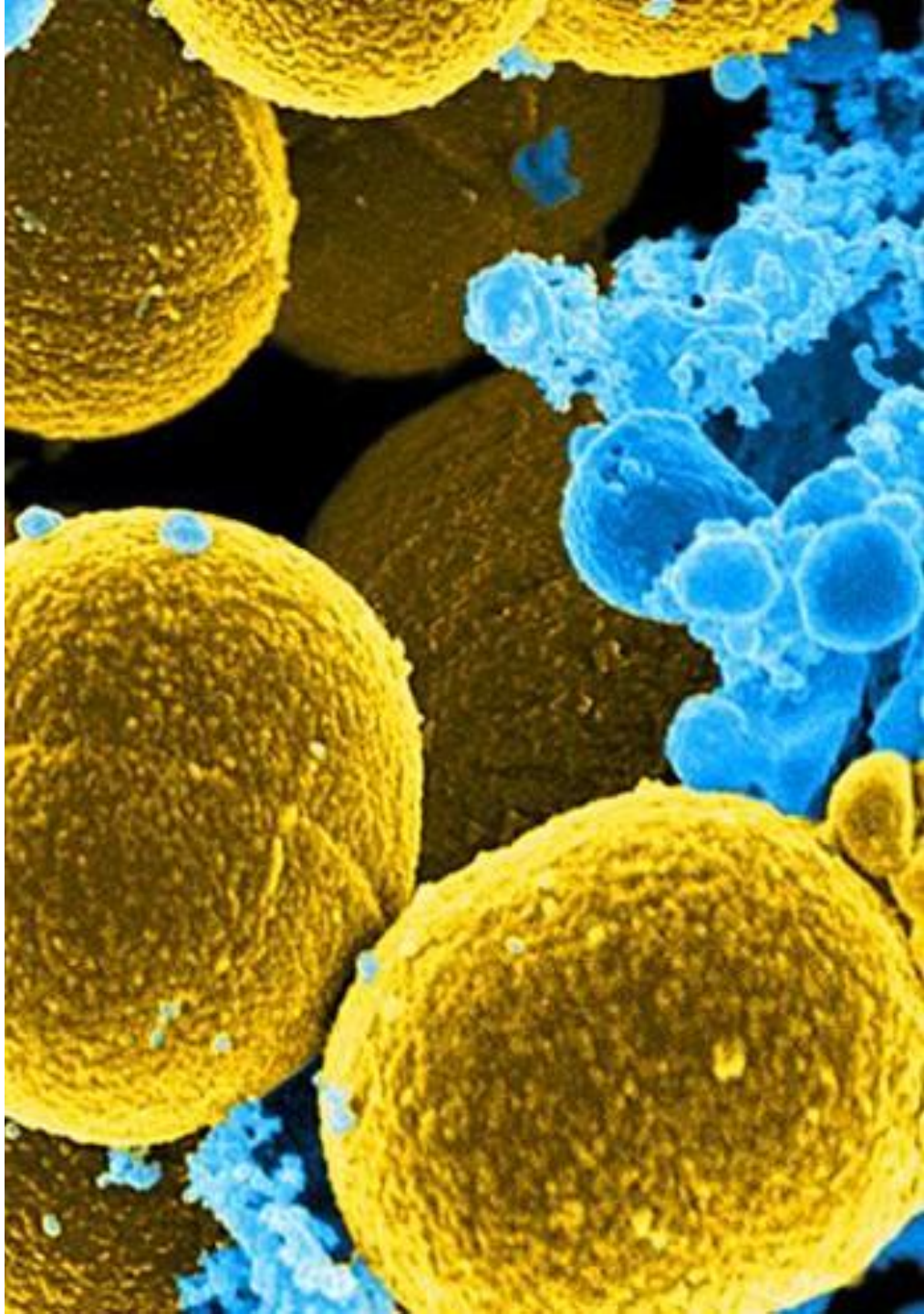
Facilities must display hand hygiene posters in heavily trafficked areas.

Sources: CDC 2022

MDROs and Healthcare

MDRO spread

- Wash hands!
- Cover cuts and wounds with a dressing
- Follow isolation precautions when in place
- Complete the full round of antibiotics



Infection Control Assessment and Response (ICAR) tool for General Infection Prevention and Control (IPC) across settings

- Level of detail not sufficient for specialty areas like burn units

- Module 3 – observation form- wound care
- Module 8 – wound care facilitator guide

Prevention of cross transmission

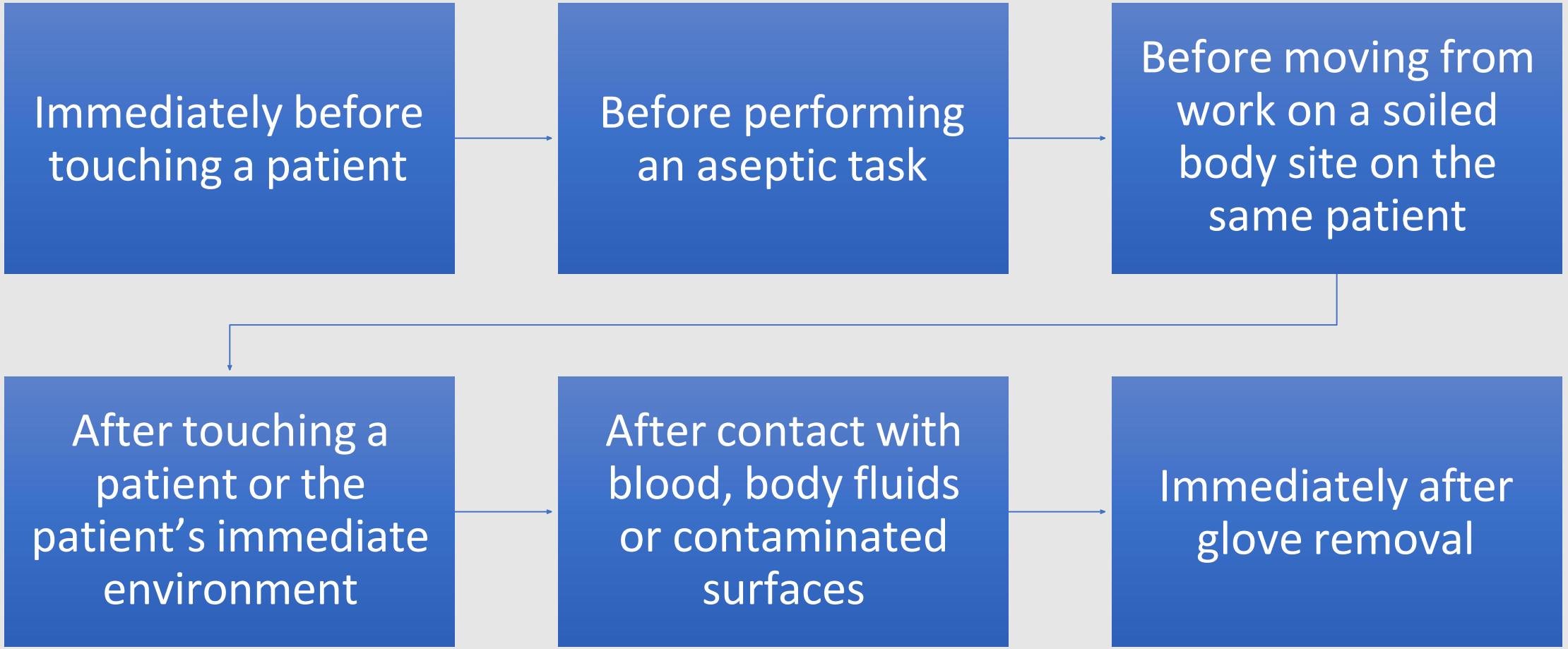
Must be performed wherever wound care is performed

Many facilities have wound care teams but nursing personnel will still perform dressing changes

Practical hygiene tips for big impact

- Alcohol-based hand sanitizer dispensers easily accessible to HCP while performing wound care?
- Do HCP perform hand hygiene before performing wound care?
- Do HCP don clean gloves and other recommended PPE?
- Gloves changed and hand hygiene performed when moving from dirty to clean tasks
  - Moving amongst wounds
- Maintain separation between clean and dirty supplies

Hand hygiene occurs



PPE recommendations

- Gloves should be worn during wound care procedures
- Gowns should be worn when worn care requires significant contact with resident or their immediate environment, such as when turning or positioning a resident for wound care or if the procedure could generate splashes or sprays (eg during irrigation)
- Face protection such as goggles or a face mask/face shield should be worn during wound care procedures that may generate splashes or aerosols such as irrigation, pulse lovage, and handling equipment such as vacuum assisted closure devices
- Additional PPE may be warranted if the patient/resident is on precautions

- Wear gloves when it can be reasonably anticipated that contact with blood or other potentially infectious materials could occur
- Wear a gown appropriate to the task during activities that could cause contact with body fluids
- Use protective eyewear and a mask or face shield during procedures and activities that could generate splashes or sprays

Prior to starting procedure

• Clean supplies gathered and placed on a clean surface in the room?

- Dressing materials and equipment should be selected and gathered prior to entering the patient/resident area to a void accessing the supply cart/clean storage during the procedure

- Only the materials needed for an individual patient should be brought into the patient's room or treatment area
  - Placed on a clean surface
  - Away from potential sources of contamination (away from sink splash zones)
  - Brought prior to beginning wound care

Where is the wound care performed?

- Patient/resident room
- Procedure room
- Operating room
- Unknown

Where are clean wound care supplies stored?

- Patient/resident room
- Procedure room
- Wound care cart
- Clean supply closet

Does the wound care clean supply cart remain outside the patient immediate care area?

Where are wound supplies stored?

- Maintain separation between clean and soiled equipment to prevent cross contamination
- If wound care cart is used, it should not enter the patient/resident's immediate care area (room)

What happens to unused disposable supplies that enter the patient/resident area?

- Discarded
- Returned to clean supply storage (eg cart, closet, bin) for use on other patients/residents
- Dedicated to the patient/resident
  - How/where these supplies are stored and how the facility ensures they remain dedicated to the patient/resident

What happens to unused disposable supplies that enter the patient/resident area?

- Maintain separation between clean and soiled equipment to prevent cross contamination

- Dressings/supplies that enter the patients care area are now soiled
  -must either be discarded or dedicated to the patient

What happens to unused disposable supplies that enter the patient/resident area?

If supplies dedicated to individual patient/resident:

- Should be properly labeled

- Stored in a manner to prevent cross-contamination or use on another patient
  Eg. designated cabinet in the patient's room

Is any wound care equipment used for more than one patient?

Bandage scissors

Bandage scissors should not be transported in pockets

- r/o cross contamination

WOUND CARE equipment and supplies

- If fresh bandages are cut for the resident, it should be done with clean scissors, not with scissors used to cut off soiled bandages
- Wound care dressings can be disposed of in the regular trash unless they are dripping or saturated with blood or other regulated body fluids.
- Dedicate tape, sprays, creams, and all wound care products to an individual resident and do not store used sprays with clean wound care supplies.

WOUND CARE equipment and supplies

- Clean and disinfect the surface (e.g., over bed table) where wound care supplies will be placed prior to setting down wound care supplies in resident room.

- Store wound care supplies in a clean area of resident room.

Is re-useable equipment cleaned and disinfected after each use?

- Re-usable wound care equipment should be cleaned and disinfected after each use
- Level of disinfection depends on type of equipment
- Eg. bandage scissors only require low or intermediate level disinfection v debridement supplies must be sterile

Who is responsible for cleaning/disinfecting the equipment before use on another patient?

How/where is cleaning and disinfection performed?

- Dedicated (in-house) wound care team
- Dedicated (external/consultant) wound care team
- Nursing personnel
- Unknown

Who is responsible for cleaning/disinfecting the equipment before use on another patient?

If device reprocessing performed elsewhere devices must be contained and transported to prevent cross contamination (soaking in detergent/cleaner in a biohazard container)

Is topical medication either dedicated to an individual patient or aliquoted for individual patient/resident use prior to entering the patient/resident room?

- Includes creams/sprays/ointments
- Dedicated containers must be properly labeled and stored
- Once enters the patient care area must be dedicated to patient or discarded

Dedicate multi dose vials to a single patient whenever possible.

If multi dose vials are used for more than one patient, restrict the medication vials to a centralized medication area and do not bring them into the immediate patient treatment area (ie OR, patient room, cubicle)

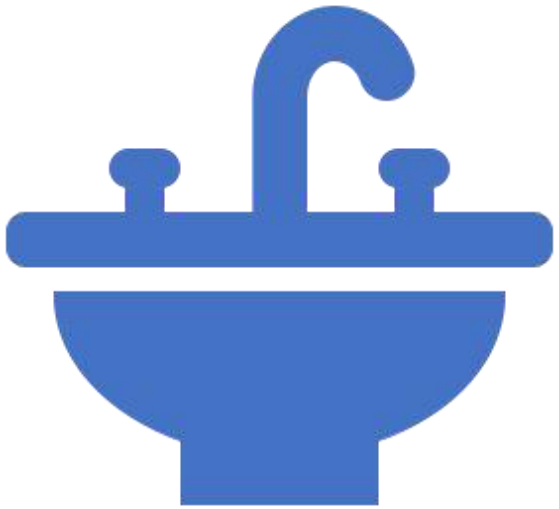
Are potentially contaminated surfaces cleaned and disinfected after wound care completed?

- You must discard PPE and perform hand hygiene after completing wound procedures
- Routine and targeted cleaning of the environment is required!
  - Close proximity to the patient
  - Frequently touched surfaces

Infected Roomies?

Consider how long an infected resident has been their roommate before moving them

- When resident colonized or infected they may need to be moved to single room to prevent transmission
- If cannot be in single room, cohort with same germ
- If cannot cohort, place infected residents with low risk residents



Patient considerations with MDRO wound

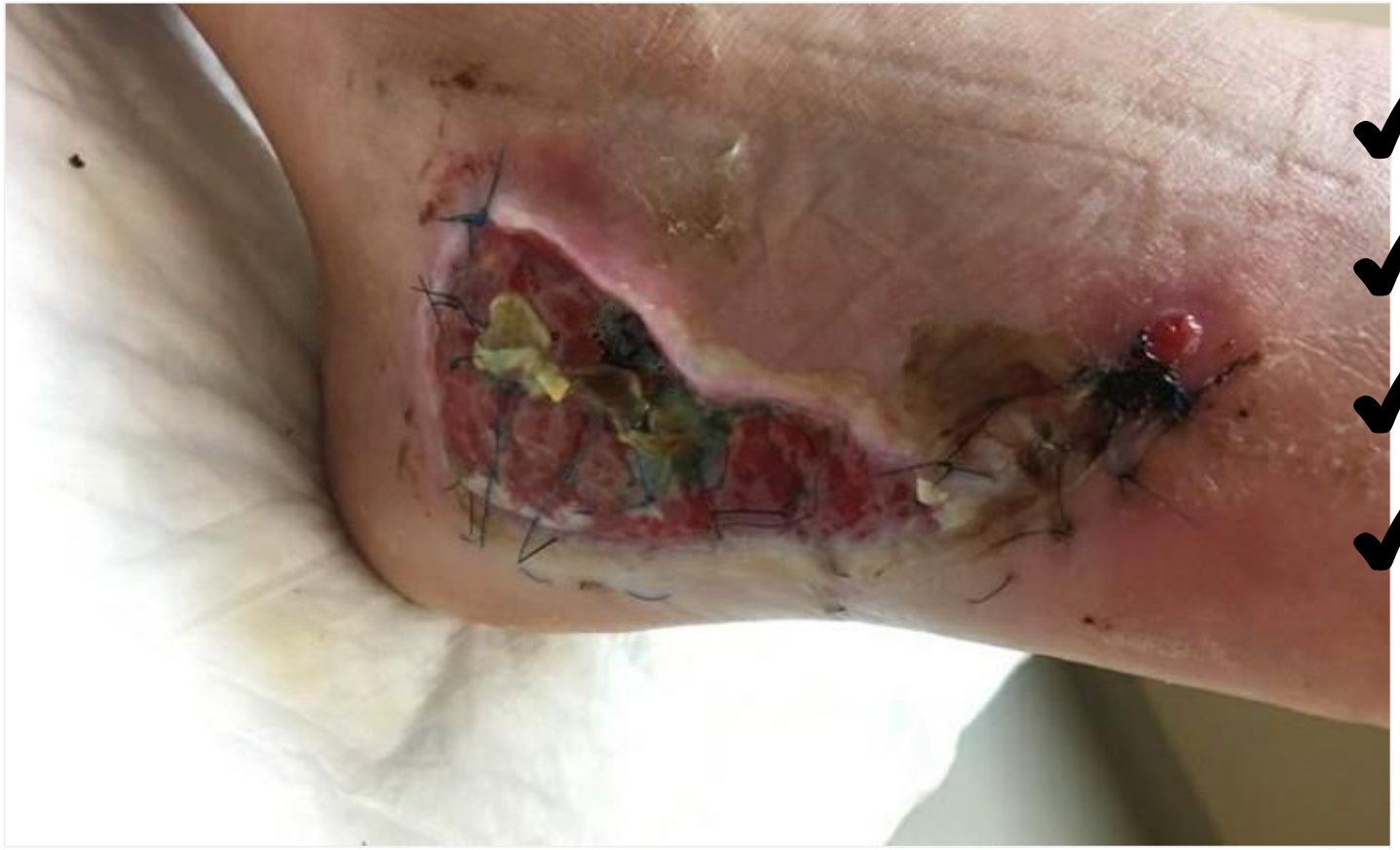
- Have infected residents shower last
- A patient with MDRO should not be moved to room with resident dependent on staff for ADLs
- A patient with MDRO should not be moved to room with urinary Catheter, IV catheter, or an open wound

Administrative controls

1. Facility has current, evidence-based policies and procedures readily available regarding wound detection, assessment, and management, which are reviewed and updated on an annual basis
2. Resources about wound care are available for staff to utilize should questions or concerns arise (i.e., nursing reference book with checklists).
3. The facility has a competency-based program for training all personnel who provide wound care upon hire and annually thereafter. Education is provided when new equipment or protocols are introduced.
4. The facility audits (monitors and documents) adherence to wound care policies and procedures and provides feedback to health care workers (HCWs), including contracted staff, regarding their performance of wound care. Audits should be conducted with a standardized tool on a routine basis. HCWs will receive education focused on gaps identified during audits.
5. The facility keeps a record of all types of wound and skin infections identified in residents receiving wound care. When necessary, transmission-based precautions or Enhanced Barrier Precautions (EBP) are implemented based on CDC guidance.

If you’re going to audit its recommended to do so on at least 2 different staff, when direct observations can’t be used ask staff

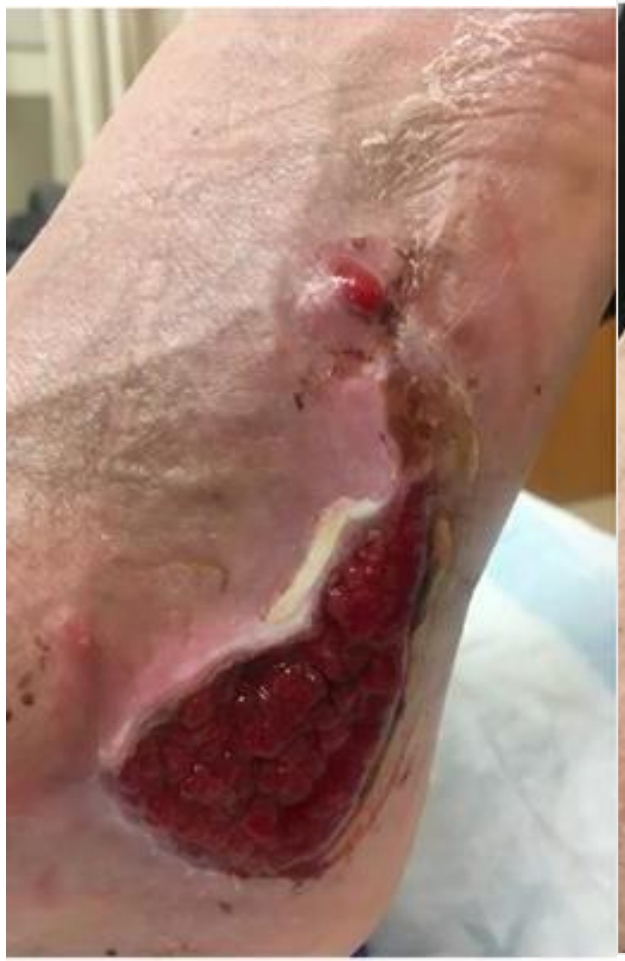
Wound hygiene in practice



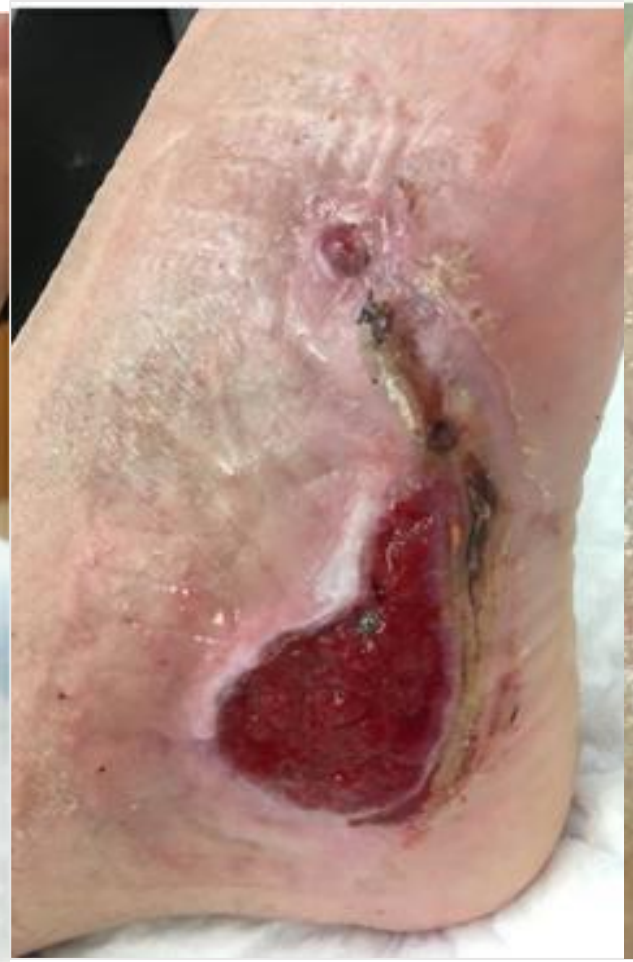
Presentation to wound clinic of traumatic foot ulcer

- ✓ Cleanse
- ✓ Debride
- ✓ Refashion
- ✓ Dress

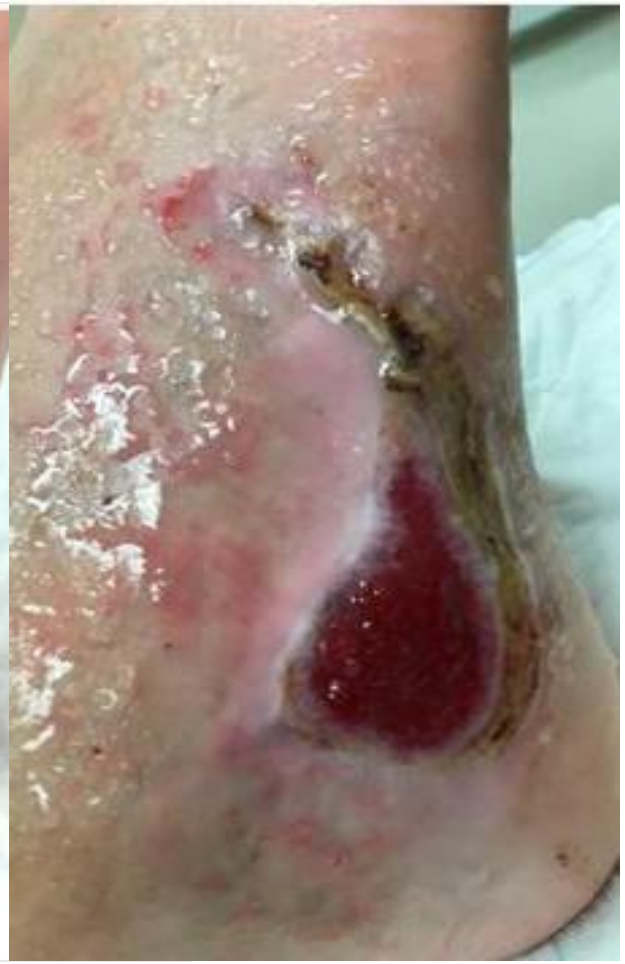
Wound hygiene in practice



Week 1

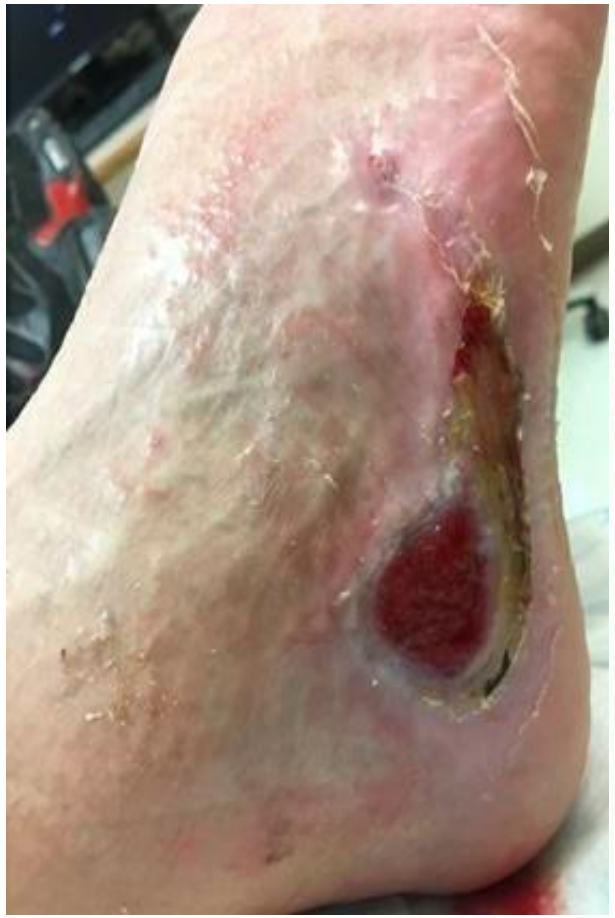


Week 2

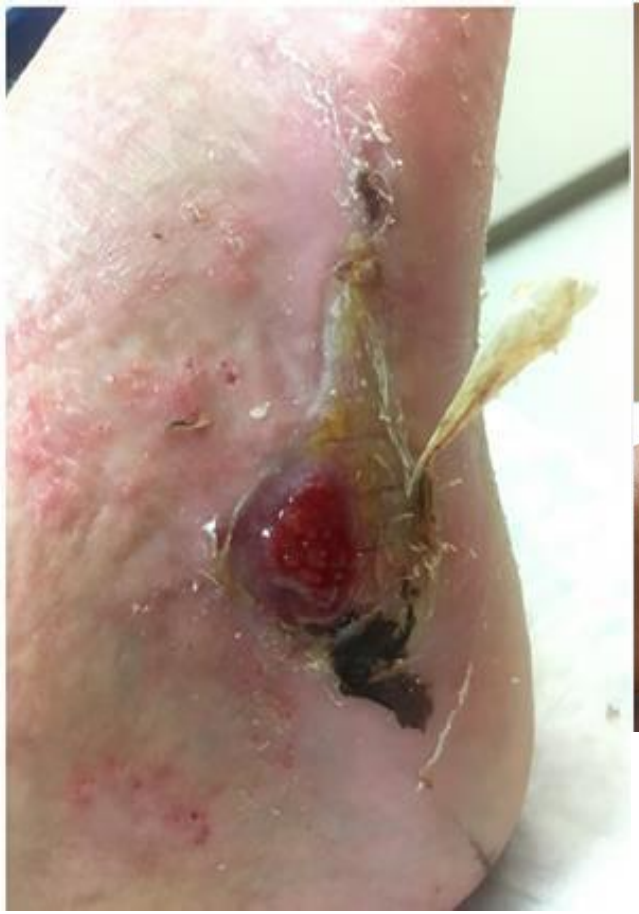


Week 3

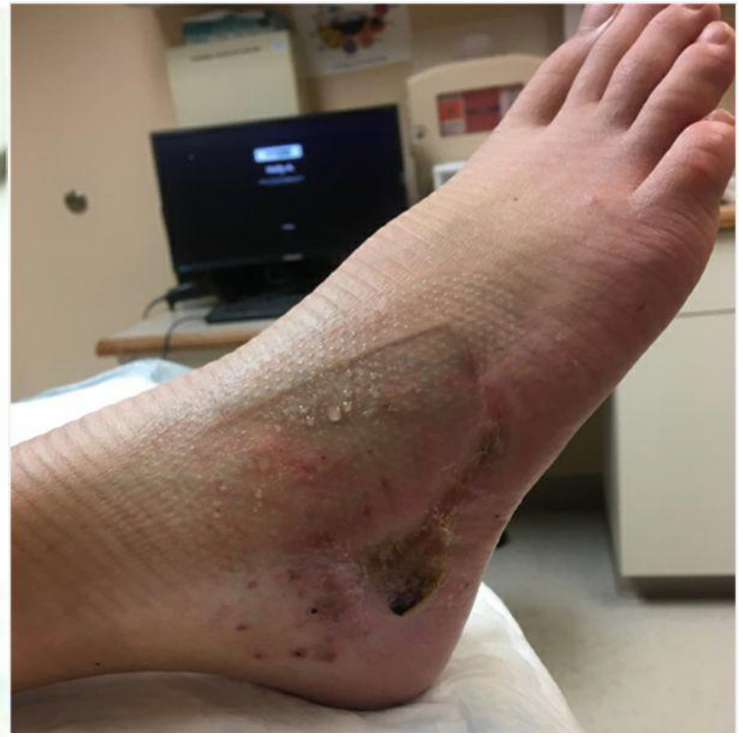
Wound hygiene in practice



Week 4



Week 5



Epithelialized

Conclusion

- Moist wounds heal quicker with less infection
- AVOID topical antibiotic ointments, unless needed based on culture results
- AVOID cytotoxic cleansers and wound dressings
- When needed, refer to a wound specialist

Typical Wound Regimen

1. Cleanse the wound, and the whole extremity (foot/leg/arm) with warm soapy water.
2. Spray with hypochlorous acid and let sit for 5 minutes.
3. Pat the skin around the wound dry.
4. Apply a foam bordered dressing
5. Change 2-3 times per week dependent on drainage.
6. Address etiology:
    - Diabetic/neuropathic foot ulcers: offload (don't walk on it, wear appropriate footwear, urinal, wheelchair, knee scooter)
    - Venous leg ulcers: compression, 30-40mmHg
    - Pressure Ulcer: offload (no donut cushions, use waffle/gel/roho cushions, reposition, micro reposition, limit time in chair, heel protectors)

Conclusions

1. Wound supplies that enter the patient area must be dedicated to the patient, discarded, or properly sanitized.
2. Wound carts cannot enter the patient area
3. Sanitize following procedures
4. Use clean supplies

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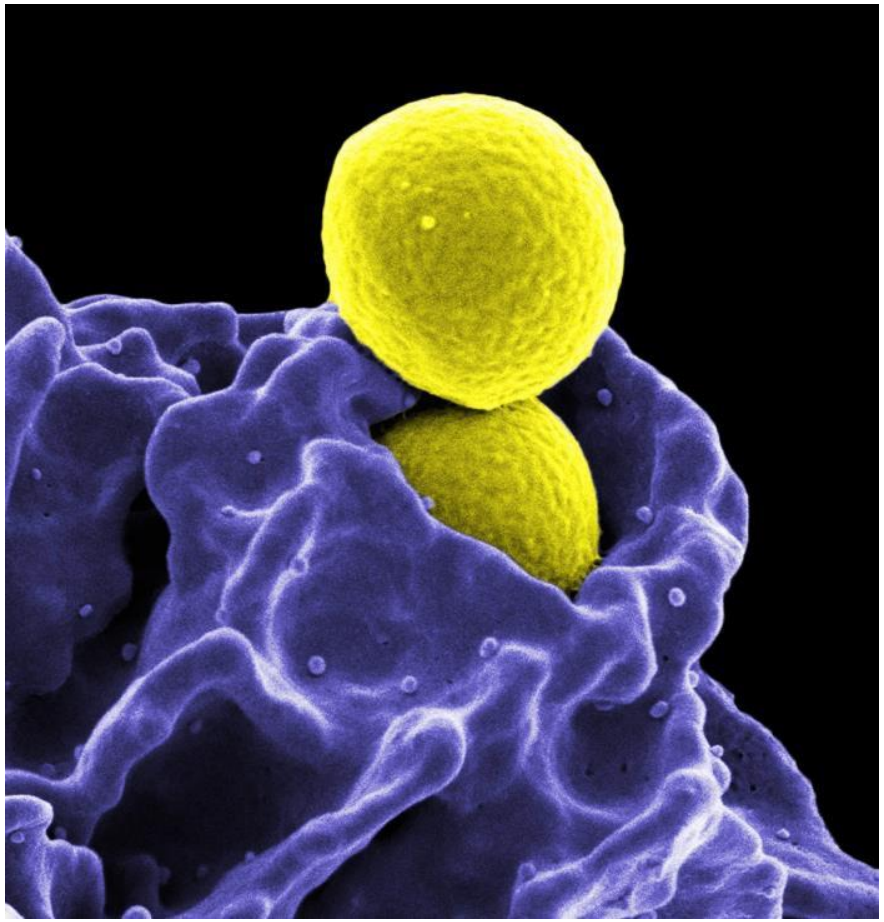
Resources: Infection Prevention Basics



- CDC: Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings (www.cdc.gov/infectioncontrol/pdf/guidelines/isolation-guidelines-H.pdf)
- CDC: Implementation of Personal Protective Equipment (PPE) in Nursing homes to Prevent the Spread of Multidrug- Resistant Organisms (MDROs) (www.cdc.gov/hai/containment/PPENursing-Homes.html)
- Wound Care Infection Prevention Recommendations for Long-Term Care Facilities. Minnesota department of health. 2022, October. Retrieved 3/22/24 from https://www.health.state.mn.us/facilities/patientsafety/infectioncontrol/woundcare.pdf
- CDC: Guideline for Disinfection and Sterilization in Healthcare Facilities (www.cdc.gov/infectioncontrol/pdf/guidelines/disinfection-guidelines-H.pdf)
- CDC: Healthcare Providers | Hand Hygiene (www.cdc.gov/handhygiene/providers/index.html)

Thank you!
Questions?

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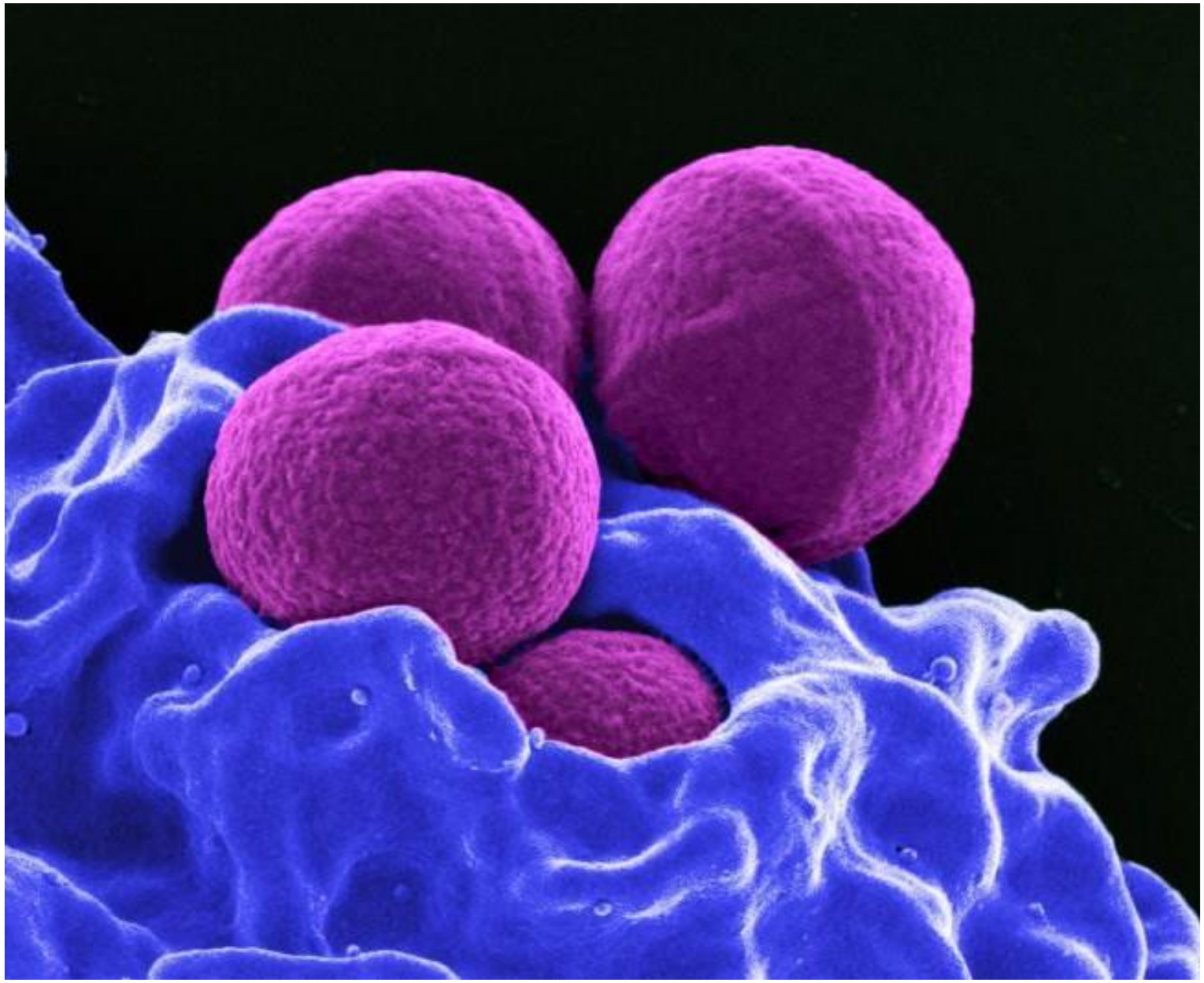

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HAI Infection Prevention Education webpage

HAI Infection Prevention Education

The resources below are intended to connect health care facility infection preventionists (IP) with education materials to support their role in preventing, detecting, and responding to healthcare-associated infections.

IPs play an essential role in facility infection prevention policy development, surveillance, and risk assessment.

IPs serve as a resource to other staff and programs within their facilities.

In addition to the state in-person trainings and online references below, there are a number of links to trusted education resources, including the CDC (Centers for Disease Prevention and Control), the Centers for Medicare and Medicaid Services (CMS), and the Association for Professionals in Infection Control and Epidemiology (APIC).

The IP Starter Kit provides Infection Preventionists a brief background and resources for some of the many infection prevention-related responsibilities within health care facilities.

Resources for infection preventionists

Long-Term Care Education series

The long-term care (LTC) education series provides education presentations on topics that include infection prevention, HAIs, antibiotic stewardship, disease surveillance, and outbreak response for staff at skilled nursing facilities, assisted living facilities, local health departments, and other LTC stakeholders. Each session features a new, timely topic presented by the Department of Health Services (DHS) program staff, HAI Infection Preventionists, partner organizations, or other external subject matter experts.

View the full library of education sessions. **Note:** All 2021 and 2022 education sessions can be found by visiting the full library

Have a topic request?

Send topic ideas or requests that you have for the long-term care education series or the IP lunch and learn series to DHSWIHAIPreventionProgram@dhs.wi.gov.

Upcoming LTC Education Session

Date: April 18, 2024

Topic: Multidrug-Resistant Organisms in Wisconsin

WISCONSIN DEPARTMENT of HEALTH SERVICES