# WOUND CARE

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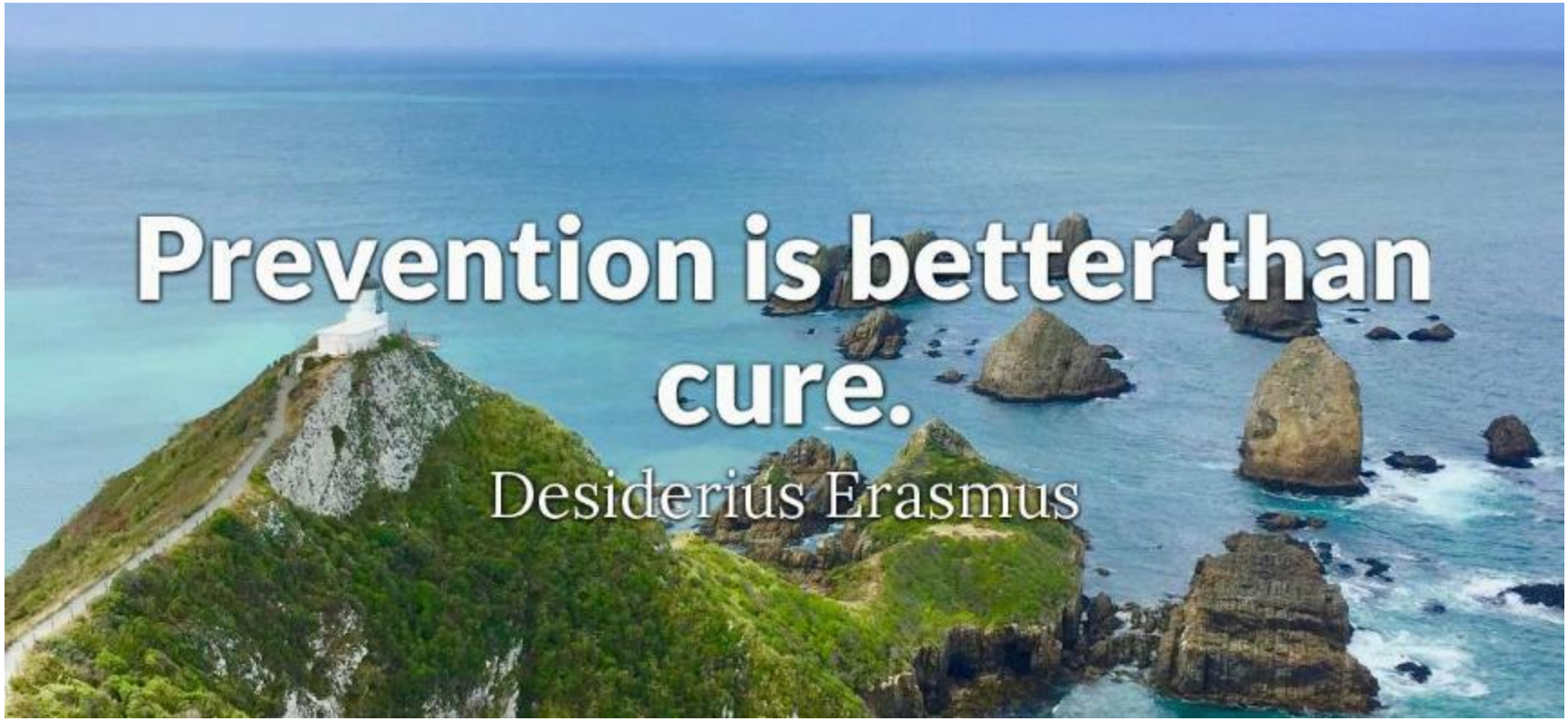

Prevention is better than cure.
Desiderius Erasmus

# Agenda

- New Island Health Wound Care Education
- The basics
- Wound Types and Diagnostics and practice updates
- Products and updates

- In development for wound care

# Island Health Skin and Wound Care Education

- Island Health Skin and Wound Care pages

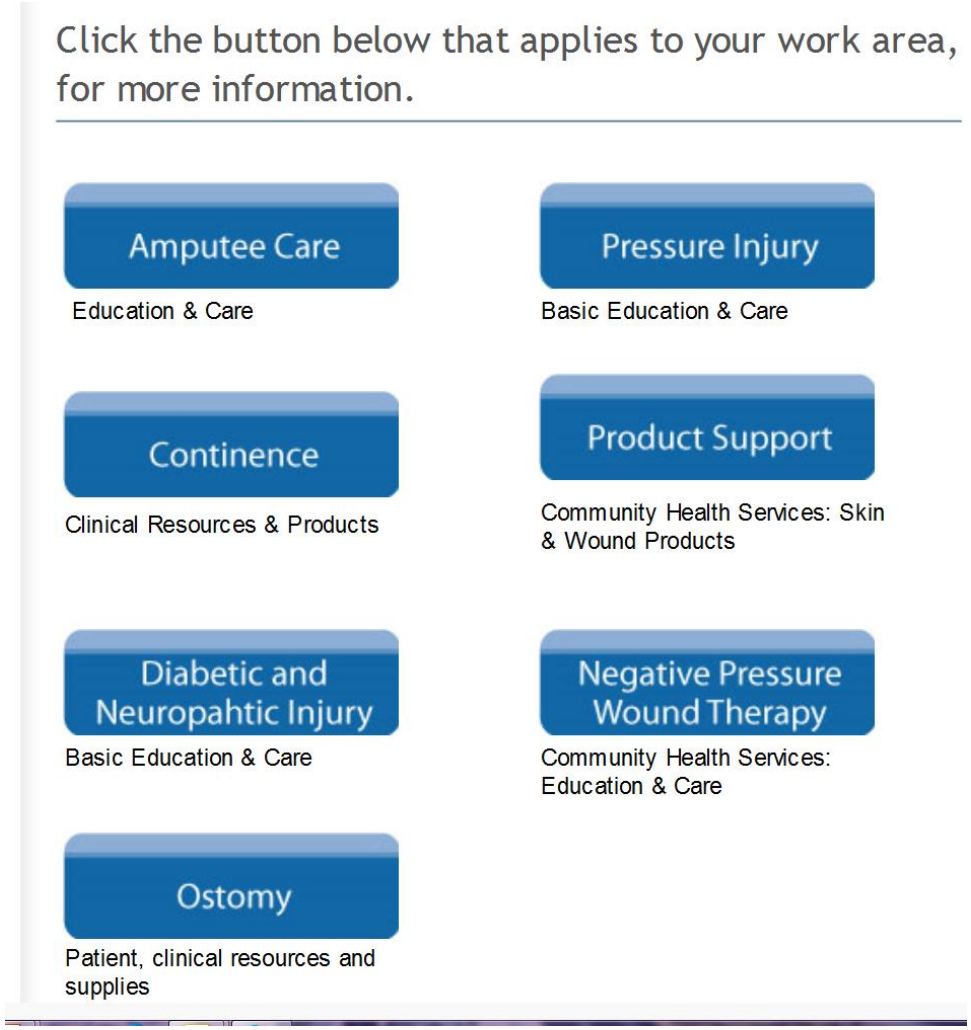
- Mandatory wound care education on hire for:  How wounds heal, wound assessment, pressure injury

- Cape tool for 9 month education program for all wound types
- Procedures for packing and swabbing
- E-Learning modules
- Best practice guidelines
- Dedicated one stop pages for information

# Main page


Skin, Wound, Ostomy and Continence
Island Health Skin,Wound, Ostomy and Continence
Skin and Wound Care
Continence
Ostomy
Additional Webpages / SharePoint Sites

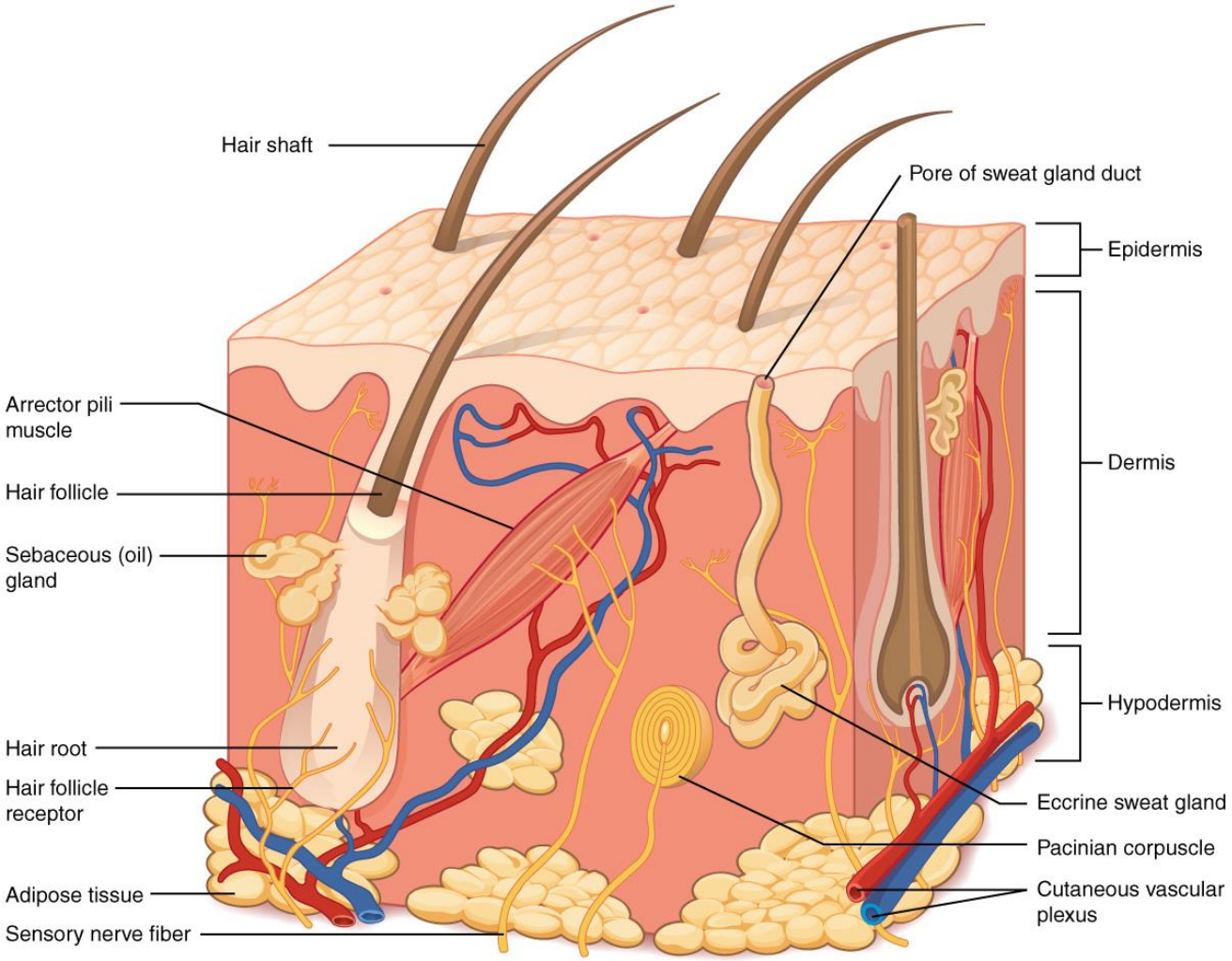
# Dedicated Pages



# Functions of the Skin

- Protection
- Thermoregulation
- Sensation
- Metabolism
- Communication

# Anatomy of the Skin



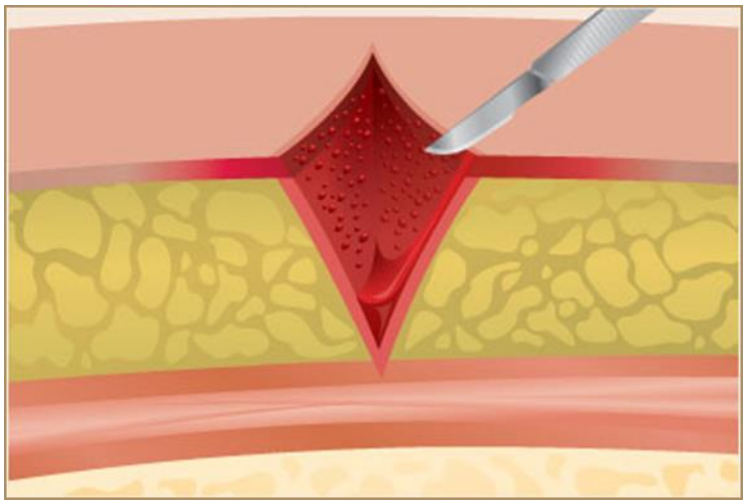
# Factors that Contribute to impaired Skin Integrity

- Circulation
- Nutrition
- Condition of the Epidermis
- Allergies
- Infections
- Systemic disease
- Trauma
- Medications
- Excessive exposure to the sun
- Mechanical forces- Friction, Shearing, Pressure

# Wound Healing Trajectory


- Hemostasis – first 24hours
- Inflammation – 1-4 days
- Proliferation or granulation – 4-21 days
- Remodeling or maturation – up to 2 years

# Hemostasis



**<u>Hemostasis</u>**

Occurs immediately after the injury. The blood begins clotting at the wound site and vasoconstriction occurs

**Clinical Goal:**

- Stop bleeding

# Inflammatory

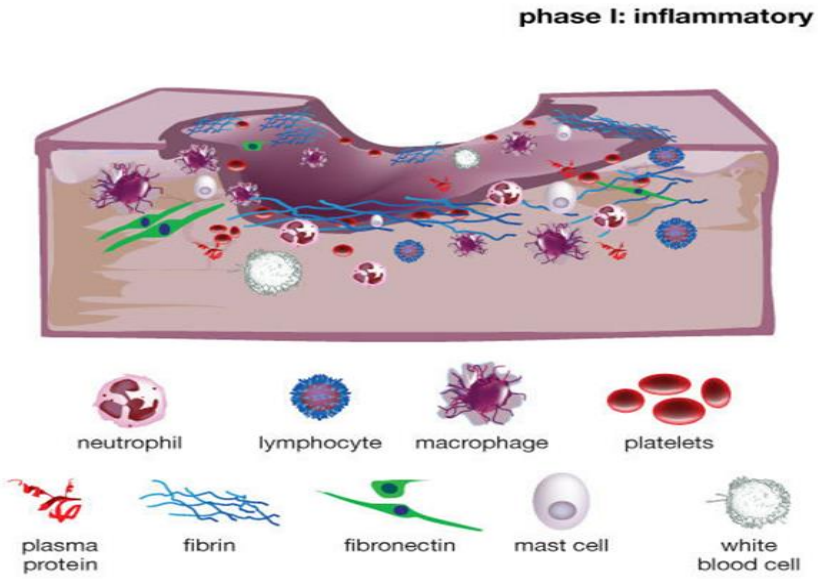
**Inflammation**

Begins right after the injury and lasts 4 - 6 days following the injury. A vascular and cellular response occurs in which a number of cells, including platelets, neutrophils and macrophages, migrate to the wound site

**Clinical Goal:**

Manage excessive inflammation

Assist wound progression



# Proliferation and Granulation 4-21 days

**Proliferation**

Between 3 and 21 days, tissue reconstruction begins, including angiogenesis, granulation and epithelialization

**Clinical Goal:**

Reduce wound volume
Assist wound progression
Prepare wound for closure

# Remodeling or maturation – up to 2 years

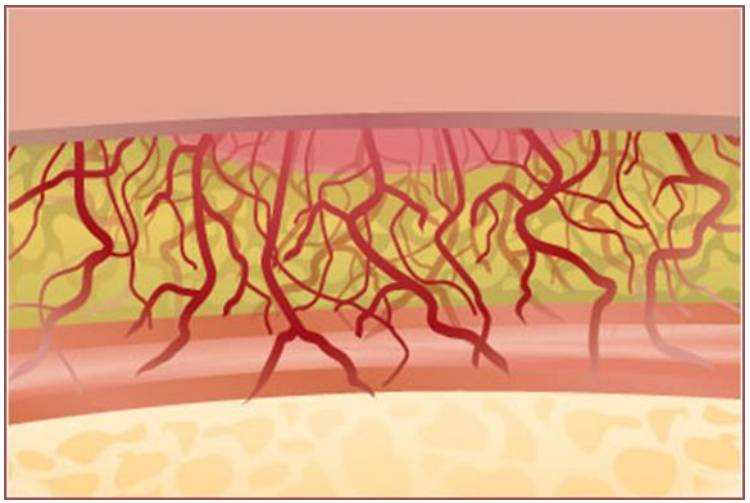
Interior finishing/remodelling or maturation  goal is to increase tensile strength

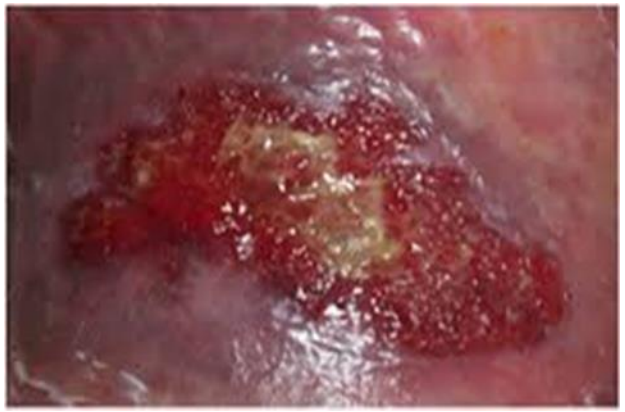
Results in a scar-active dynamic tissue

Stage 1: (up to 4 wks) soft fine and weak

Stage 11: (4-12 weeks) red and hard and Strong

Stage 111: (12wks to 2 yrs) soft, white and supple scar)





# Barriers to Wound Healing

- Necrotic tissue
- Infection
- Hemorrhage
- Pressure
- Mechanical damage
- Medical conditions
  - Diabetes
  - Vascular diseases
- Age
- Medicines
- Smoking
- Skin dryness


"What fits your busy schedule better, exercising one hour a day or being dead 24 hours a day?"

# Nutrition is key

Nutritional Status

- Nutrition is a critical factor in wound healing
- Patients who are nutritionally compromised cannot heal
- Albumin
  - Normal range: 35 – 50 g/L
  - Takes 21 days for changes in nutrition to change level
  - Wounds will not heal period if Albumin below 12 g/L

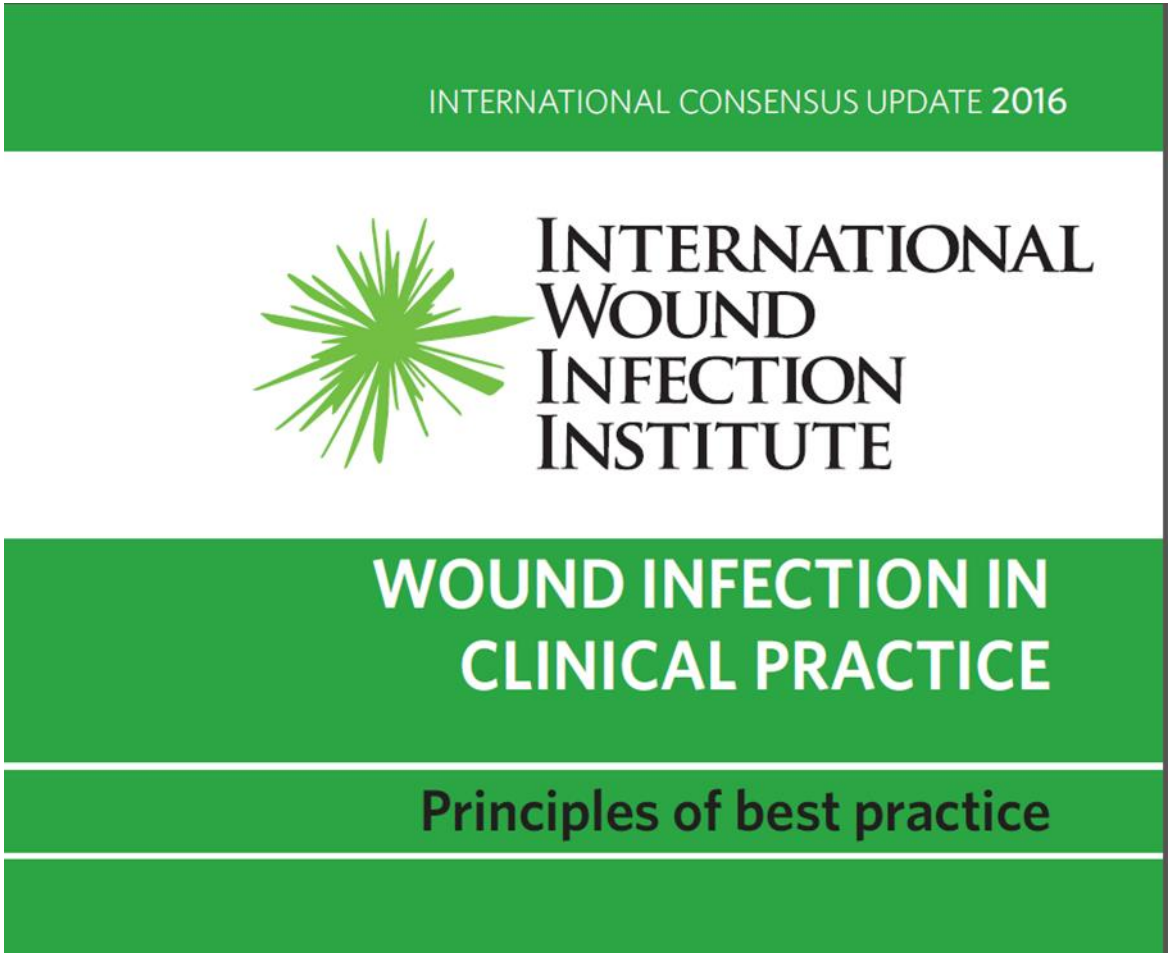
# Is it infected or critically colonized




friable tissue

- Has the drainage increased
- Is it more painful or pain in a insensate diabetic
- Heat
- Erythema to Periwound 2 cm
- Sugars uncontrolled by insulin if diabetic

# Updated evidence



# Treatment indications

**Figure 1 | IWII wound infection continuum**[22, 24, 25]

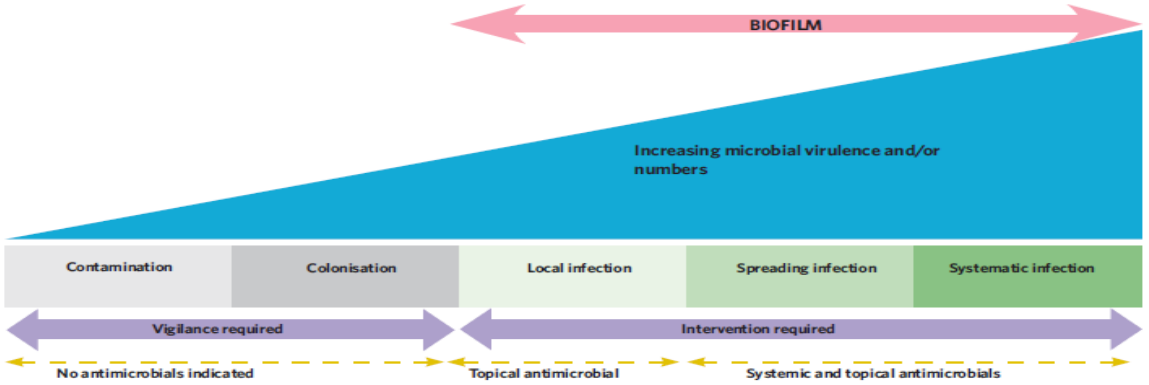
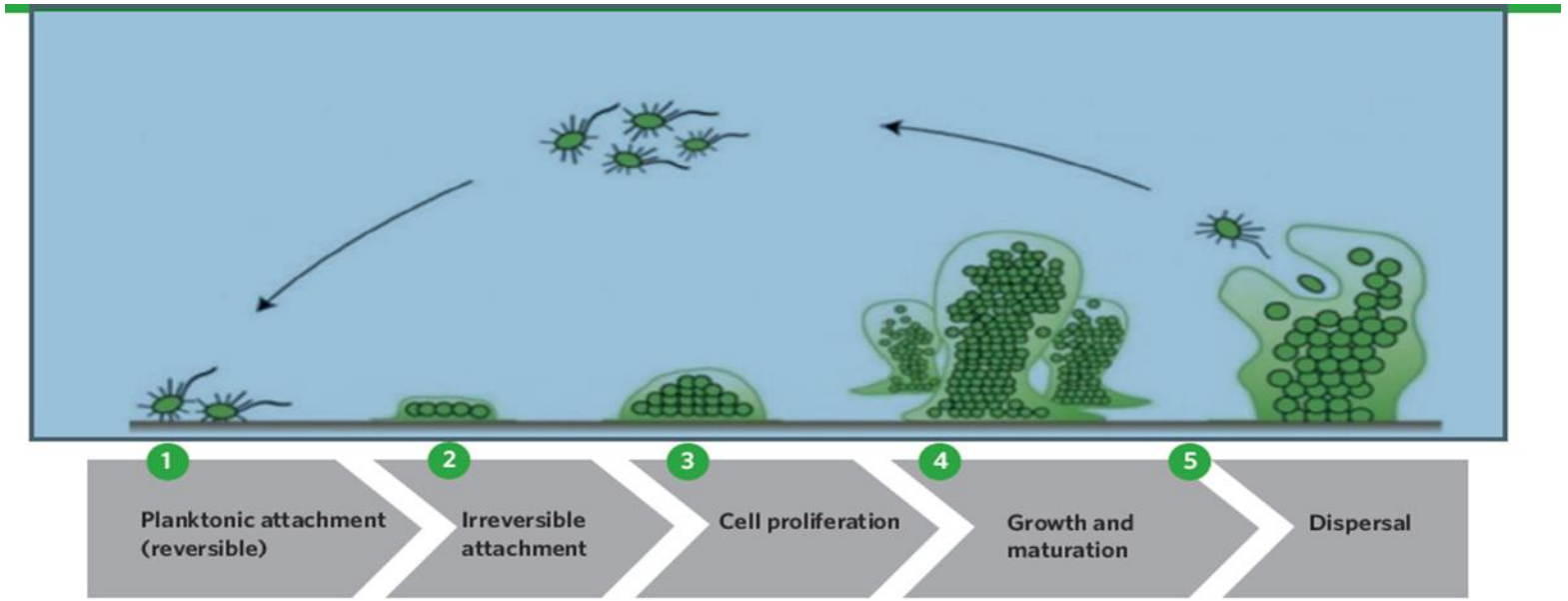



**Table 1: Signs and symptoms associated with stages of the wound infection continuum**

| Contamination[26] | Colonisation[26] | Local infection | | Spreading infection[22, 23] | Systemic infection[22, 23] |
|---|---|---|---|---|---|
| All wounds may acquire micro-organisms. If suitable nutritive and physical conditions are not available for each microbial species, or they are not able to successfully evade host defences, they will not multiply or persist; their presence is therefore only transient and wound healing is not delayed | Microbial species successfully grow and divide, but do not cause damage to the host or initiate wound infection | Covert (subtle) signs of local infection:[2, 27-36]<br>■ Hypergranulation (excessive 'vascular' tissue)<br>■ Bleeding, friable granulation<br>■ Epithelial bridging and pocketing in granulation tissue<br>■ Wound breakdown and enlargement<br>■ Delayed wound healing beyond expectations<br>■ New or increasing pain<br>■ Increasing malodour | Overt (classic) signs of local infection:[2, 27, 28, 35, 36]<br>■ Erythema<br>■ Local warmth<br>■ Swelling<br>■ Purulent discharge<br>■ Delayed wound healing beyond expectations<br>■ New or increasing pain<br>■ Increasing malodour | ■ Extending in duration +/- erythema<br>■ Lymphangitis<br>■ Crepitus<br>■ Wound breakdown/ dehiscence with or without satellite lesions<br>■ Malaise/ lethargy or non-specific general deterioration<br>■ Loss of appetite<br>■ Inflammation, swelling of lymph glands | ■ Severe sepsis<br>■ Septic shock<br>■ Organ failure<br>■ Death |




**Box 1: Criteria indicative of potential biofilm**

- Failure of appropriate antibiotic treatment
- Recalcitrance to appropriate antimicrobial treatment
- Recurrence of delayed healing on cessation of antibiotic treatment
- Delayed healing despite optimal wound management and health support
- Increased exudate/moisture
- Low-level chronic inflammation
- Low-level erythema
- Poor granulation/friable hypergranulation
- Secondary signs of infection

# Biofilm Assessment/Treatment

- Invisible to the eye
- Can have a yellow fur, but not always
- Suspect in older stalled wounds when Antibiotics not effective
- Wounds in boxer short region or feet
- Diabetics with poor sugar control

**Treatment**

- Mechanical Debridemnt
- Surgical removal
- Maggots?
- Gauze 20 minute Prontosan soaks

# What is Prontosan?

research

## Effect of a wound cleansing solution on wound bed preparation and inflammation in chronic wounds: a single-blind RCT


• **Objective:** Research into surfactant solutions for the debridement of chronic wounds suggests that surfactants may support wound bed preparation (WBP) in chronic wounds, however their efficacy has not been evaluated in randomised controlled trials (RCTs). Our aim was to assess the clinical efficacy of a propylbetaine-polihexanide (PP) solution versus normal saline (NS) solution in WBP, assessing inflammatory signs and wound size reduction in patients with pressure ulcers (PUs) or vascular leg ulcers.

• **Method:** In a single-blinded randomised controlled trial (RCT) patients were randomly allocated to two groups and treated with either propylbetaine-polihexanide (PP) solution (Prontosan) or NS. Wounds were assessed using the Bates-Jensen wound assessment tool (BWAT). Assessments took place at inclusion (T0), day 7 (T1), day 14 (T2), day 21 (T3), and day 28 (T4). Outcomes were analysed using a two-tailed Student's t-test.

• **Results:** A total of 289 patients were included. Both groups had similar demographics, clinical status, and wound characteristics. Data analysis showed statistically significant differences between T0 and T4 for the following outcomes: BWAT total score, p=0.0248; BWAT score for inflammatory items, p=0.03; BWAT scores for wound size reduction (p=0.049) and granulation tissue improvement (p=0.043), all in favour of PP. The assessment of pain did not show any significant difference between the two groups.

• **Conclusion:** The study results showed significantly higher efficacy of the PP solution versus NS solution, in reducing inflammatory signs and accelerating the healing of vascular leg ulcers and PUs. This evidence supports the update of protocols for the care of chronic wounds.

# Wound Assessment

- Etiology
- What stage is the wound in?
- How did it start how old?
- Exposed Structures ?
- Improving/ no change/ worse
- Is it infected or critically colonized ?
- Comorbid conditions
- Goal for wound-Fragility scale
- Patients goals
- Current care?

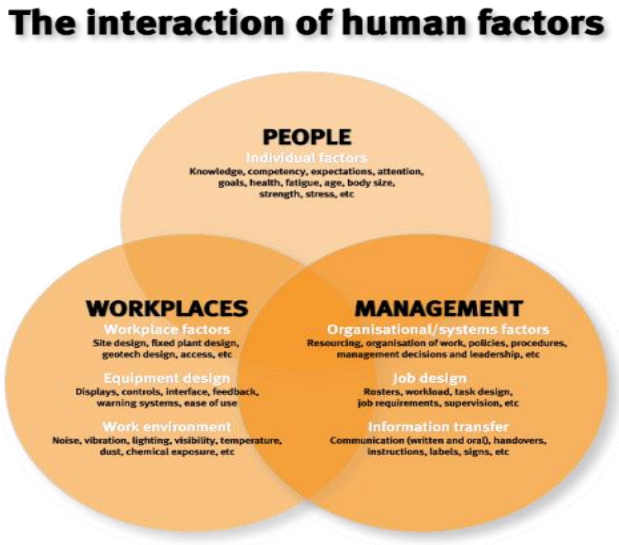
Review

- Diabetic control A1C
- Nutritional status blood work
- smoking
- Hemoglobin
- Albumin
- Anticoagulant therapy
- Autoimmune disorders
- Blood flow if lower limb(ABI) Doppler exam
- Venous disease
- Heart failure
- Blood pressure
- Medications like prednisone/chemo

# Human factors

- Patient compliancy
- cognition
- Appetite
- What surfaces they are on and what is available
- Overall ability to heal

- Look at the availability of supplies
- Cost of dressings (who is paying)
- Expertise  and training of provider doing care
- Time and accessibility of provider to give care



# Care by Wound Types/ Etiology

- Skin Tears
- Burns
- Venous disease
- Arterial Disease
- Diabetic ulcers
- Cancers
- Pressure Injury

# Skin Tears

- Risk factors

- Increased age
- Dryness
- Prednisone
- Shear
- Friction
- trauma

Assess

- infection

Treatment

- Close flap +/- skin glue
- Non adherent change q3 to 5 days
- Wrap dressing/no tape or strong adhesive
- Review of transfers and equipment
- Moisturize skin

https://www.clwk.ca/buddydrive/file/guideline-skin-tears-final-may-2016

# Burns

Risk factors

- Male 17 to 35
- Mental health issues coupled with or without Addictions
- Alcohol
- Cooking Drugs at home
- Children in Kitchens
- Loss of sensation

Actions

TBSA at time of burn and 72 hours post
Dress with Restore or jelonet 1st three days
Scarring risk factors
Pain with procedure
Who will debride?
Joints/faces/groins clinic or admitted
Burns over 10%
Restore TRIAC q3days
Access to care? Provider and funds
Expertise in care
If does not heal in 2 weeks review for grafting

Referrals:
RJH Burn Outpatient clinic
CHS
Plastics

# Venous

Risk Factors

- CEAP 3-6
- Genetic
- Injury
- Standing job such as clerk or hairdresser or sitting with legs down
- Age
- History of DVT
- Venous disease over time unmanaged can turn into a secondary lymphedema


Assess

- Is there mixed arterial disease
- Heart failure/Values
- Age of open area
- Hx of compression management?
- Compliancy for compression
- Is this lymphedema now?
- Shower between dressing changes
- Coban 2 light wraps-who can apply
- If bilateral wrap one leg to start and have nurse review in 48 hours
- Transition into sock once wound closed and edema managed
- Order
- Elevate legs when possible
- Order
- ABI with waveform and toe pressure
- Venous reflux studies

Referrals:

- Lower Leg Wound Clinic
- Urgent Vascular Limb Clinic
- Vascular Surgeon
- CHS

# Arterial

Risk Factors

Age
Smoking
CAD
Diabetes
High cholesterol
MS

Diabetes can mask Arterial

Dressings suggestions

Povidone Iodine
Inadine

Assess

- Temperature, Pulses, pallor, paresthesia
- Smoking still?
- Open areas manage with dry antimicrobial dressings unless vascularized
- Footwear review
- Pressure points ADL's
- How far can you walk?
- Do you dangle foot or sleep in a chair
- Contributing cardiac conditions CAD or heart failure
- Ensure dry gangrene

Orders

- Avoid foot elevation especially if wounds
- ABI with toes pressures and waveform
- Venous reflux studies
- CTA with runoff

Referrals

- LLWC Lower Leg Wound Clinic
- UVLC  Urgent Vascular Limb Clinic
- Vascular Surgeon
- CHS

# Diabetic

Risk Factors

- Loss of sensation
- Job walking/standing on your feet
- Poor footwear
- Uncontrolled sugars
- Loss of vison or unmanaged feet

Assess
- Footwear
- Lifestyle
- Callous amount and recurrence
- Infection-Pain
- Ability to self care
- Compliancy

Order
- ABI with toe pressure and waveform
- Prophylactic antibiotics
- Off Loading- air boot or total contact cast
- Bloodwork AIC, c-reactive, x-ray (bone or foreign objects) WBC

Referrals
- Podiatrist or Foot care nurse to manage callous
- LLWC Lower Leg wound clinic
- CHS

Iodasorb is a great product
Regular Callous debridement

# Cancers

Risk Factors
Irregular in shape
Vascular growth or non healing ulceration
Open area that doesn't make sense for pressure
History of skin cancer or long trips to Hawaii
Over exposure to the sun

Assess

Growth or ulcer rate of change

Conservative management with jelonet or non adherent

No V.A.C therapy

Order

- Punch Biopsy
- Fresh frozen plasma

Referrals

- Dermatology
- Plastics
- Surgical suture
- CHS

# Fungating wounds

**Treatments**

- Radiotherapy
- Chemotherapy (fluorouracil cream if a primary cancer)  drip if secondary
- Hormone (breast)
- Electrochemotherapy

(stop bleeding)

**Management**

- Malodour
- Pain
- Exudate
- Bleeding
- Pruritus

# Dimethyl trisulfide (DMTS)

- The gas (volatiles) emitted from cooked onions, vegetables and aged/fermented cheeses and beer
- Pseudomonas and candida organisms emit the same odour (DMTS)
- Can be treated with metronidazole? (Reduce anaerobes)
- Silver/charcoal dressings to treat odour

- Try Prontosan soaks?
- miltefosine solution?

https://www.jstage.jst.go.jp/article/bbb/73/9/73_90229/_pdf

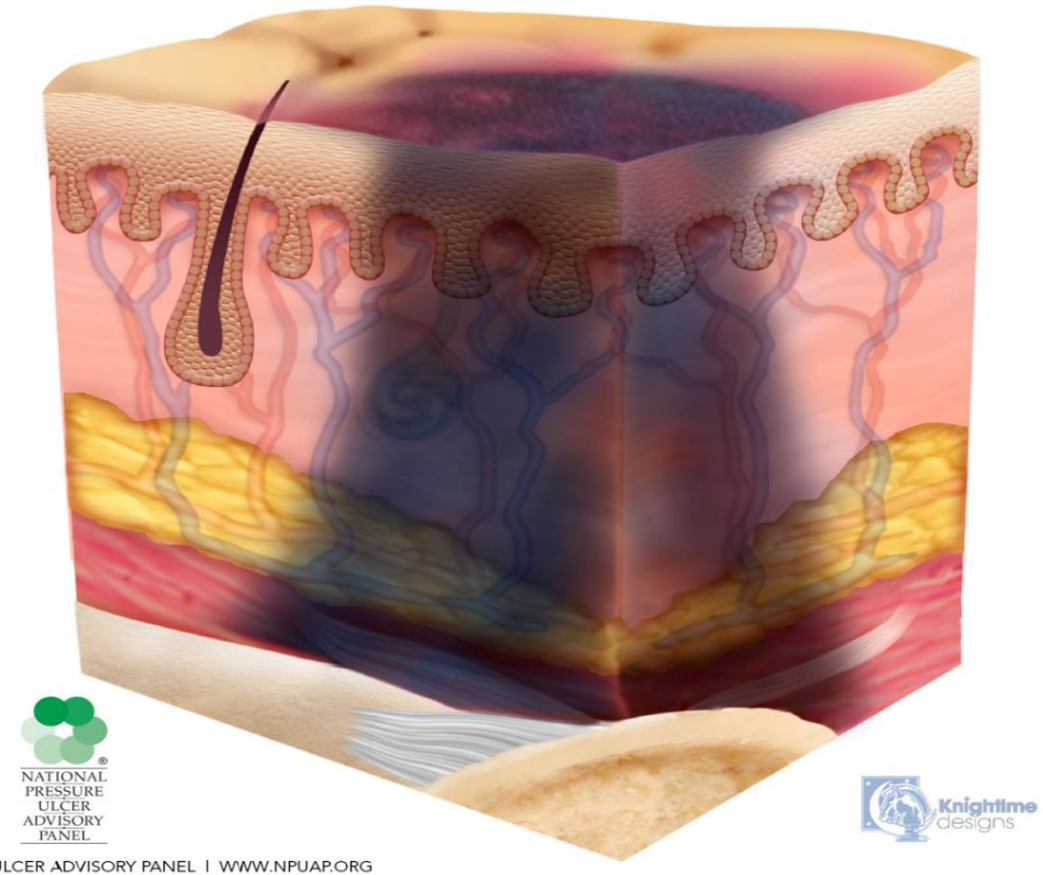
# Pressure Injury

Pressure Injury

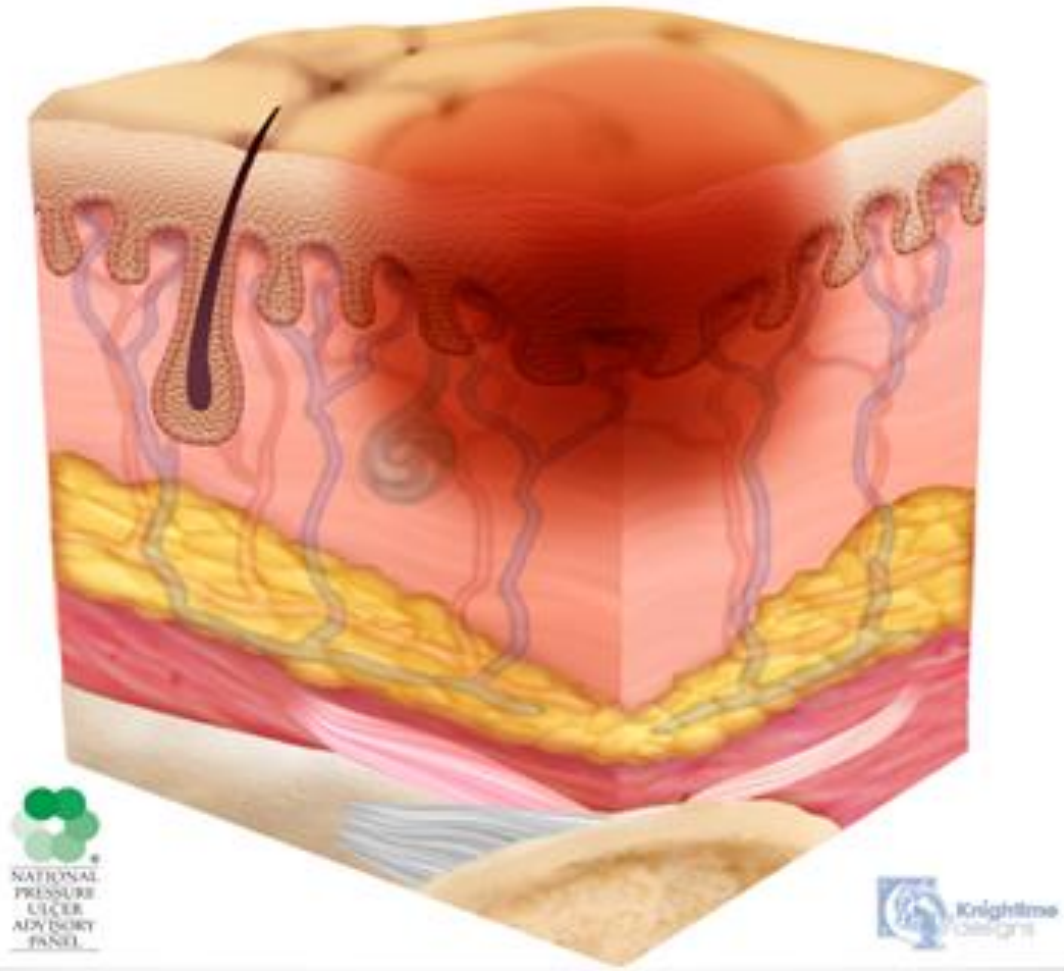
A pressure injury is localized damage to the skin and underlying soft tissue usually over a bony prominence or related to a medical or other device. The injury can present as intact skin or an open ulcer and may be painful. The injury occurs as a result of intense and/or prolonged pressure or pressure in combination with shear. The tolerance of soft tissue for pressure and shear may also be affected by microclimate nutrition, perfusion, co-morbitities and condition of the soft tissue. (April 9, 2016)

http://www.npuap.org/resources/educational-and-clinical-resources/npuap-pressure-injury-stages/?gclid=CJy04rPc59ECFQ5EfgodH30CtQ

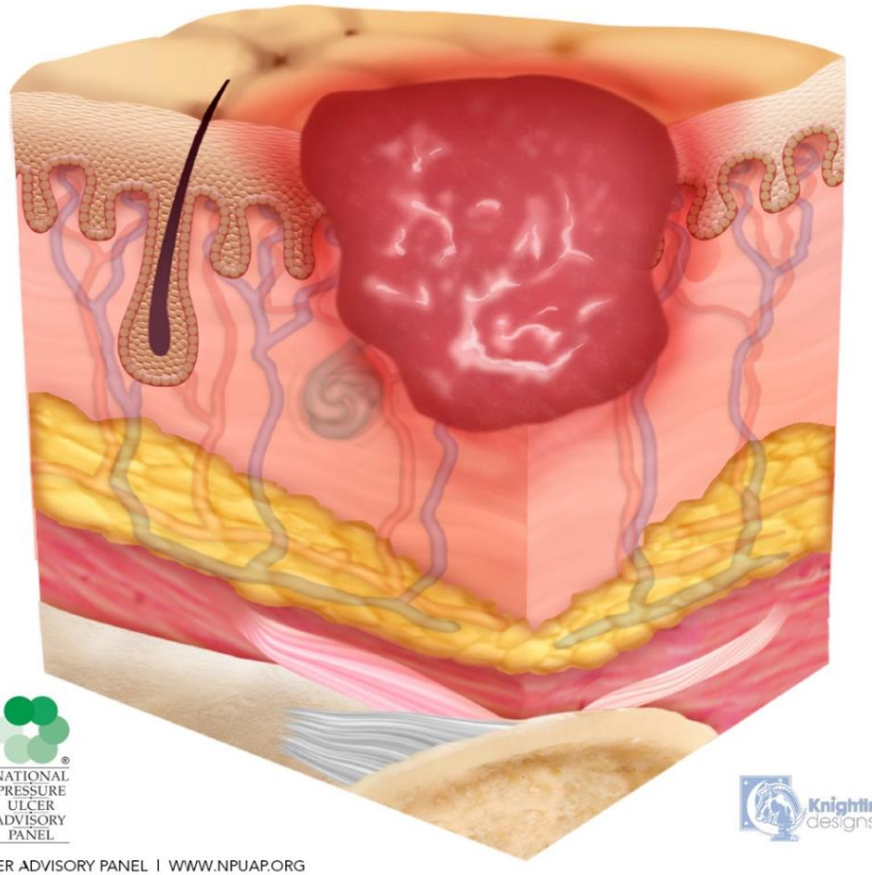
# Deep Tissue Pressure Injury



# Stage 1 Pressure Injury - Lightly Pigmented



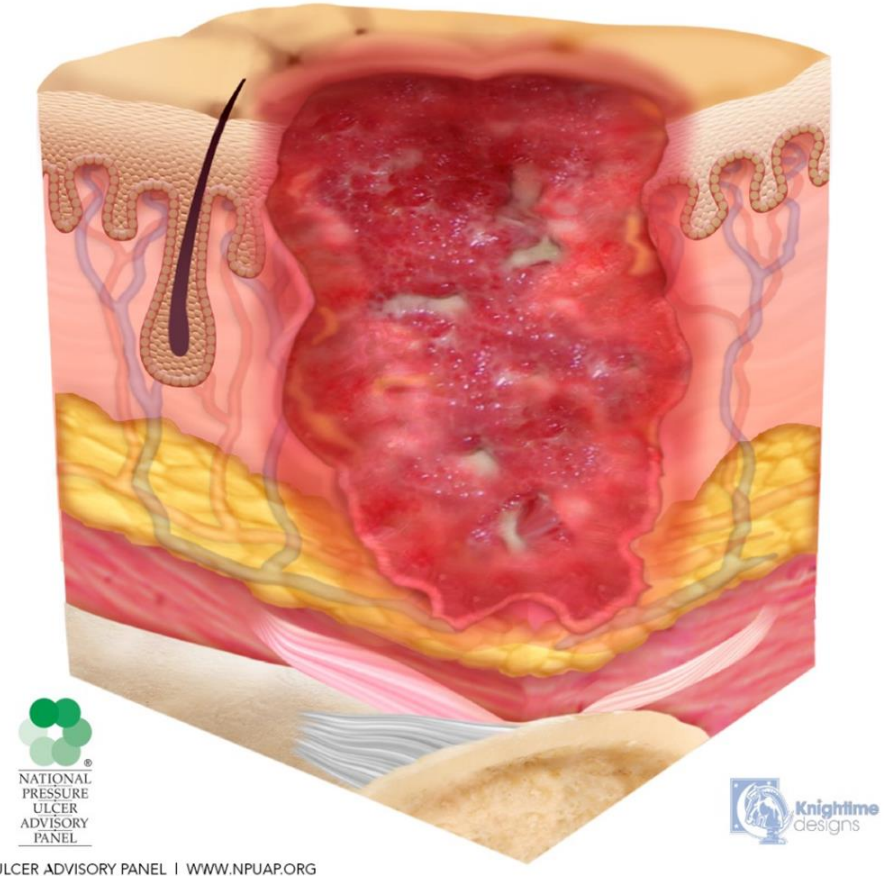
# Stage 2 Pressure Injury



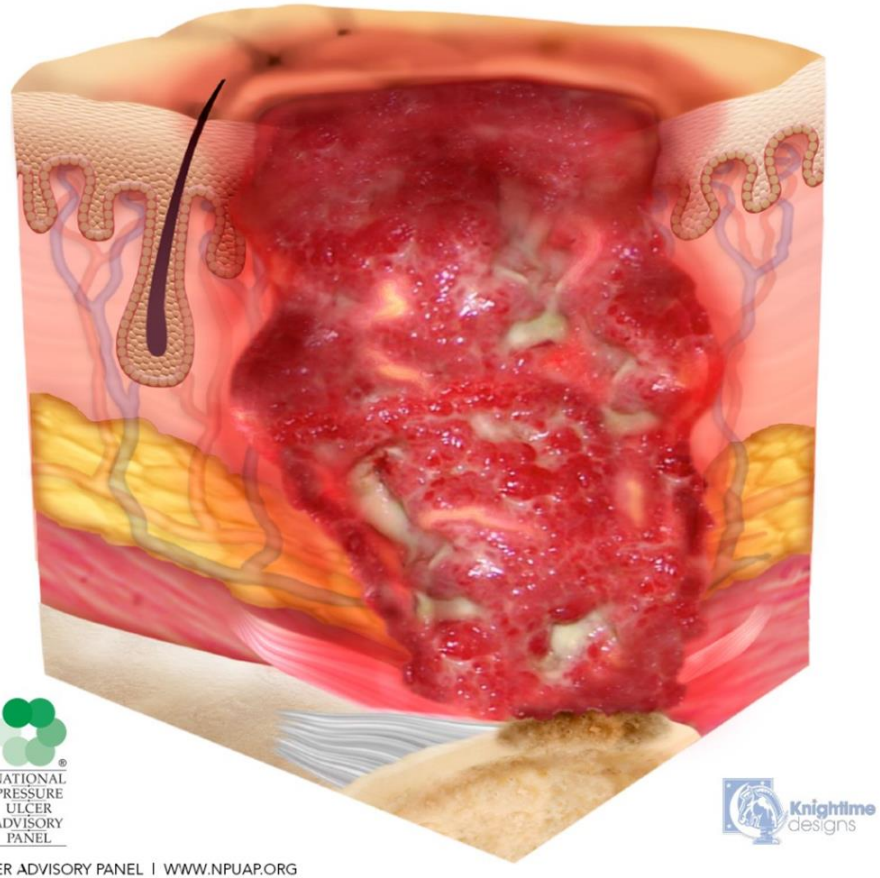
NATIONAL PRESSURE ULCER ADVISORY PANEL

Knightlime designs

# Stage 3 Pressure Injury



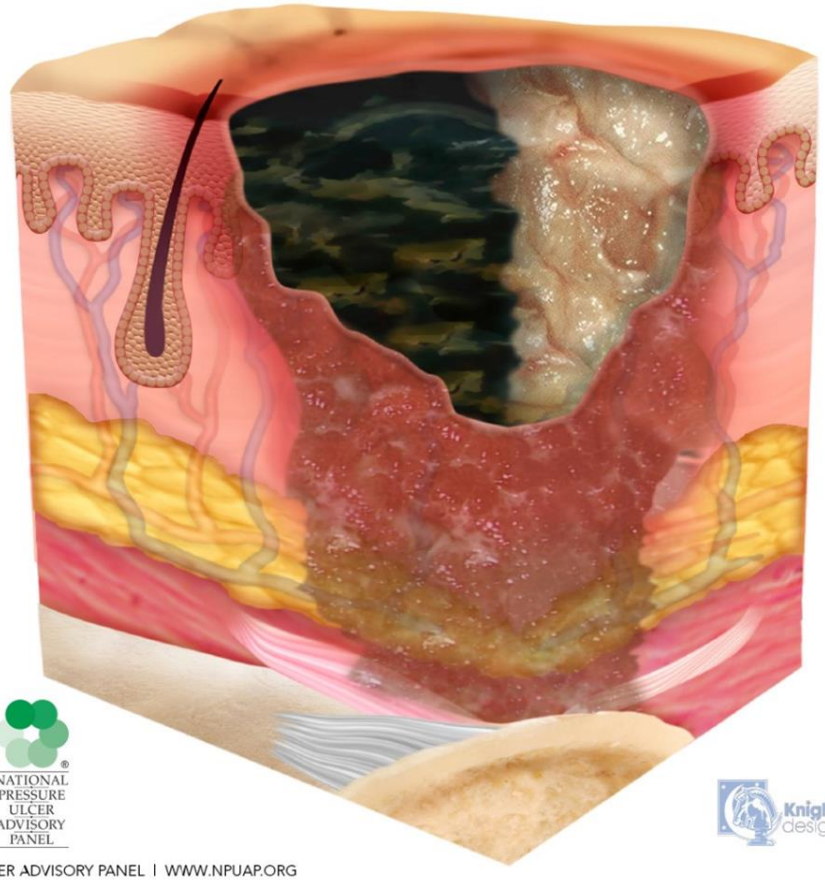
# Stage 4 Pressure Injury



NATIONAL PRESSURE ULCER ADVISORY PANEL

Knightime designs

# Unstageable Pressure Injury – Slough and Eschar



# Pressure Injury

## Risk factors

- Shear
- Friction
- Excessive Moisture/continence issues
- Age
- Poor nutrition
- Immobility
- I can go on…..

## Assess

Stage
Infection or colonization
Compliancy
Cognition
Bone?
Current care

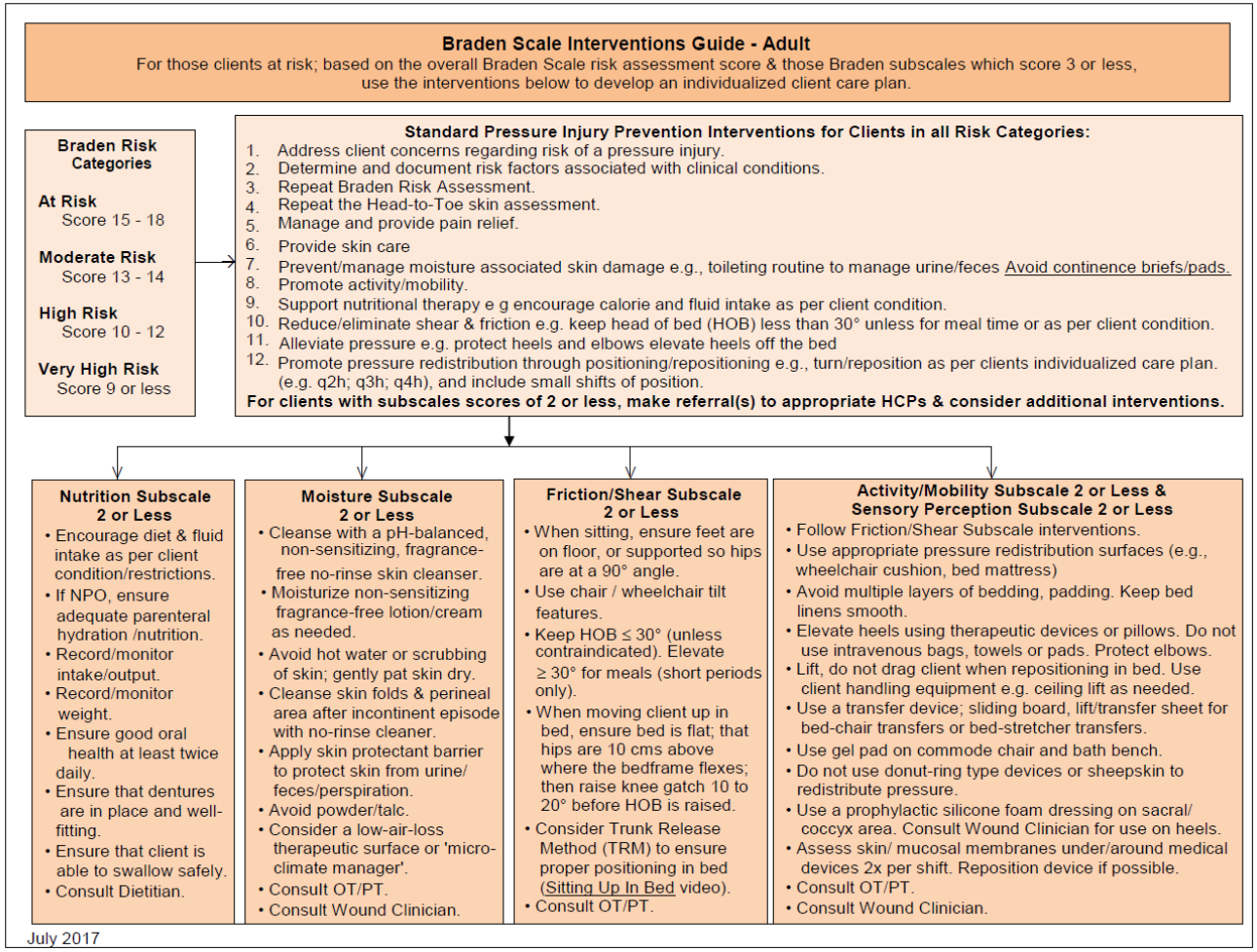
## Order

Braden qshift
OT for surfaces
PT to assess transfers
Turn schedule (client centred)
Restrictions on activity
Smoking cessation
Dietitian to see (bloodwork to assess nutrition)

## Referrals

Pressure Injury Access Clinic
CHS
RADD Team
QA seating review

# Order this on Chart !!



**Braden Scale Interventions Guide - Adult**

For those clients at risk; based on the overall Braden Scale risk assessment score & those Braden subscales which score 3 or less, use the interventions below to develop an individualized client care plan.

**Braden Risk Categories**

**At Risk**
Score 15 - 18

**Moderate Risk**
Score 13 - 14

**High Risk**
Score 10 - 12

**Very High Risk**
Score 9 or less

**Standard Pressure Injury Prevention Interventions for Clients in all Risk Categories:**

1. Address client concerns regarding risk of a pressure injury.
2. Determine and document risk factors associated with clinical conditions.
3. Repeat Braden Risk Assessment.
4. Repeat the Head-to-Toe skin assessment.
5. Manage and provide pain relief.
6. Provide skin care
7. Prevent/manage moisture associated skin damage e.g., toileting routine to manage urine/feces Avoid continence briefs/pads.
8. Promote activity/mobility.
9. Support nutritional therapy e g encourage calorie and fluid intake as per client condition.
10. Reduce/eliminate shear & friction e.g. keep head of bed (HOB) less than 30° unless for meal time or as per client condition.
11. Alleviate pressure e.g. protect heels and elbows elevate heels off the bed
12. Promote pressure redistribution through positioning/repositioning e.g., turn/reposition as per clients individualized care plan. (e.g. q2h; q3h; q4h), and include small shifts of position.

**For clients with subscales scores of 2 or less, make referral(s) to appropriate HCPs & consider additional interventions.**

**Nutrition Subscale 2 or Less**

- Encourage diet & fluid intake as per client condition/restrictions.
- If NPO, ensure adequate parenteral hydration /nutrition.
- Record/monitor intake/output.
- Record/monitor weight.
- Ensure good oral health at least twice daily.
- Ensure that dentures are in place and well-fitting.
- Ensure that client is able to swallow safely.
- Consult Dietitian.

**Moisture Subscale 2 or Less**

- Cleanse with a pH-balanced, non-sensitizing, fragrance-free no-rinse skin cleanser.
- Moisturize non-sensitizing fragrance-free lotion/cream as needed.
- Avoid hot water or scrubbing of skin; gently pat skin dry.
- Cleanse skin folds & perineal area after incontinent episode with no-rinse cleaner.
- Apply skin protectant barrier to protect skin from urine/ feces/perspiration.
- Avoid powder/talc.
- Consider a low-air-loss therapeutic surface or 'micro-climate manager'.
- Consult OT/PT.
- Consult Wound Clinician.

**Friction/Shear Subscale 2 or Less**

- When sitting, ensure feet are on floor, or supported so hips are at a 90° angle.
- Use chair / wheelchair tilt features.
- Keep HOB ≤ 30° (unless contraindicated). Elevate ≥ 30° for meals (short periods only).
- When moving client up in bed, ensure bed is flat; that hips are 10 cms above where the bedframe flexes; then raise knee gatch 10 to 20° before HOB is raised.
- Consider Trunk Release Method (TRM) to ensure proper positioning in bed (Sitting Up In Bed video).
- Consult OT/PT.

**Activity/Mobility Subscale 2 or Less & Sensory Perception Subscale 2 or Less**

- Follow Friction/Shear Subscale interventions.
- Use appropriate pressure redistribution surfaces (e.g., wheelchair cushion, bed mattress)
- Avoid multiple layers of bedding, padding. Keep bed linens smooth.
- Elevate heels using therapeutic devices or pillows. Do not use intravenous bags, towels or pads. Protect elbows.
- Lift, do not drag client when repositioning in bed. Use client handling equipment e.g. ceiling lift as needed.
- Use a transfer device; sliding board, lift/transfer sheet for bed-chair transfers or bed-stretcher transfers.
- Use gel pad on commode chair and bath bench.
- Do not use donut-ring type devices or sheepskin to redistribute pressure.
- Use a prophylactic silicone foam dressing on sacral/ coccyx area. Consult Wound Clinician for use on heels.
- Assess skin/ mucosal membranes under/around medical devices 2x per shift. Reposition device if possible.
- Consult OT/PT.
- Consult Wound Clinician.

July 2017

# Updates

- SNAP may be coming to residential care and community
- Marilyn Elder has been coming to help in residential with pressure wounds
- You can order care as per “provincial guidelines”

# Resources/Refereneces

- VIHA Wound and Skin Guidelines

https://intranet.viha.ca/departments/hcc/standards/Pages/skin_and_wound_care.aspx

CLWK website

https://www.clwk.ca/communities-of-practice/skin-wound-community-of-practice/

- ET's-out patient clinic at RJH-compression/Stoma
- Burn and Wound Clinic (patient referral required)
- Lower Leg Wound Clinic LLWC (patient referral required physiatrist)

https://intranet.viha.ca/departments/hcc/Documents/standards%20and%20guidelines/skin_and_wound_care/fluc_physician_referral_form.pdf

- Pressure Injury Access Clinic (referral required) Starts March 2017 (plastics and physiatrists)
- CAWC site


Questions