MaineHealth

MMC Burn & Soft Tissue Service
Burn/Wound – Nursing Care Fundamentals

Critical Care – Nurse Education Series – May 2023

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Non-disclosures

All planners, faculty, and others in control of the content of this educational activity have no relevant financial relationships with ineligible entities (i.e., commercial organizations).

Objectives

- Describe the role of the Burn & Soft Tissue Service at Maine Medical Center and identify team members
- Review principals of wound management and nursing role/responsibilities
- Review burn and wound types, grafts and dermal substitutes
- Identify BST resources and ongoing meetings, opportunity for education and getting involved

Burn & Soft Tissue Service

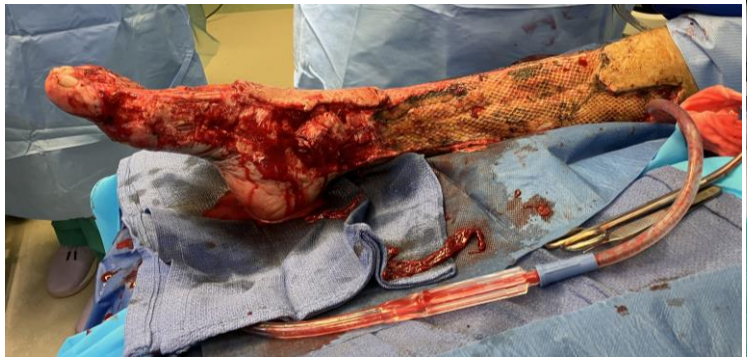
- Inpatient surgical service using a multidisciplinary team-based approach to patient care of patients with burn injury and complex wound care needs

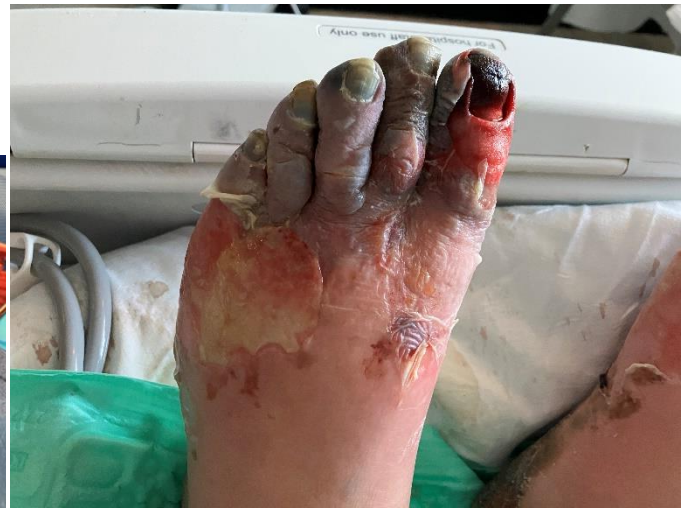
BST dedicated staff

- Burn Physicians: Damien Carter MD
  Stacy Rotta MD
  Liz Turner MD
  + Surgical resident on service
  Rotating Trauma Attending - Laura Withers MD
- Burn APP: Rosemary Paine NP
- Burn/Wound Resource Nurse: Hannah Miner CWON
  Sue Reeder CWCN
- Burn Psychologist: Kristen Kemerling PsychD
- Burn Therapists: Kelley Crawford, Lisa Murray, Kristen Wendland (PT)
  Raechell Kearney, Alex Walton, Daren Dionne, Tony Perry, Lowella Outlette (OT)
- Burn Dietician Specialist: Michelle Creech RD
- Pharmacy: Katie Smith PharmD (SCU)

Typical BST-managed wounds

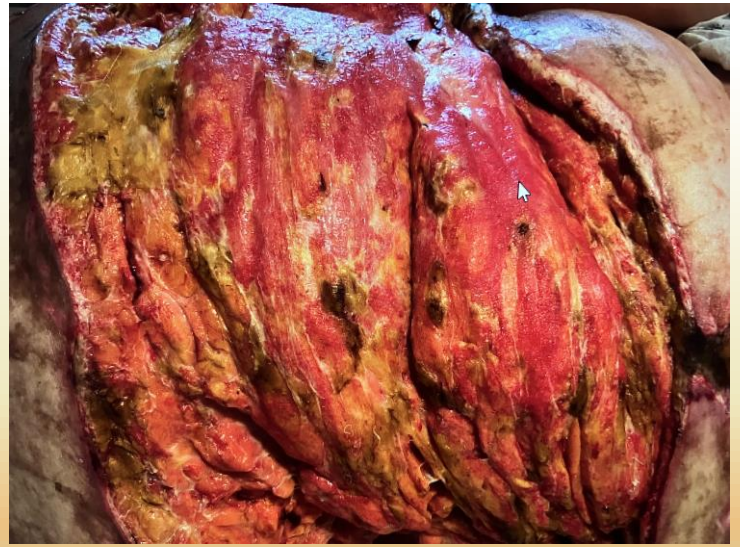
- All Burn injuries (> Age 16)
- Frostbite injury
- Necrotizing soft tissue infections
- Exfoliative skin diseases (SJS/TENS) > 15% open





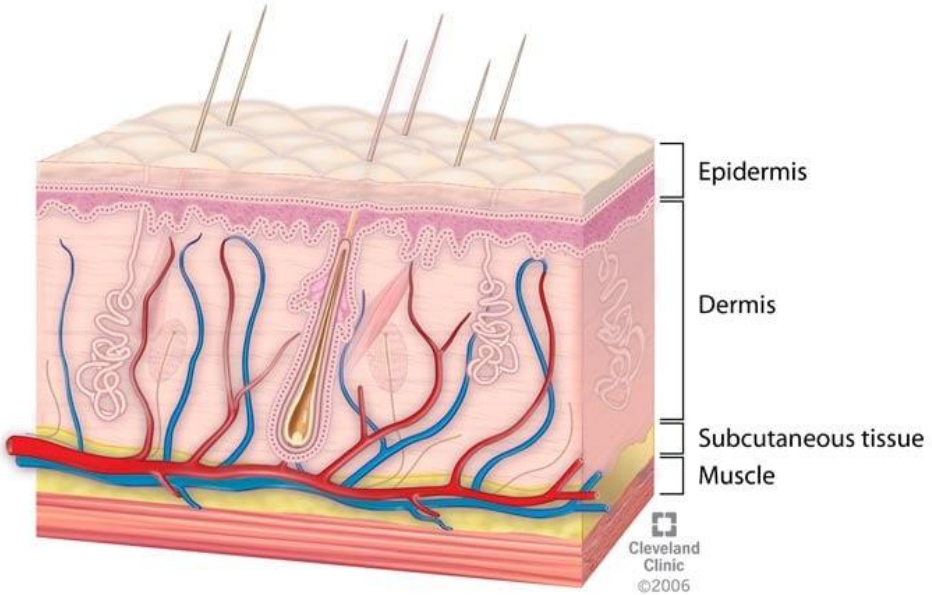
Other atypical complex wounds BST may be involved with:

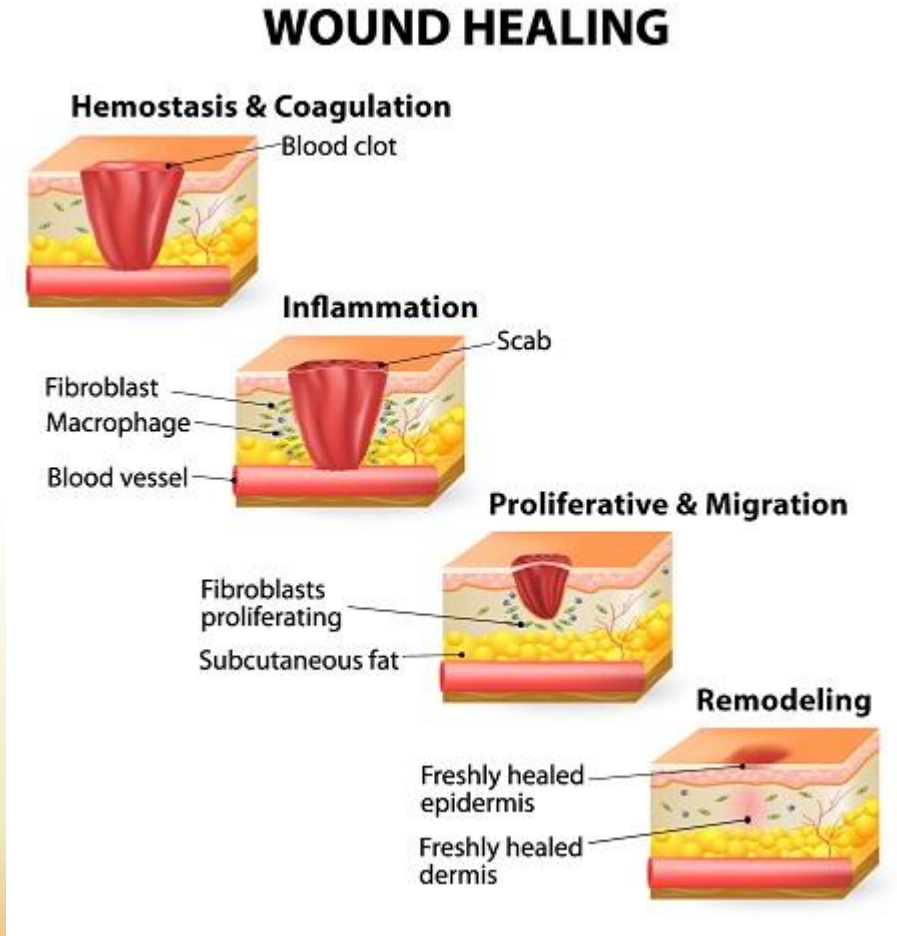
- Non-healing chronic wounds, soft tissue injuries
- Complex podiatry, DFUs
- Calcyphylaxis
- Hydradenitis
- TSS



Wound Care Fundamentals

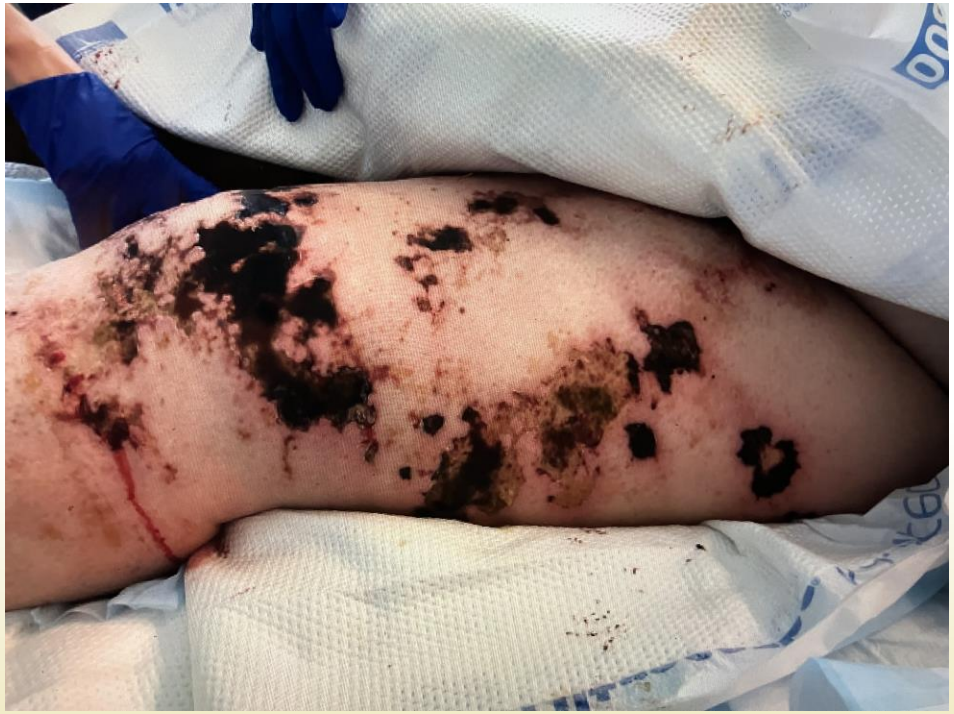
Anatomy of the Skin –





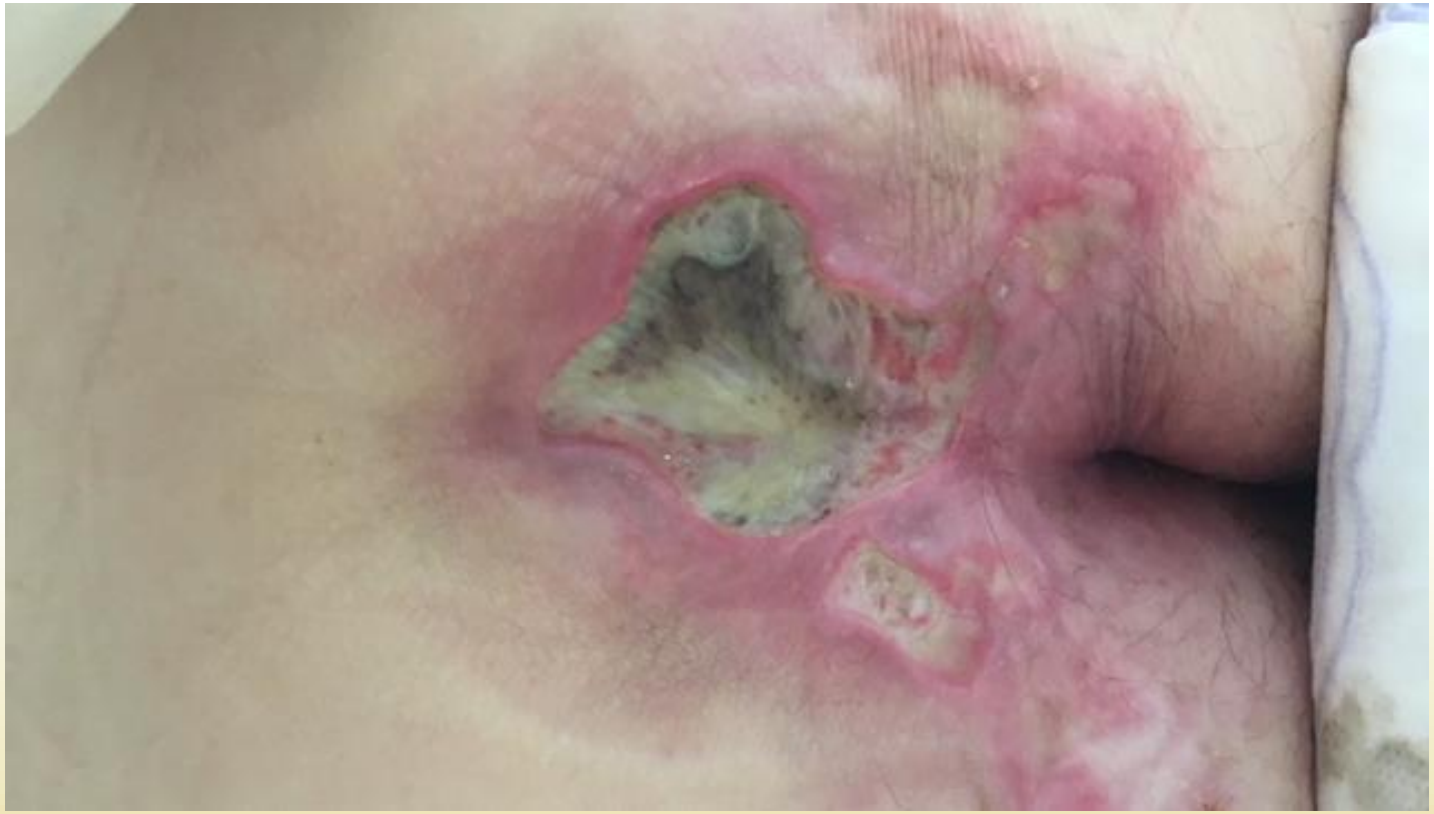
Factors that affect wound healing

- Diabetes
- Obesity
- Autoimmune
- Necrosis
- Poor nutrition
- Pharm – NSAIDs, steroids
- Radiation therapy
- Chemotherapy
- Smoking
- Alcoholism
  - Zinc
  - Vit C



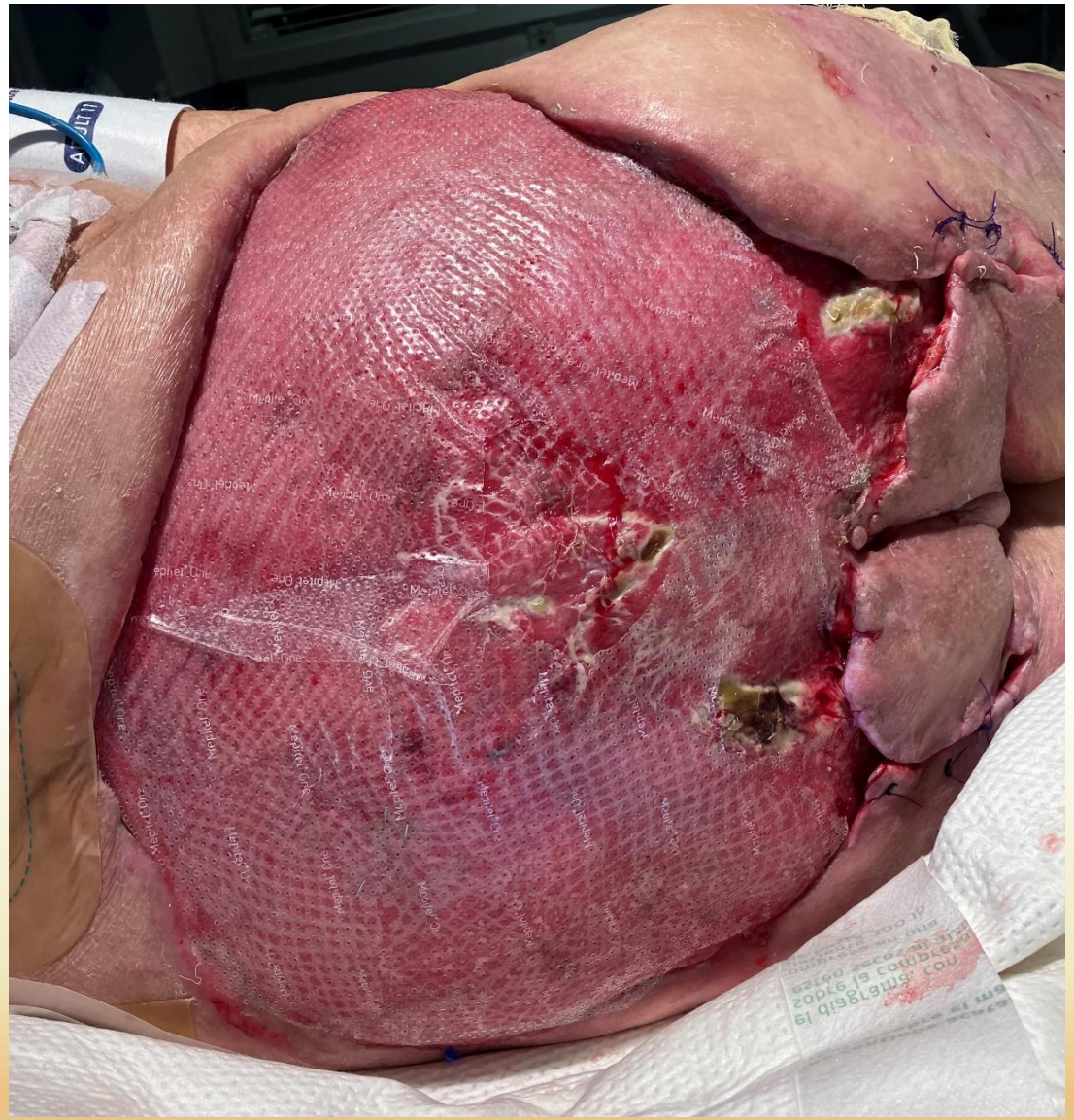
Wound Assessment

- Etiology
- Anatomic location
- Size, depth (partial vs. full thickness)
- Wound base characteristics
- Edges
- Exudate (drainage) amount
- Signs/symptoms of infection
- Periwound skin condition
- Pain



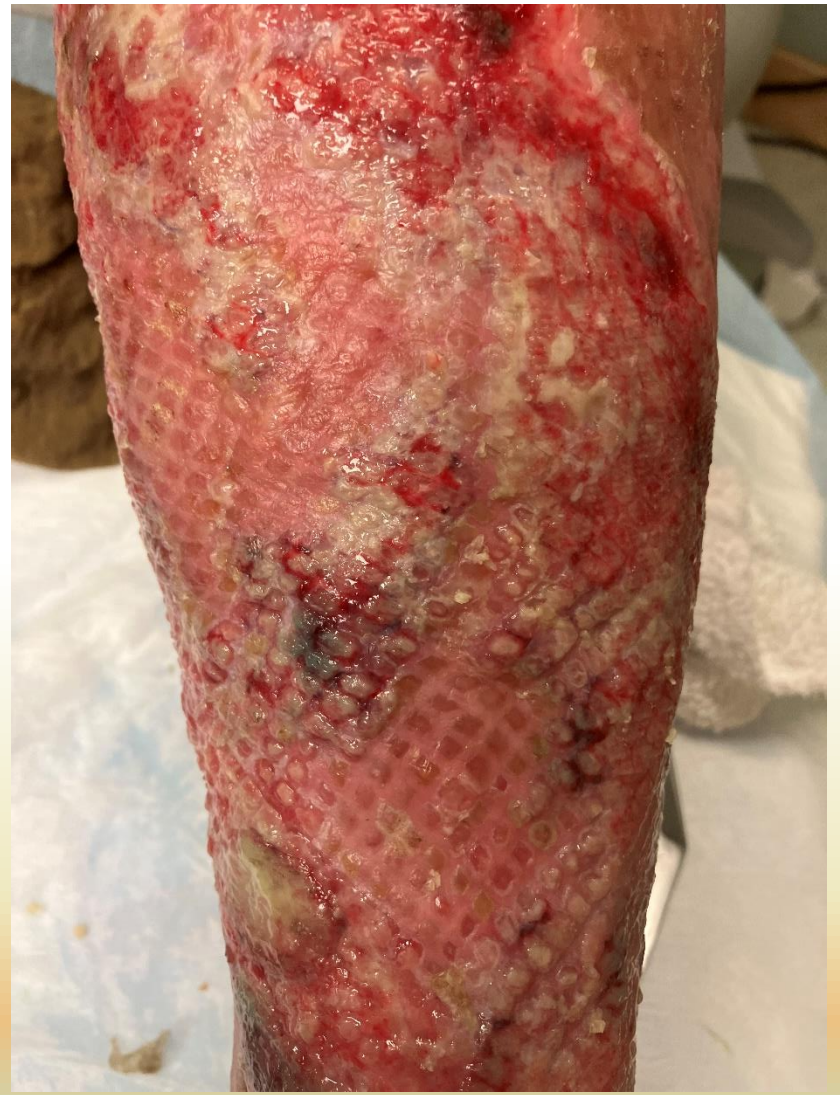
Principles of Wound Management – Nursing Considerations

- Manage pain
- Cleansing/debridement
- Moisture balance
- Fill dead space
- Protect periwound skin
- Prevent infection
- Offload pressure
- Patient dignity



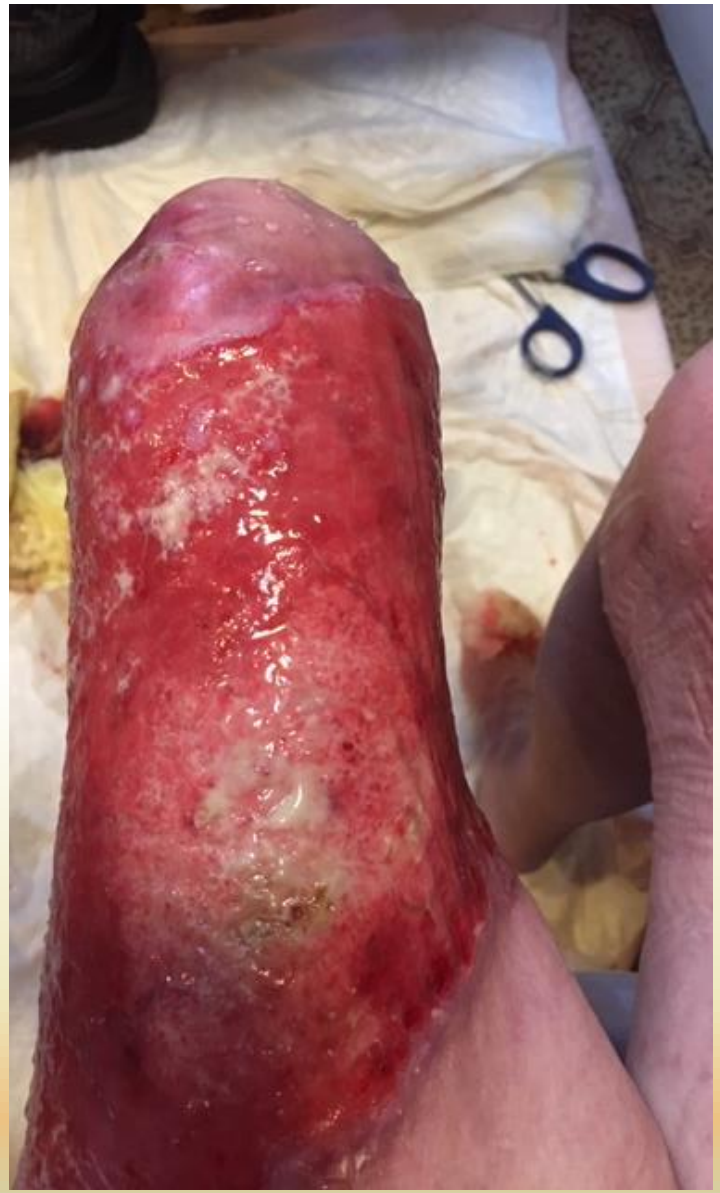
Protect periwound skin

- No sting barrier spray
- Sensicare (Zinc)
- Incontinence/drainage management
- Dry flows
- “Soaks” only over grafts!



Pain management

- Thoroughly assess pain prior to wound care
  - Distinguish pain types
    - » Background vs. Breakthrough vs. Procedural
    - » Acute vs. Chronic
    - » Neuropathic
- Plan accordingly!
    - » Orals 60min prior to wound care
    - » Incremental dosing “stacking” vs. bolus
- Non pharmacologic strategies
  - Kristen (Burn Psychologist)
  - Distraction techniques
  - Music
  - VR



More pain considerations

- Evaluate coping
  - Anxiolytics may be helpful
- Encourage participation
- Consider dependency/tolerance to opioids, advocate for optimal pain control
- Stigma

Resources/Nursing tools:

- MMC Burn Pain Medication Administration Grid
- Burn Pain, Sedation, Anxiety and Pruritis Guideline

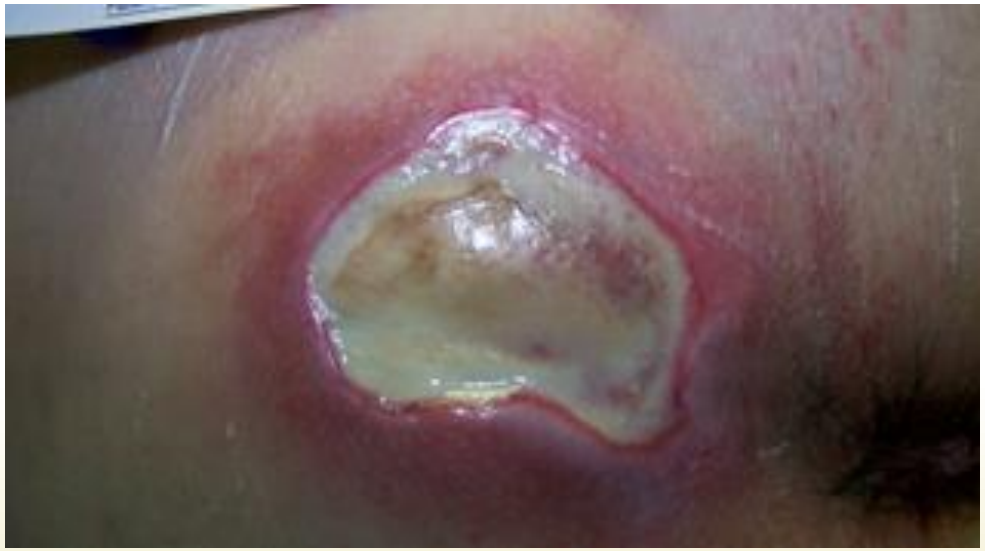
Moisture balance

- **MOIST** wound healing IS BEST!
- Prevent desiccation → add moisture
  - Ointments, hydrogel, medihoney
- Prevent maceration → add absorption
  - Hydrofiber or alginate
  - Dressing change frequency
  - Wick drainage
- Dressing selection

Wash your wounds!

- With what?
  - Soap and tap water / showering
  - Normal Saline
  - Vashe cleanse (5 min)
  - Antimicrobial "Soaks"
- Technique
  - Gentle contact with washcloth or gauze
    - » Burns – "one pass"
  - Hydrotherapy (shower, tank room)
  - Irrigation
  - Veraflo

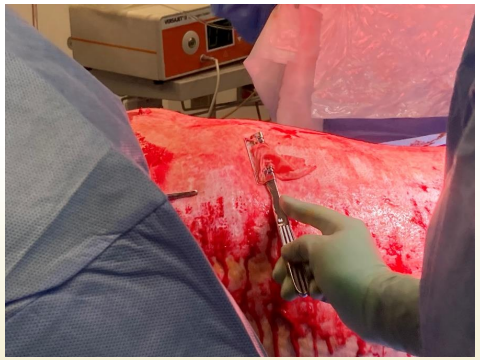
Debridement types



Which debridement technique may be appropriate for this ulcer?

Aggressive vs. Gentle

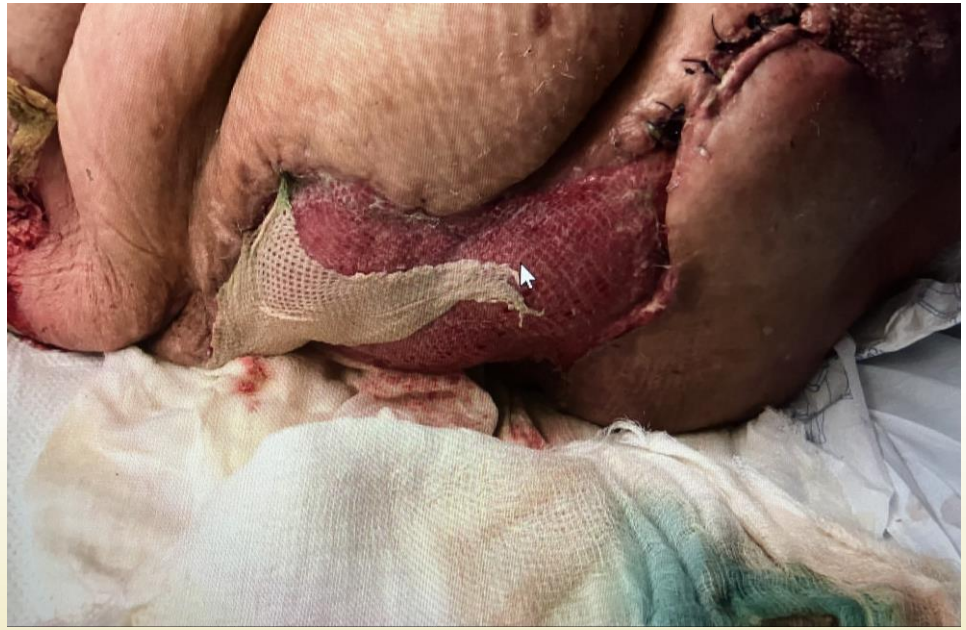
Sharp/surgical excision
Mechanical (Wet-to-dry)



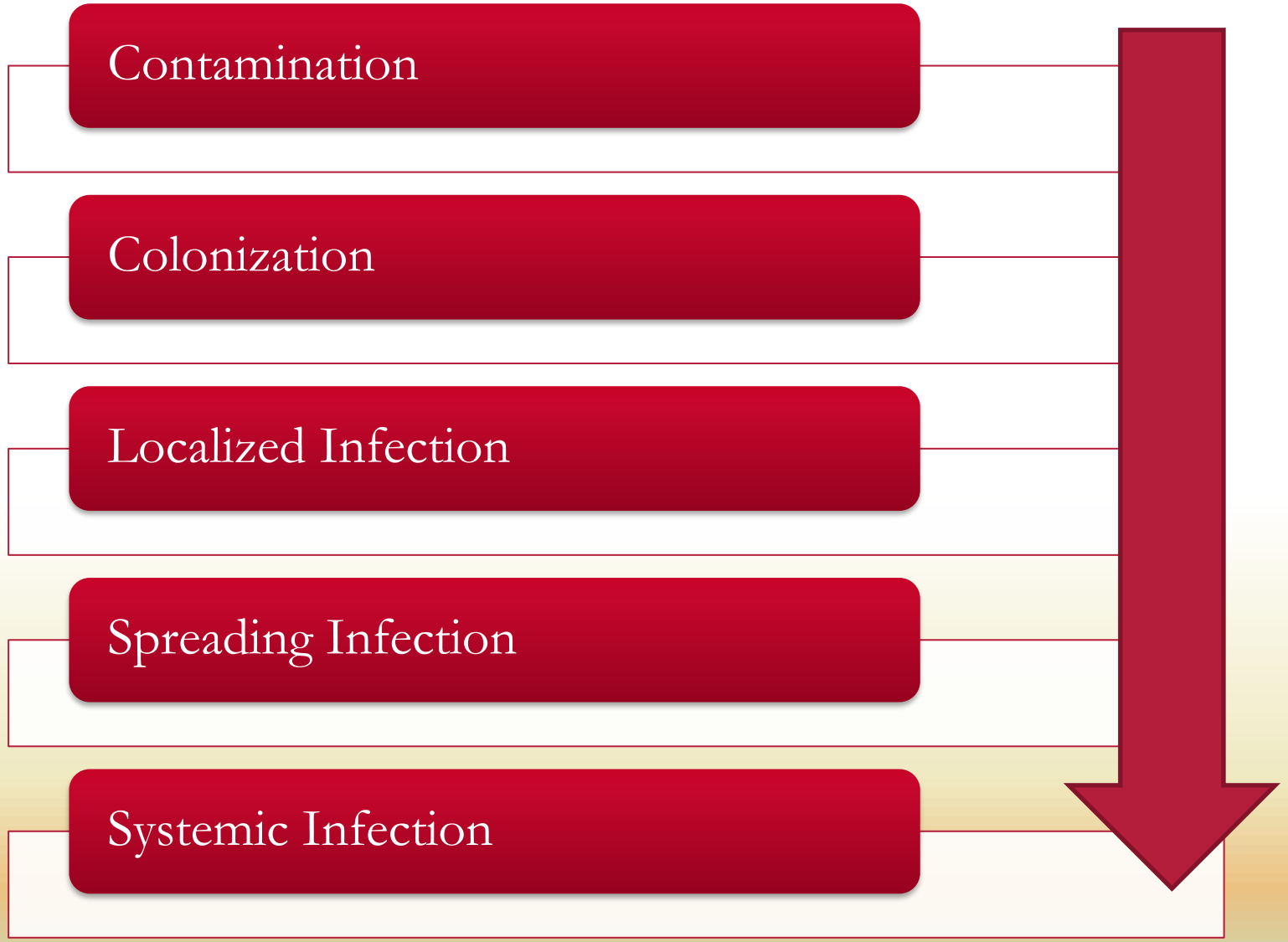
Irrigation
Wet–to-Moist
Autolytic
Enzymatic
Biologic (Maggots)
Chemical

Colonization vs. Infection

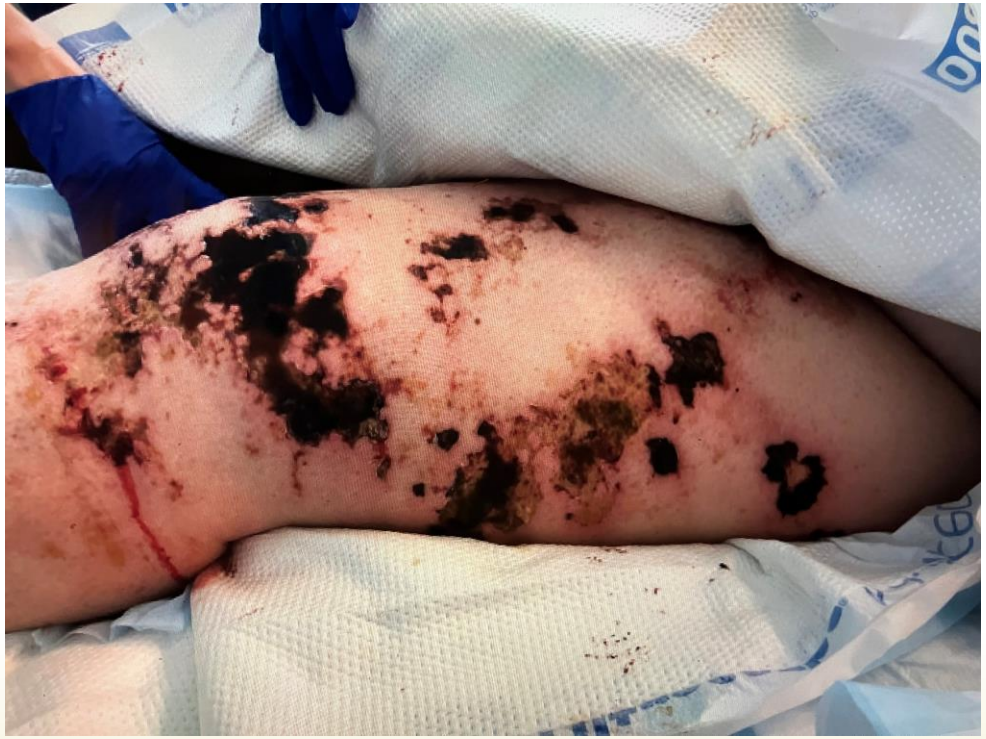
- Colonization - biofilm
  - Increased or discolored drainage
  - Odor
- Infection - invasion into tissue
  - Localized pain/tenderness
  - Erythema
  - Warmth
  - Swelling
  - Purulence (pus), significant odor
  - Fever



Bacteria Cascade



Patient dignity

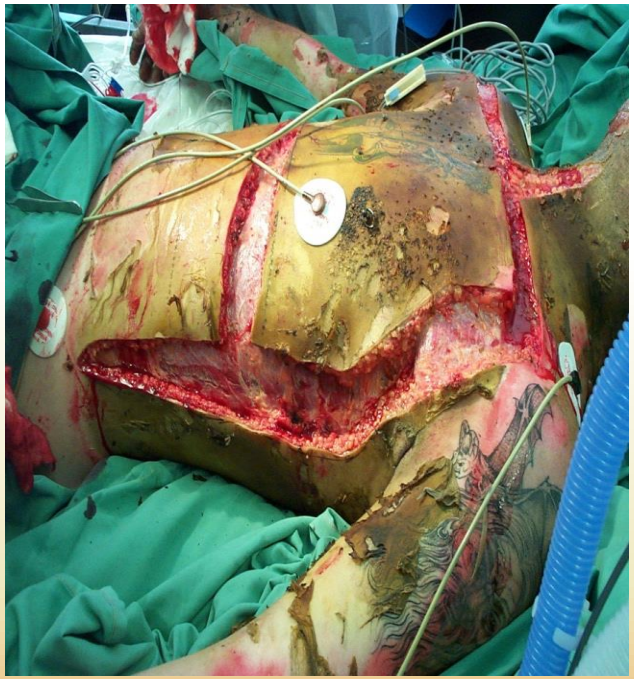


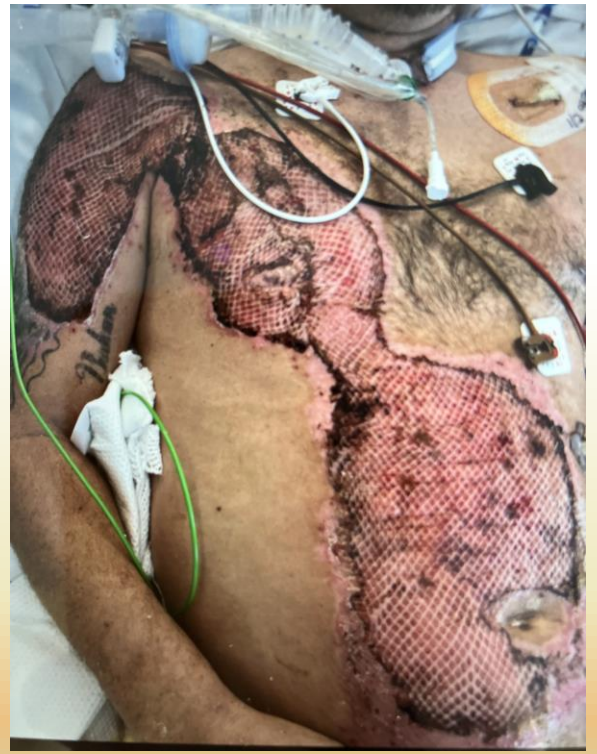
- Promote hygiene, showering
- Manage odor
  - Dressing change frequency
  - Deodorizers, essential oils
  - Medihoney, Dakins
  - Metronidazole crushed
- Manage drainage
- Focusing on open skin can be distraction from coping with underlying stress, illness
- Teach and engage patient in their care

Burn Wound Care

MMC Burn Patient - pathway to recovery

- EMS → ED → MMC Burn Procedure Room ("Tank Room") → SCU or R3 depending on burn severity and needs → OR → R3 acute phase → Rehab phase / Burn Clinic / Outpatient care

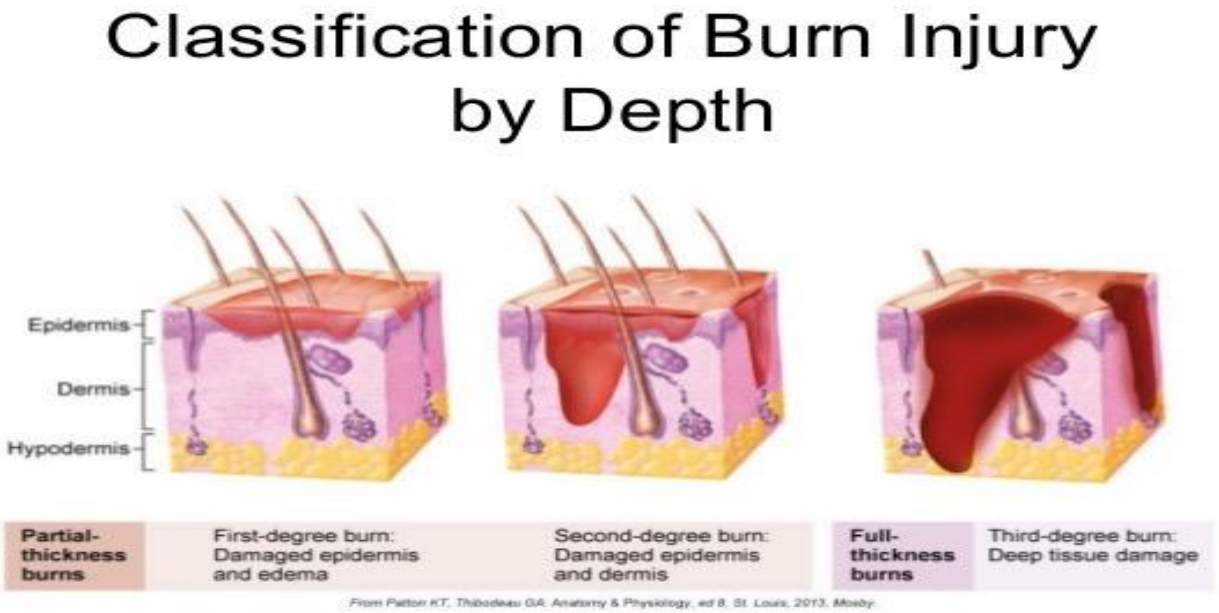


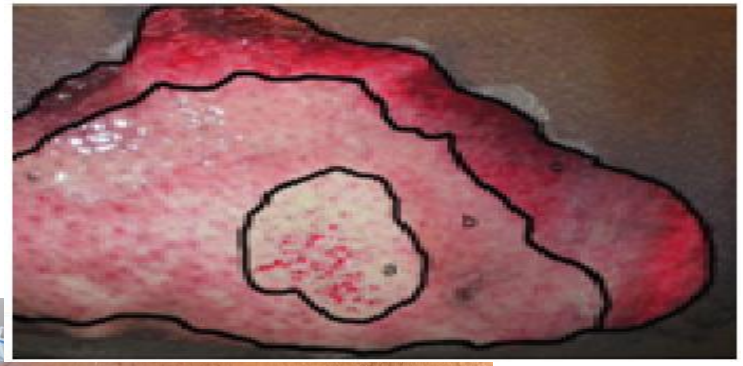


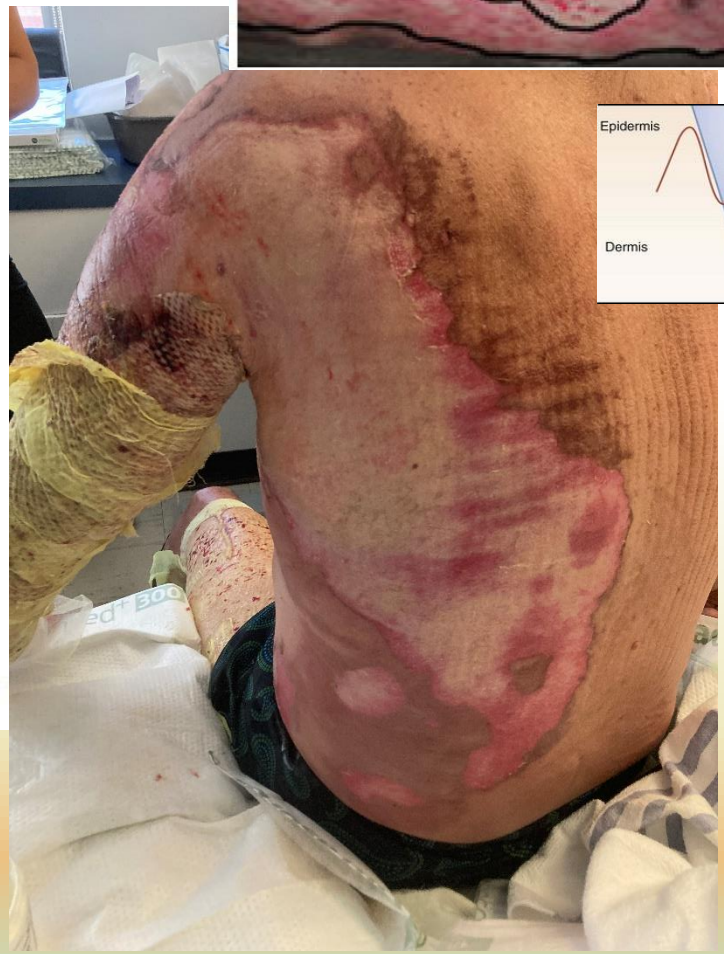
Basic Principles of Burn Wound Management

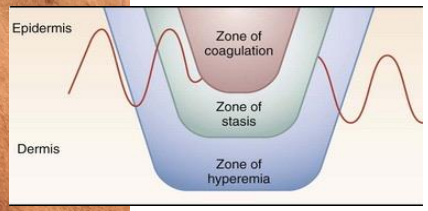
- Partial thickness burns will typically heal within 21 days given a moist environment, free of infection
- Wounds that heal within 14 days will (usually) never scar
- ALL full thickness burn need a topical antibiotic that can penetrate eschar
- Deep partial & full thickness burns are best managed by excision & grafting
- Very small deep partial & full thickness wounds particularly in special areas are best managed non-operatively
- Burn injuries over joints should be mobilized as soon as possible & as often as possible

Burn Depth & Assessment









Dupuytren's Classification

1st Degree

2nd degree – PT

3rd Degree – FT

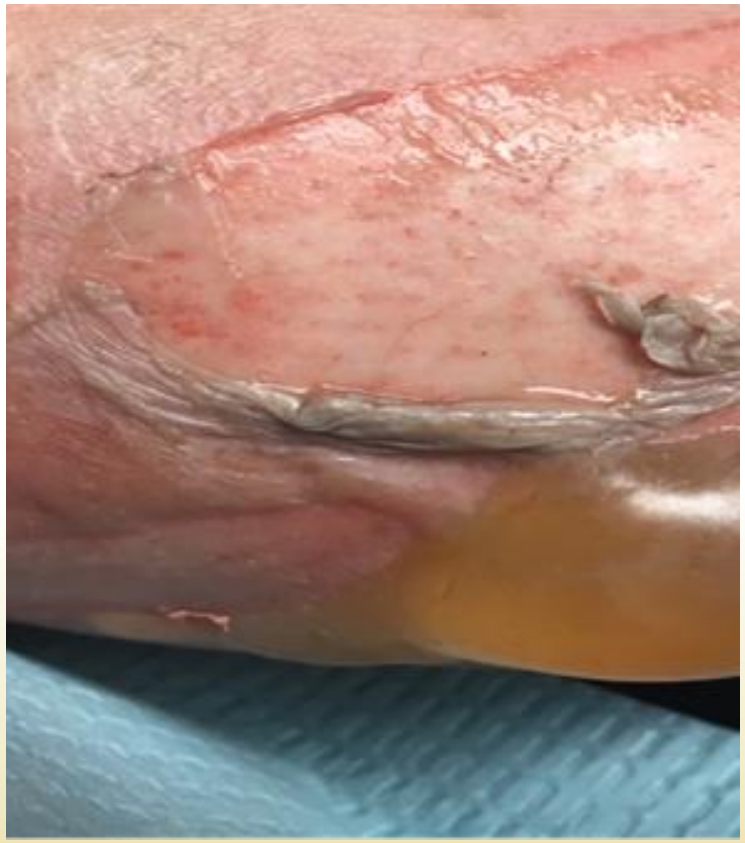
4th Degree - SubQ

5th Degree - Muscle

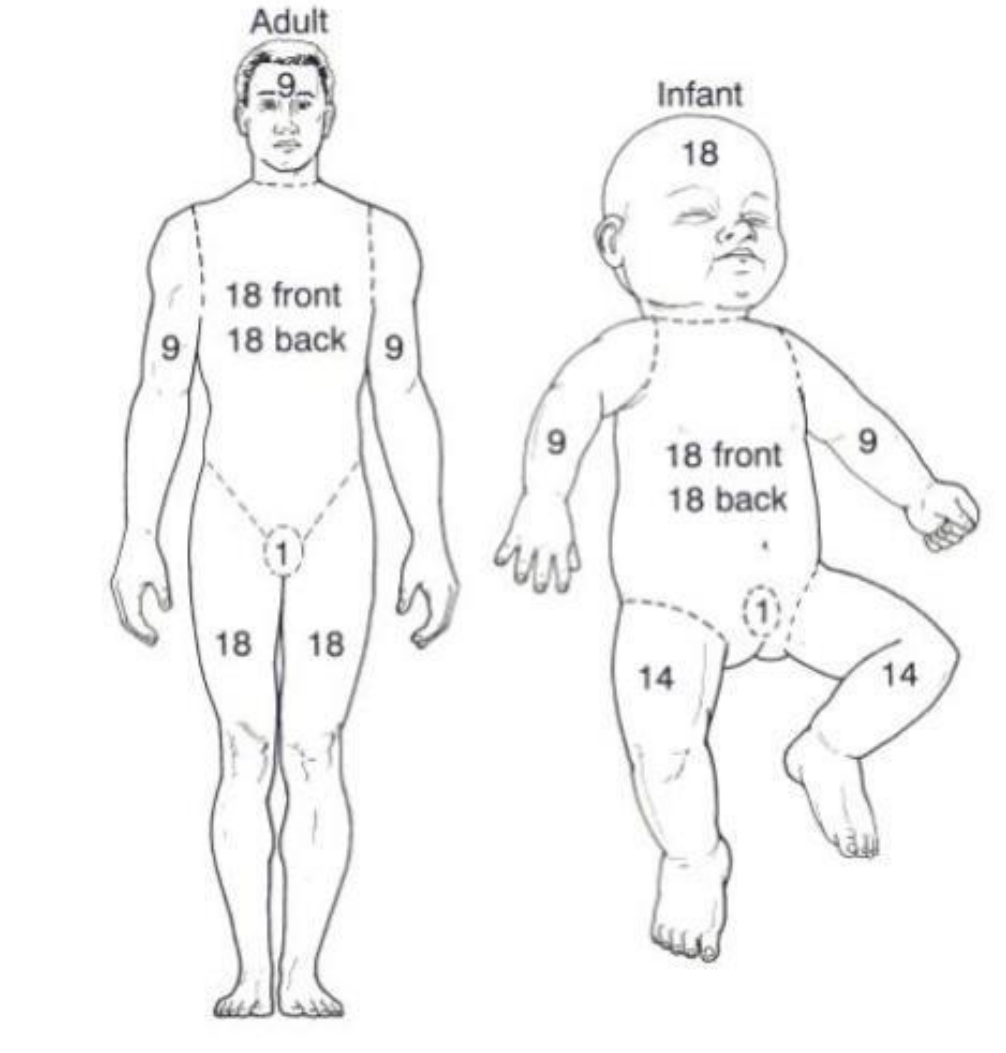
6th Degree - Bone

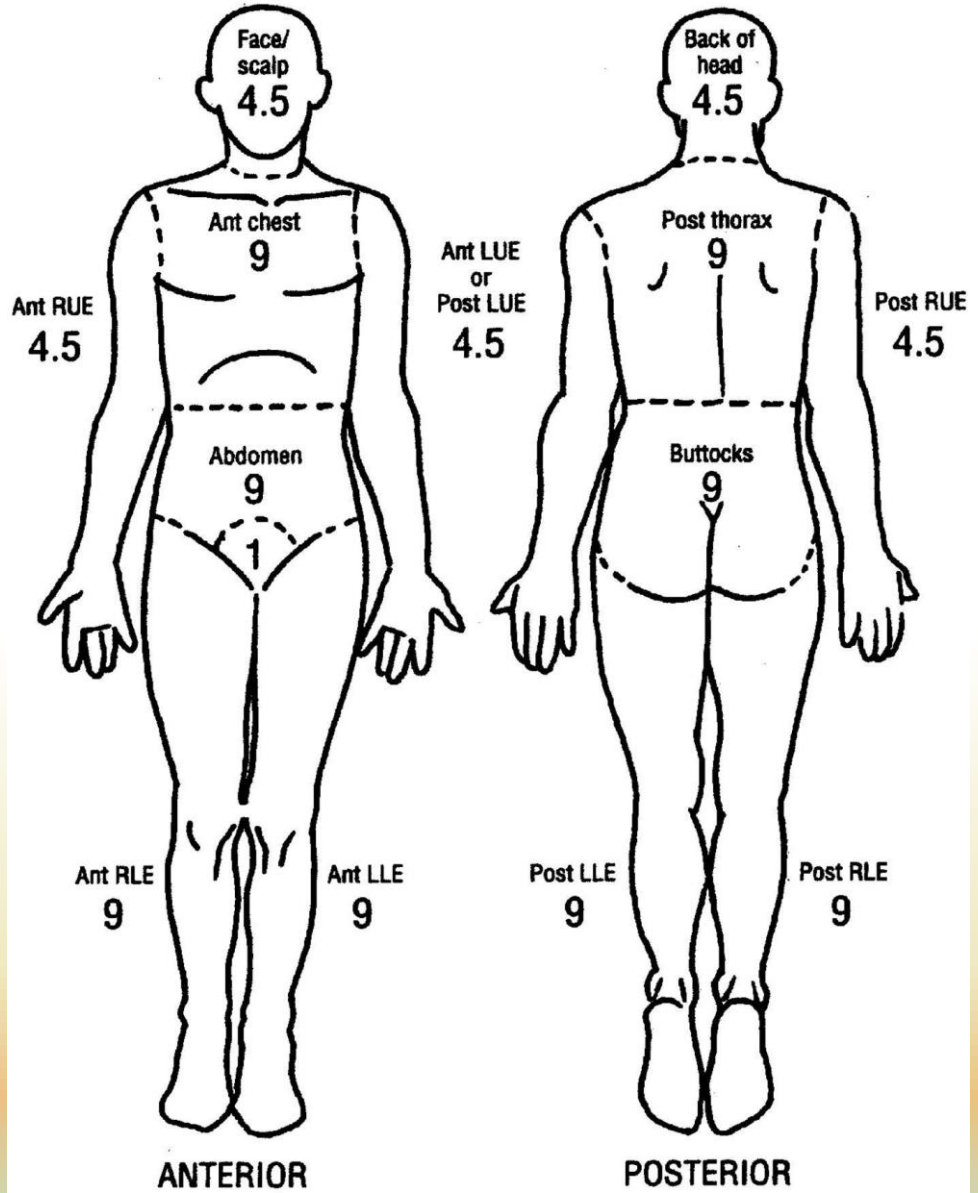
Initial Tank Room Debridement –

- Pre-medicate for pain / anxiety
- Keep patient warm
- **Head-to-toe bed bath** or shower
- Strict Clean Technique
- Remove as much non-viable tissue as possible
  - Debride blisters
  - Shave hair in wounds and at margins
    - *Never shave eyebrows!*
    - Trim melted/singed hair
- Determine TBSA
- Select appropriate topicals and dressing to meet goals
- **Always compression to extremity burns**

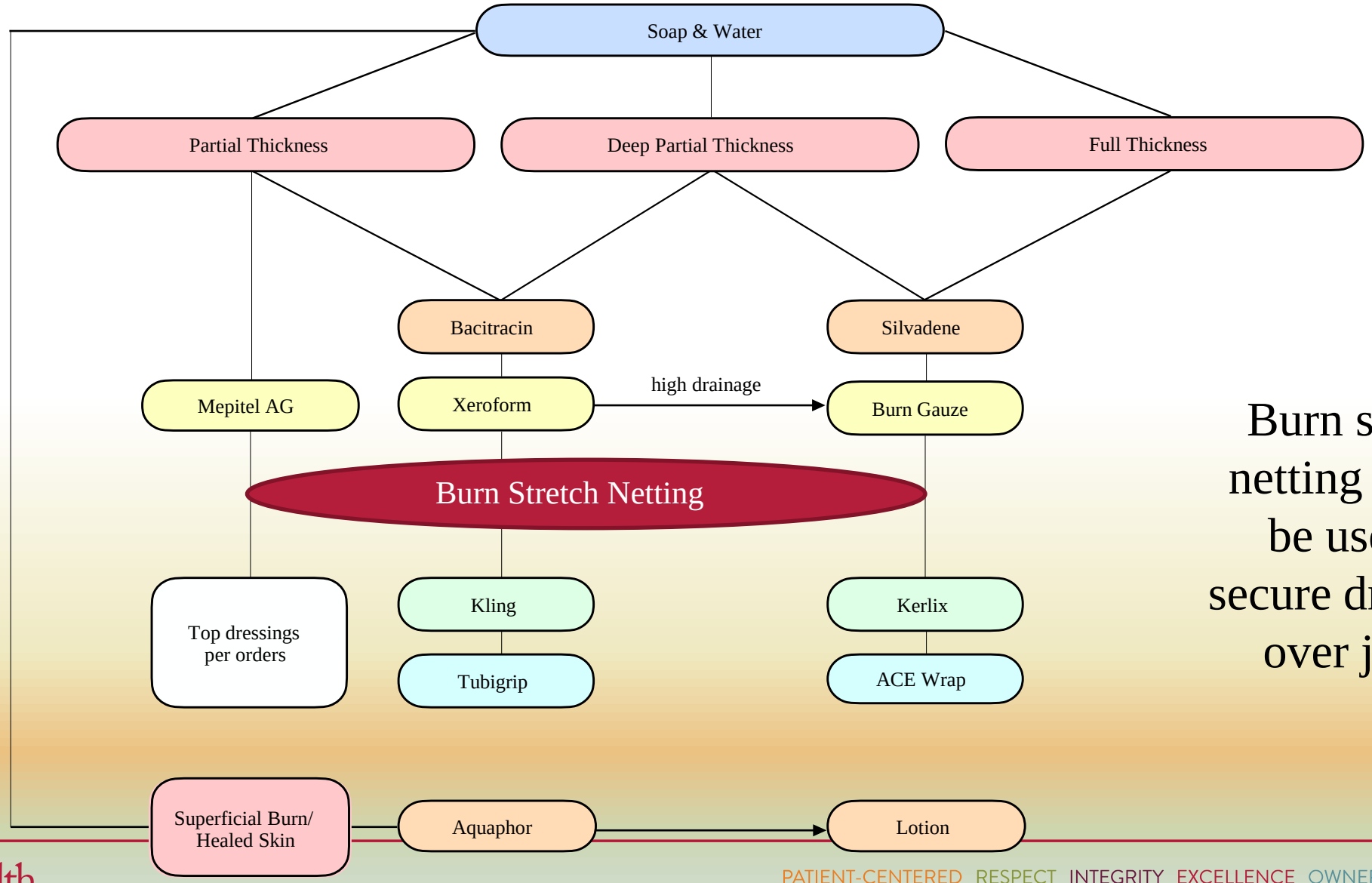


TBSA & Rule of Nines





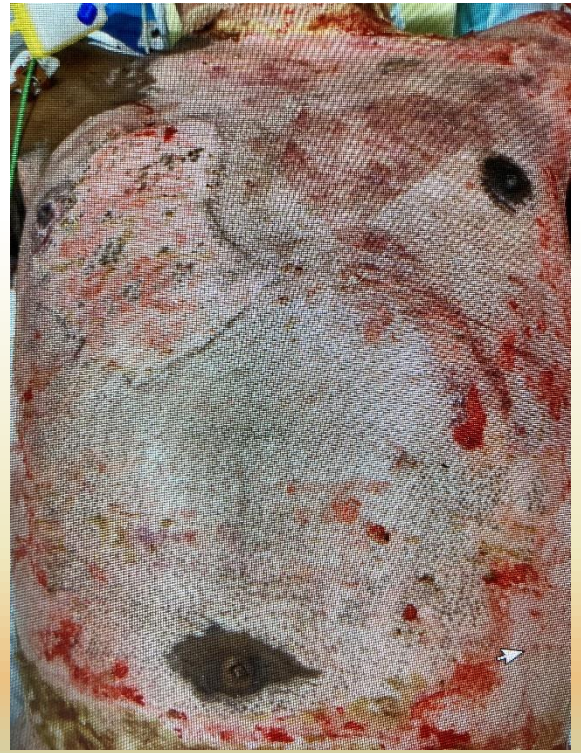
BURN DRESSING DECISION TREE

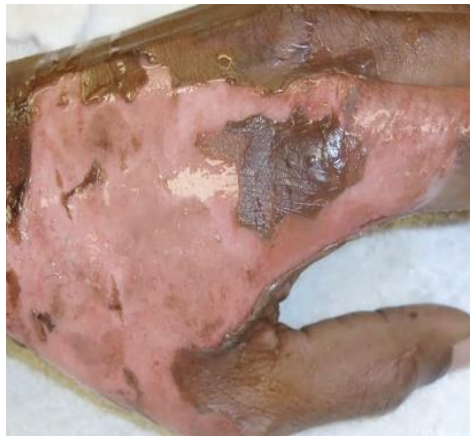


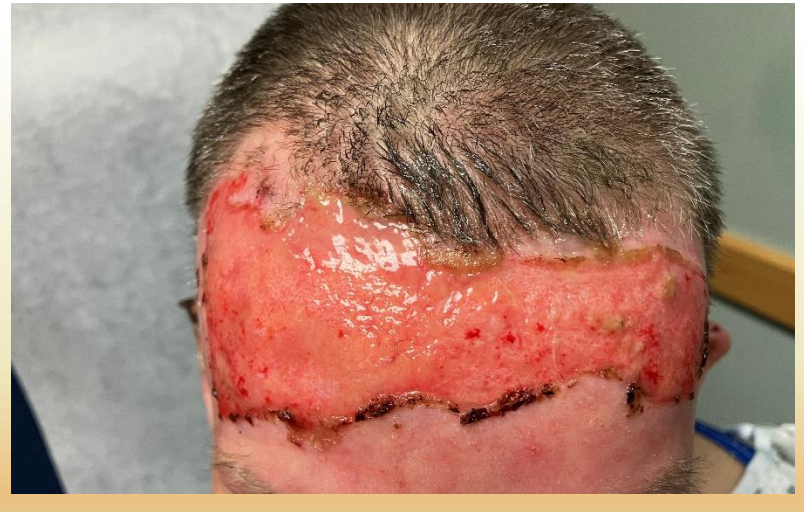
Burn stretch netting should be used to secure dressings over joints

Burn Wound Management – Nursing considerations

- Pain management – pre/intra/post
- Initial and daily debridement
- Shave daily
- Linen change with each wound care
- **Use adequate topical ointments/creams!**
  - **Aquaphor**
- Manage edema → compression/elevation
  - ACE
  - Tubigrip

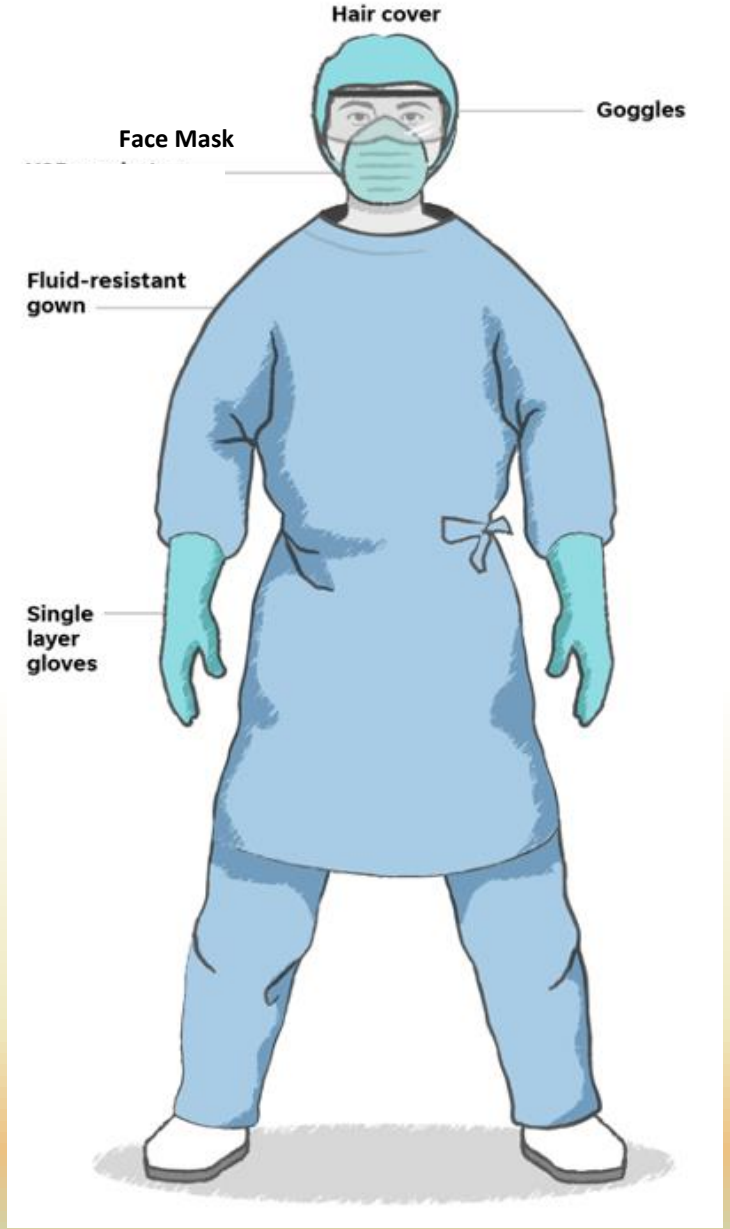






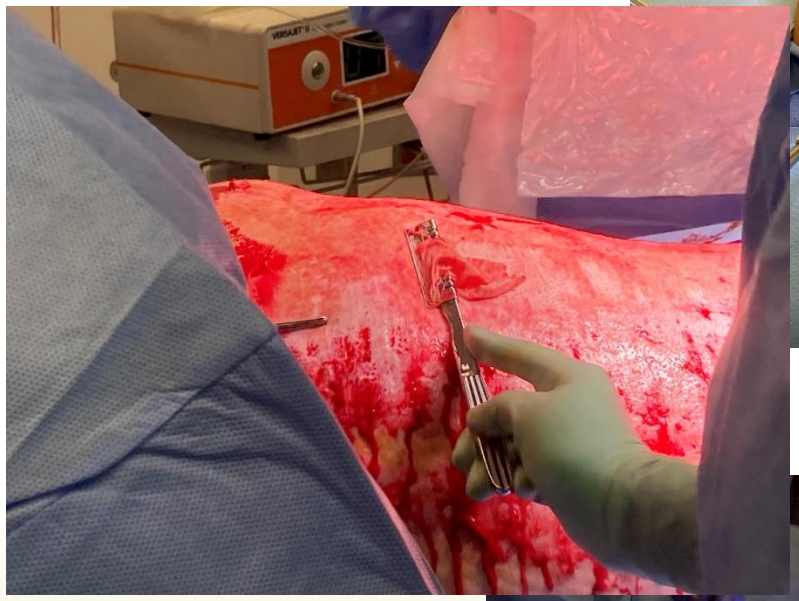
Infection Control

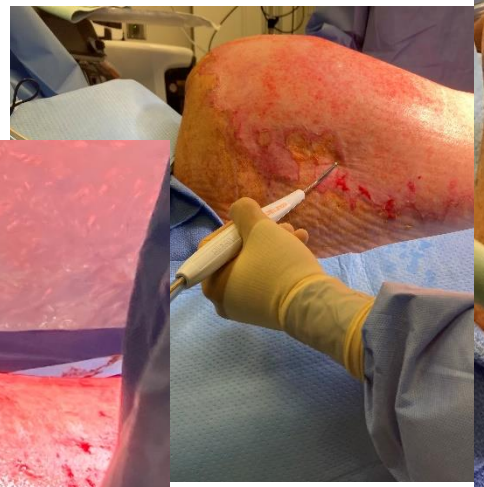
- MMC Adult Burn Infection Control Policy
- Strict hand hygiene & clean technique
- No flowers in room >15% TBSA
- PPE
  - All Burns: mask, gloves, eye protection, hat (bouffant)
    - » >15% TBSA Burns & SCU: + gown
    - » Shower/Tank Room: gown and booties

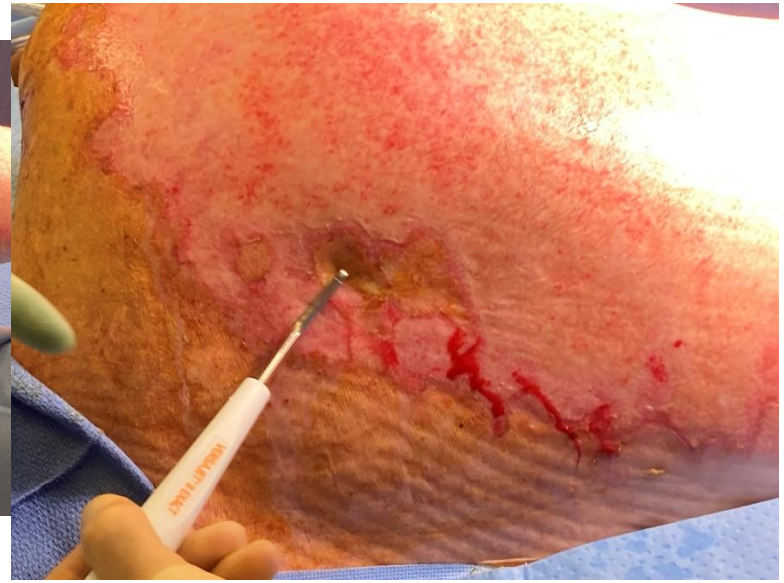


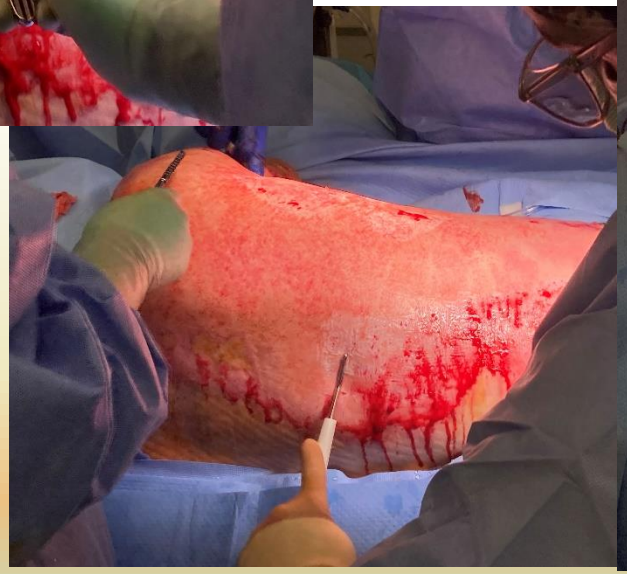
Excision & Grafting

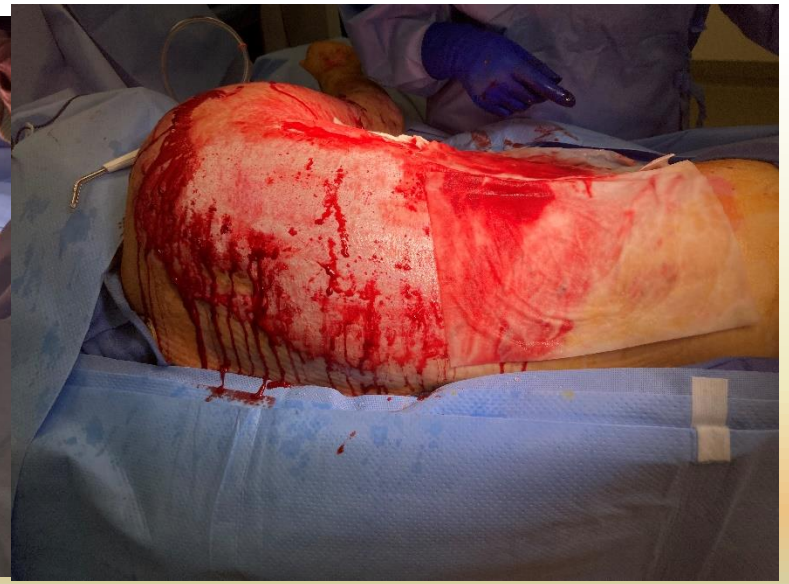
Excision







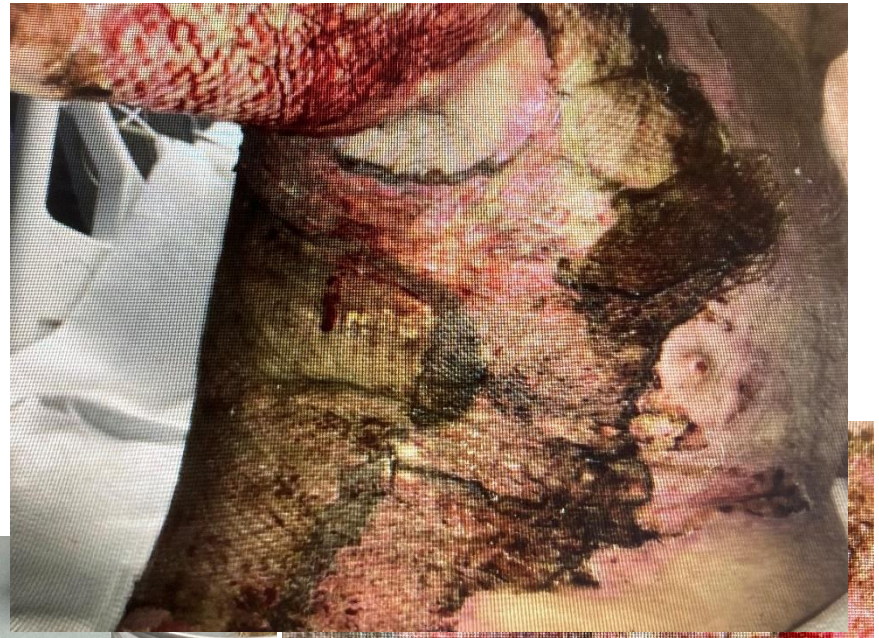


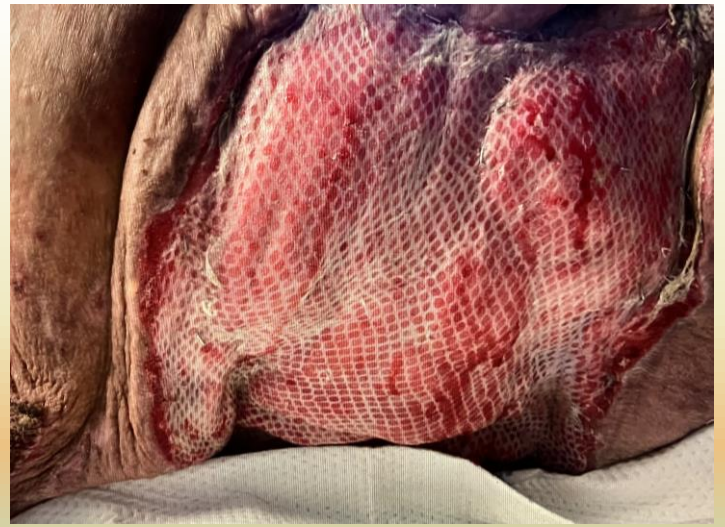


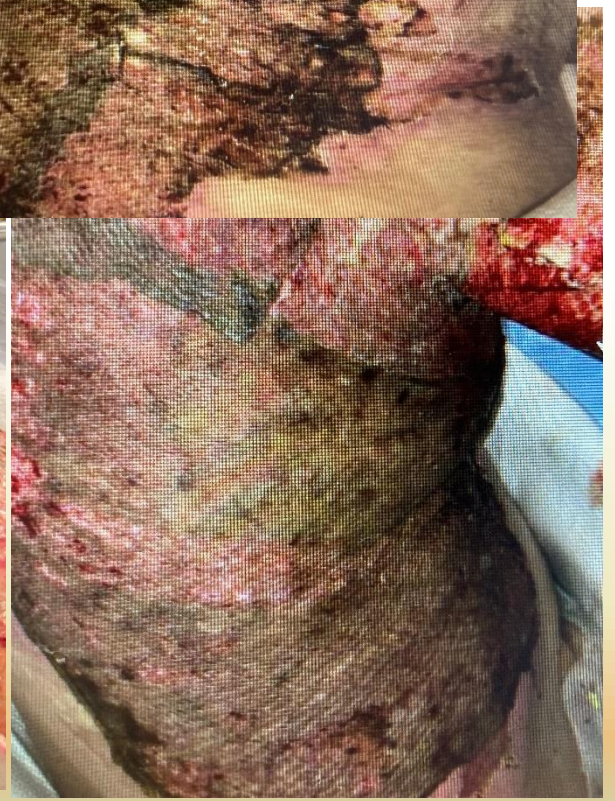
Dermal Substitutes

Allograft

- Cadaver skin
- 3 uses:
  - » Temporary biologic cover to reduce insensible losses
  - » "Test" wound bed
  - » Sandwich, overlay

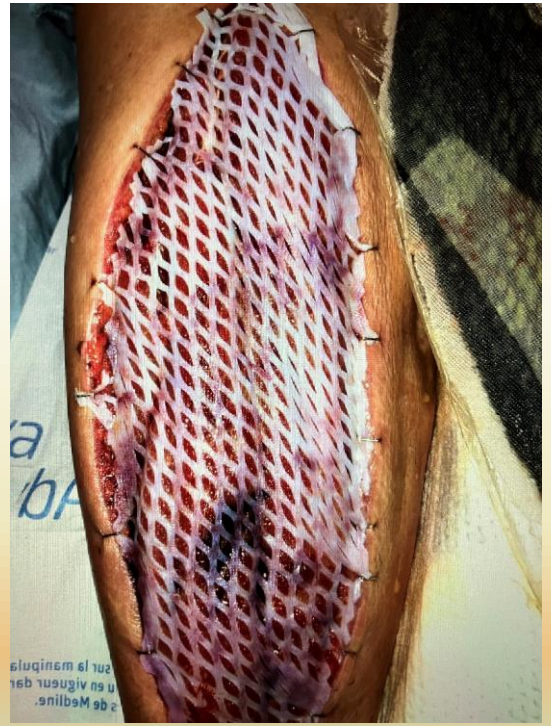


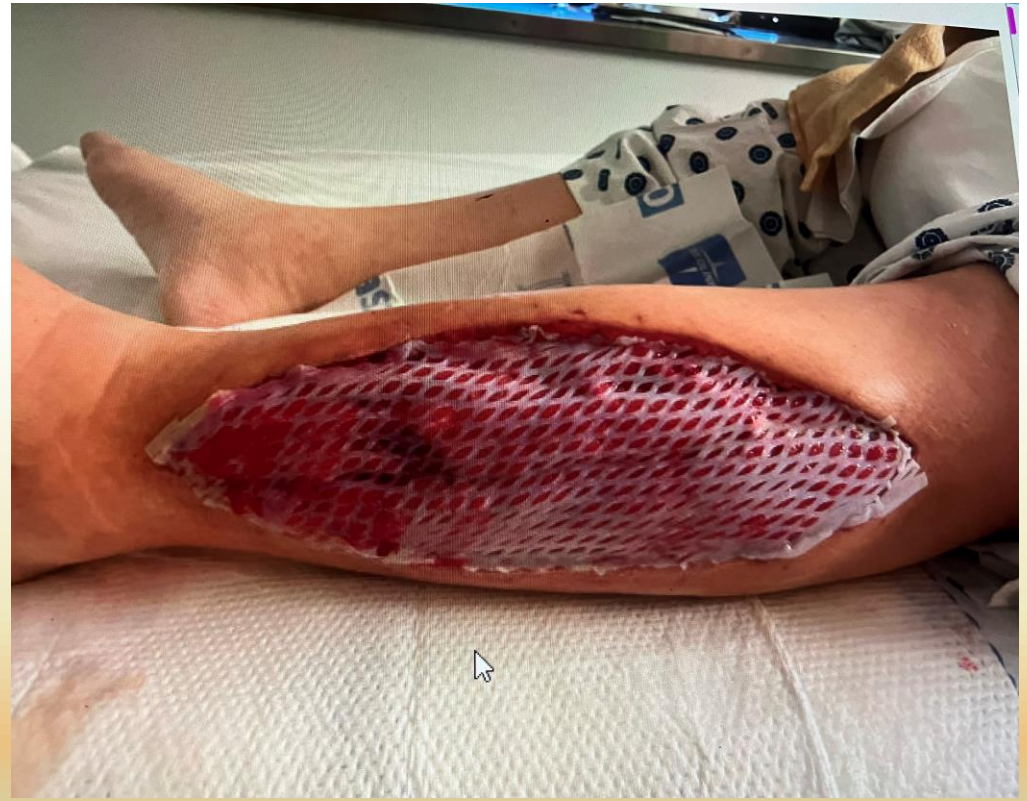




Primatrix

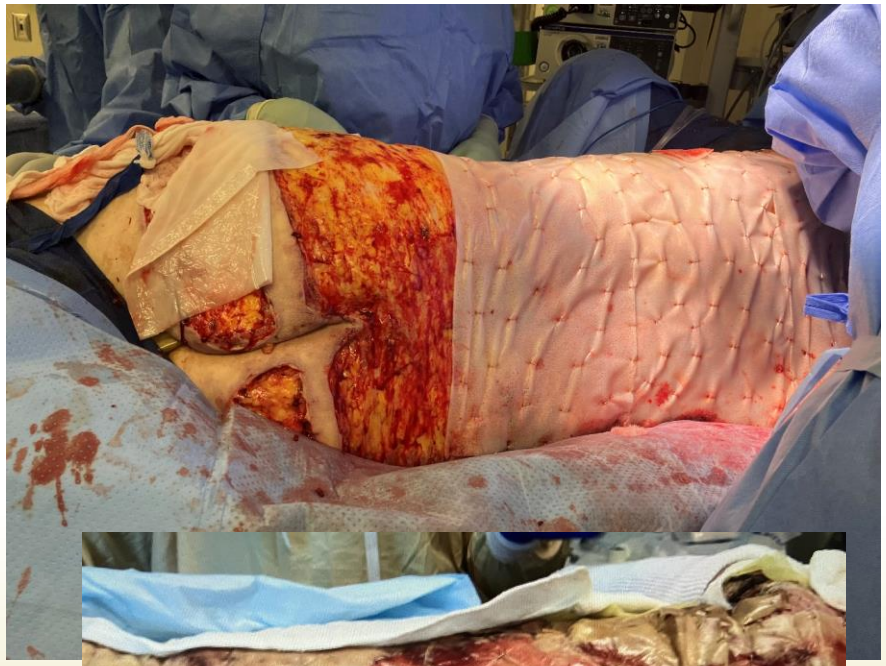
- Fetal bovine dermis
- Incorporates in ~2 weeks
- Revascularization

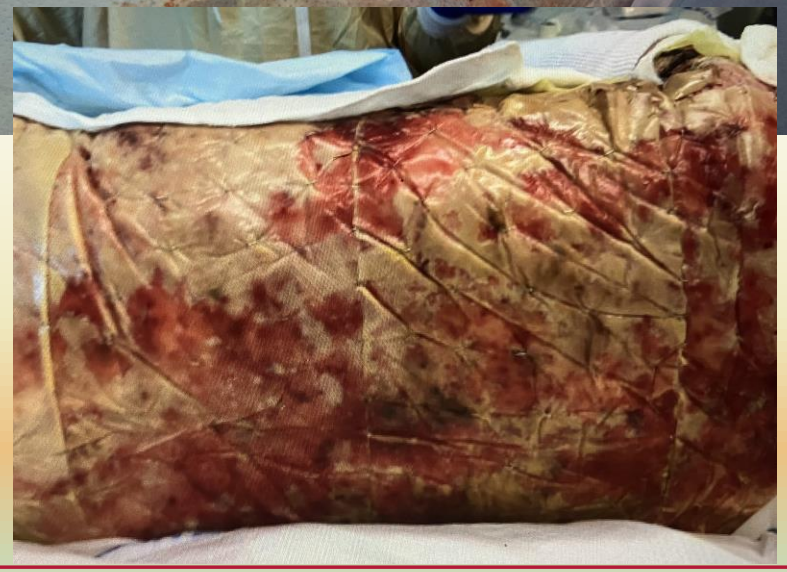


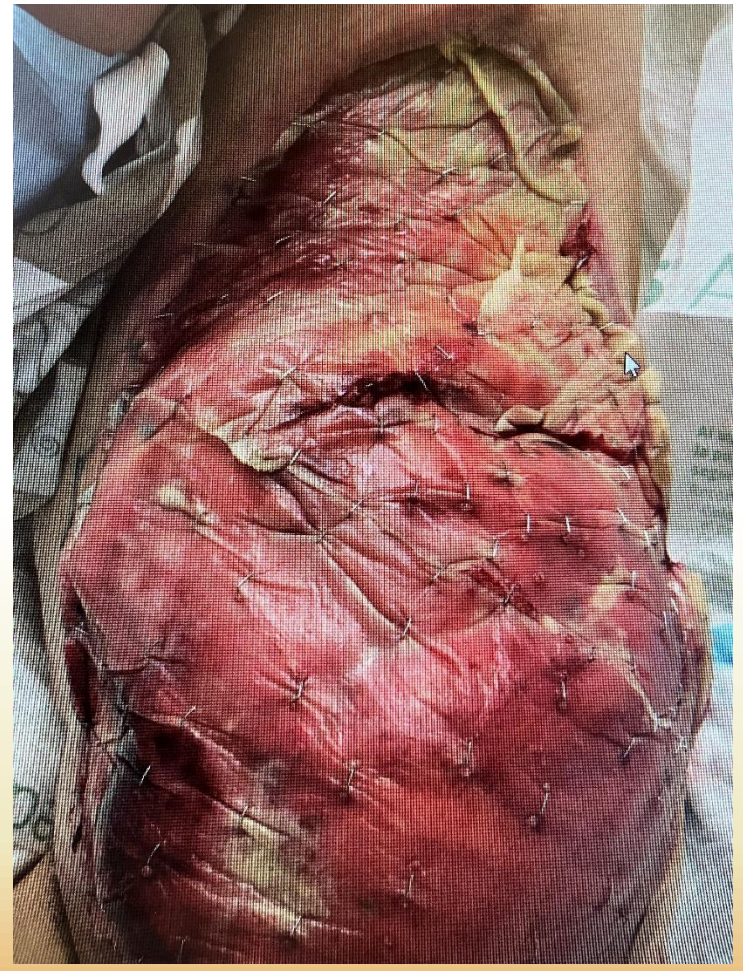


BTM (Biodegradable Temporizing Matrix)

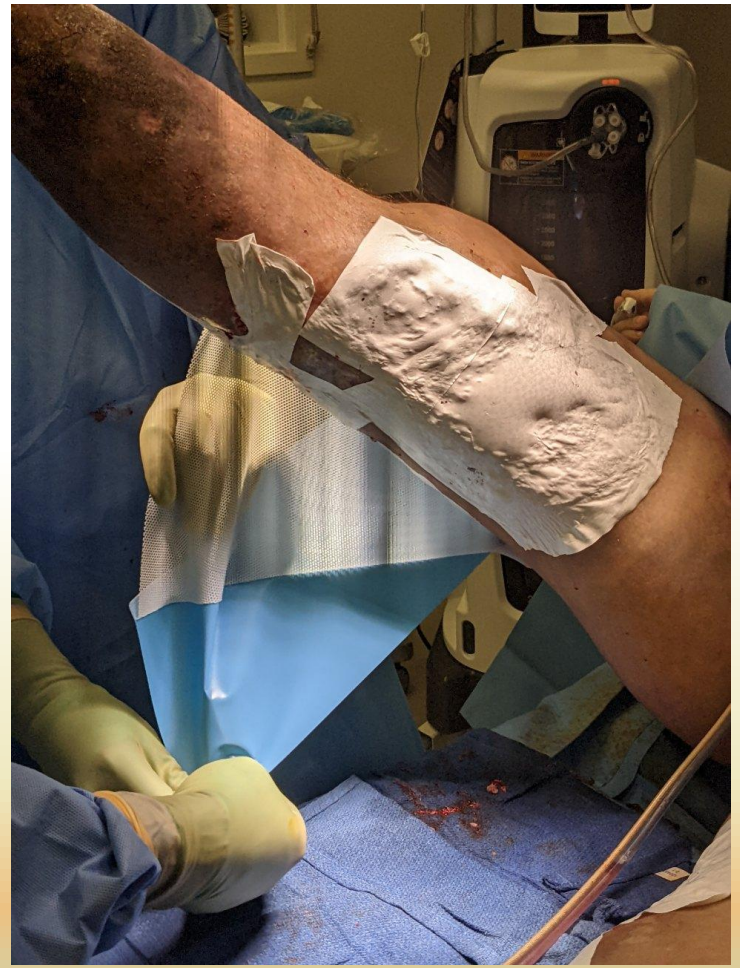
- Synthetic Polymer Matrix
- "Neo-dermis"
- Incorporates 2-3 weeks
- Dry dressings or soaks
- Improves pain control

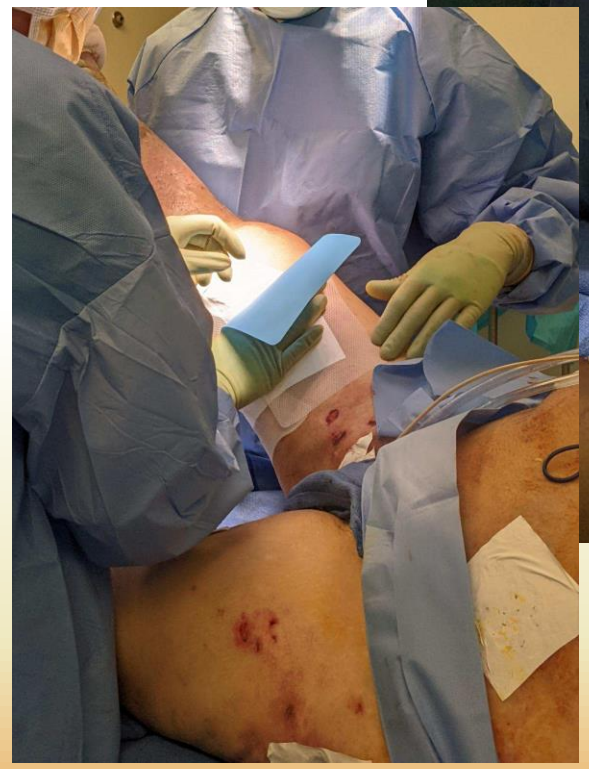


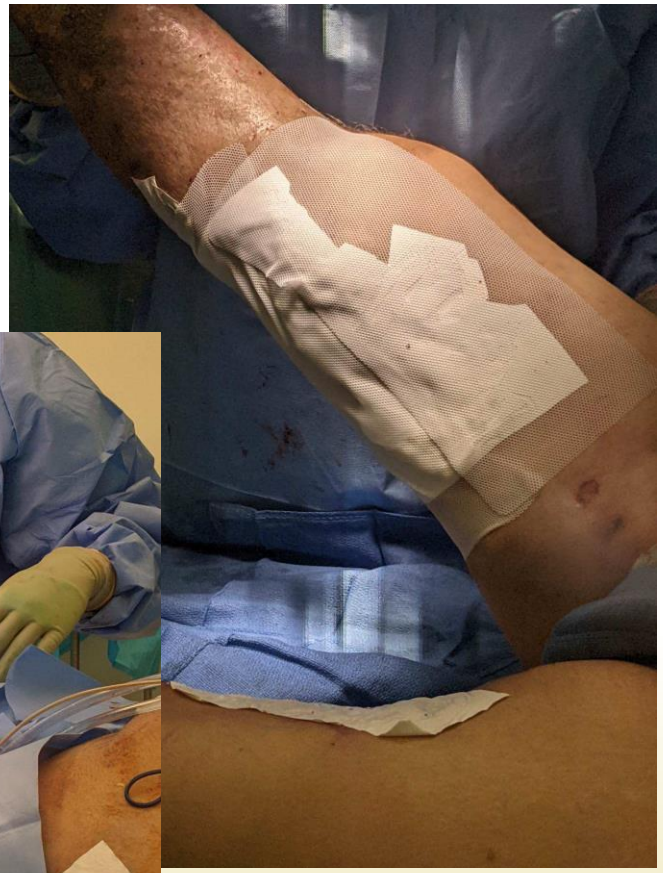


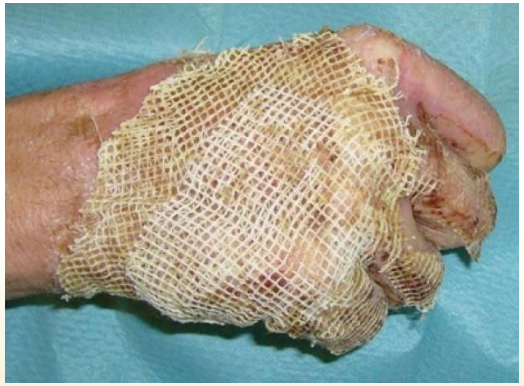


Suprathel



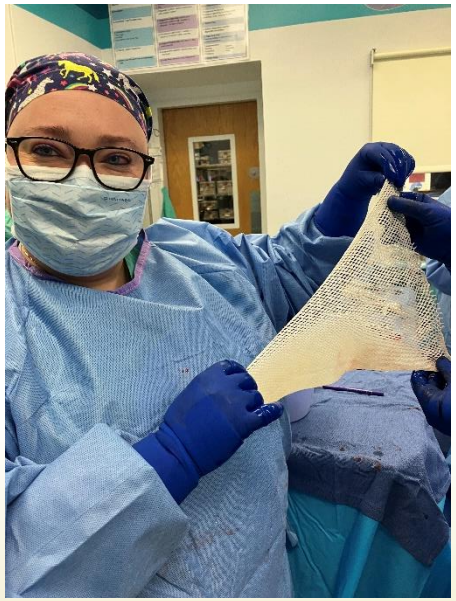


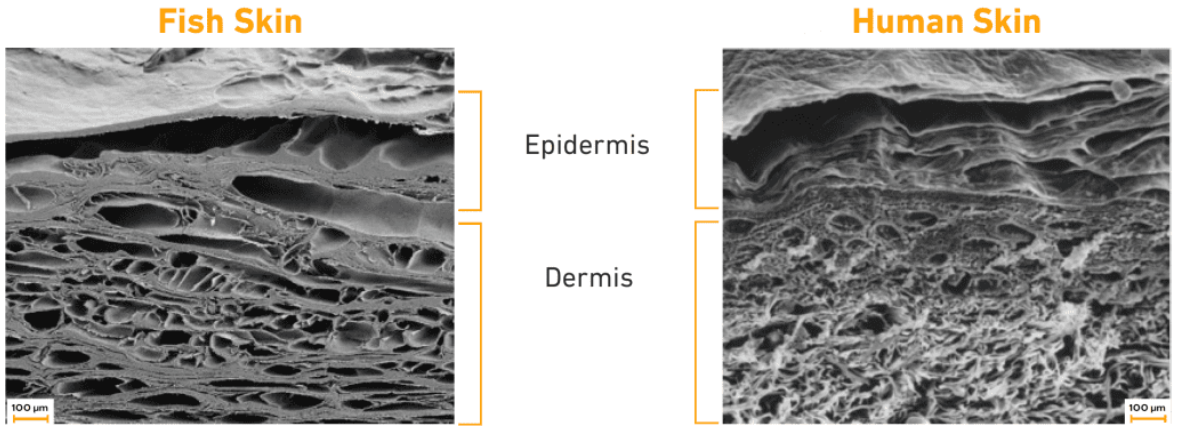


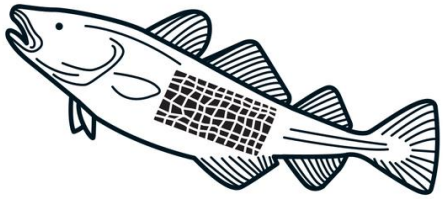


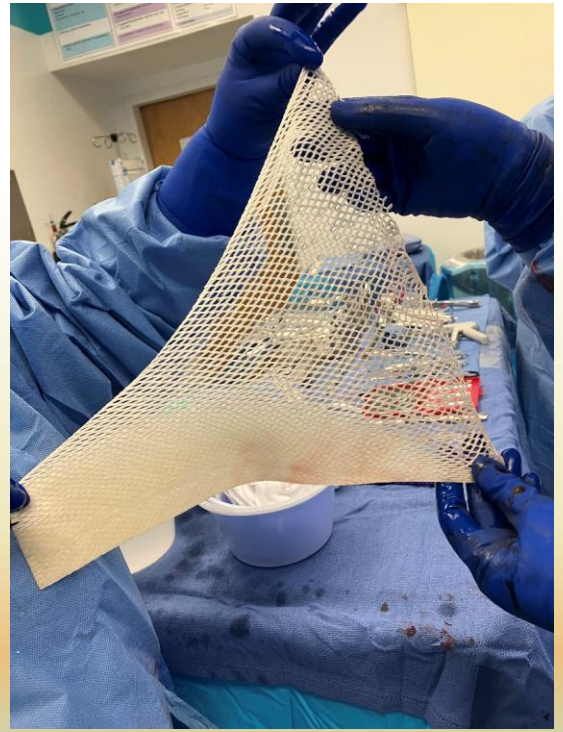
Dressing layers: Rylon
Xeroform
Gauze
Compression

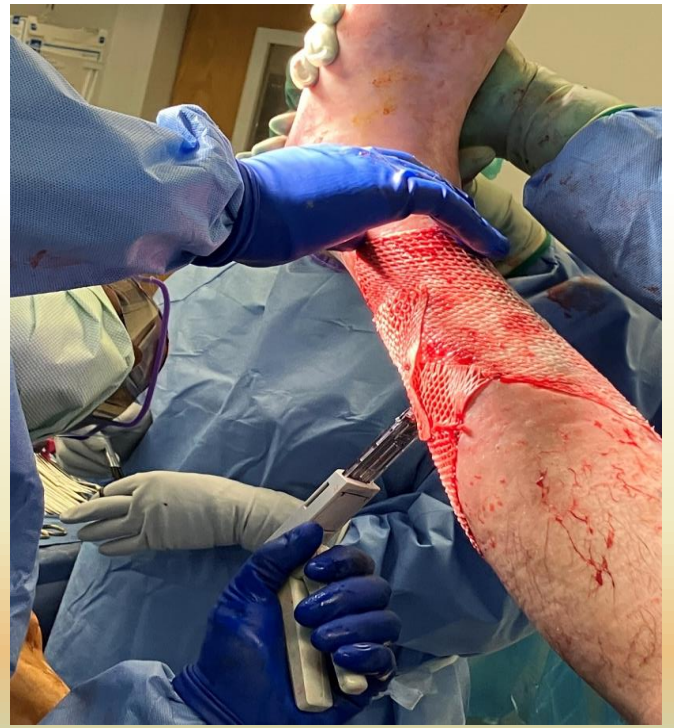
Kerecis









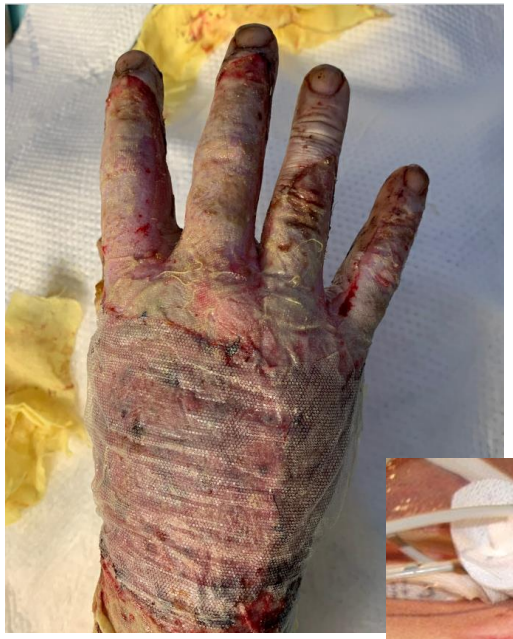


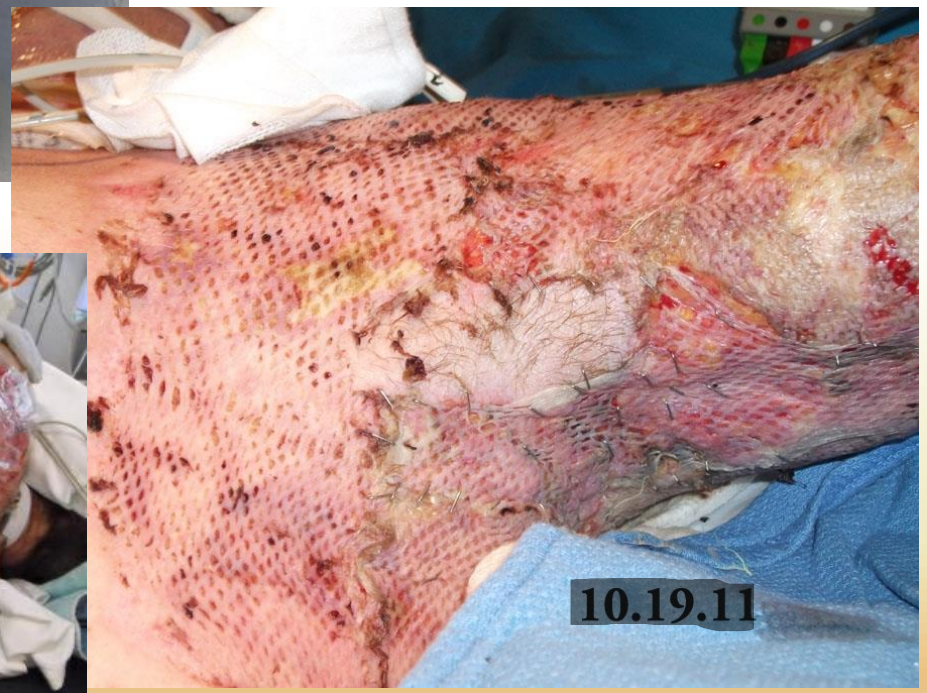
- Icelandic Cod
- Omega 3
- Incorporates to wound bed
- Nursing management TBD

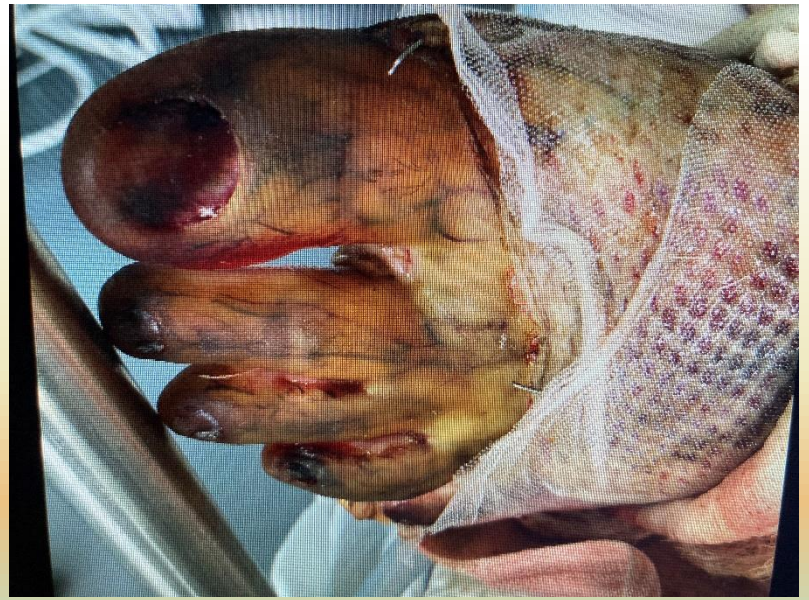
Autografting and donor site care

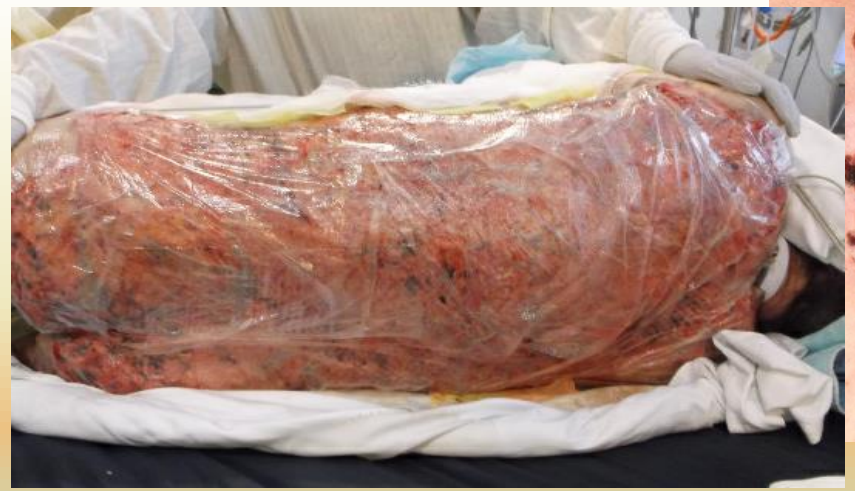
Autografts

- Split Thickness Skin Graft
  - Sheet vs Meshed
- Autologous Cell Suspension (ReCell)
- Full thickness graft







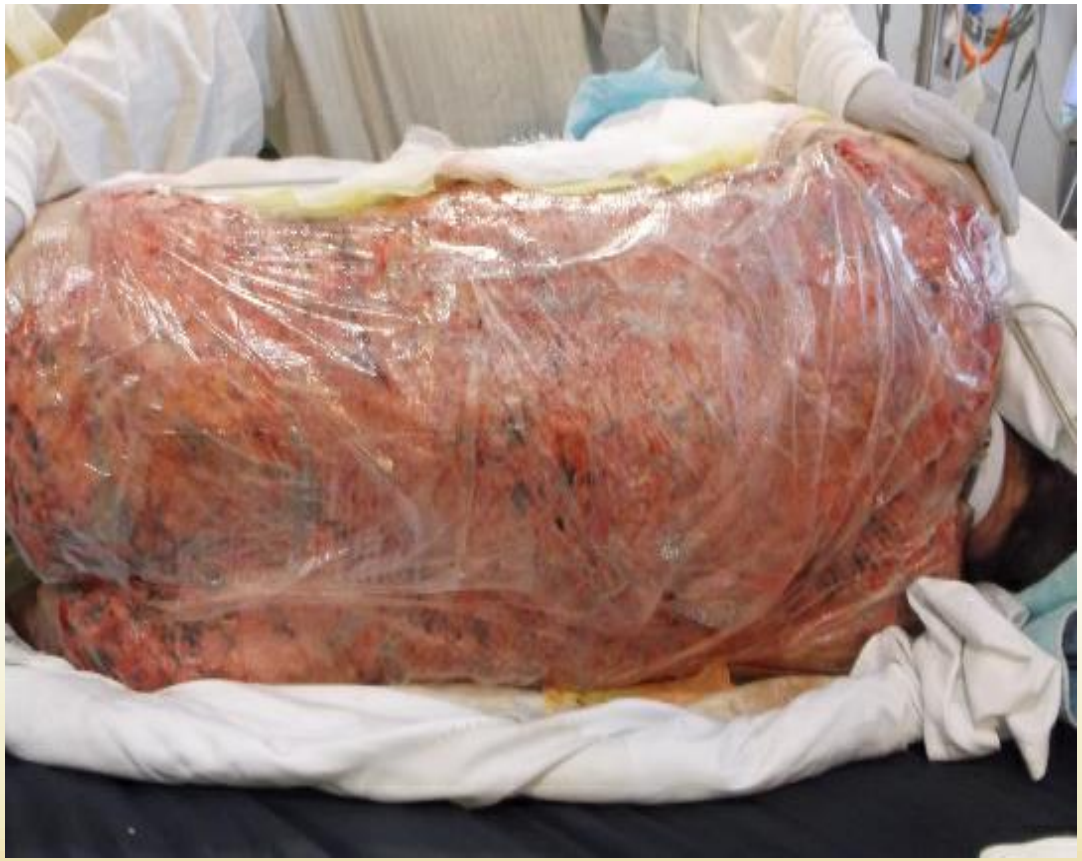


ReCell

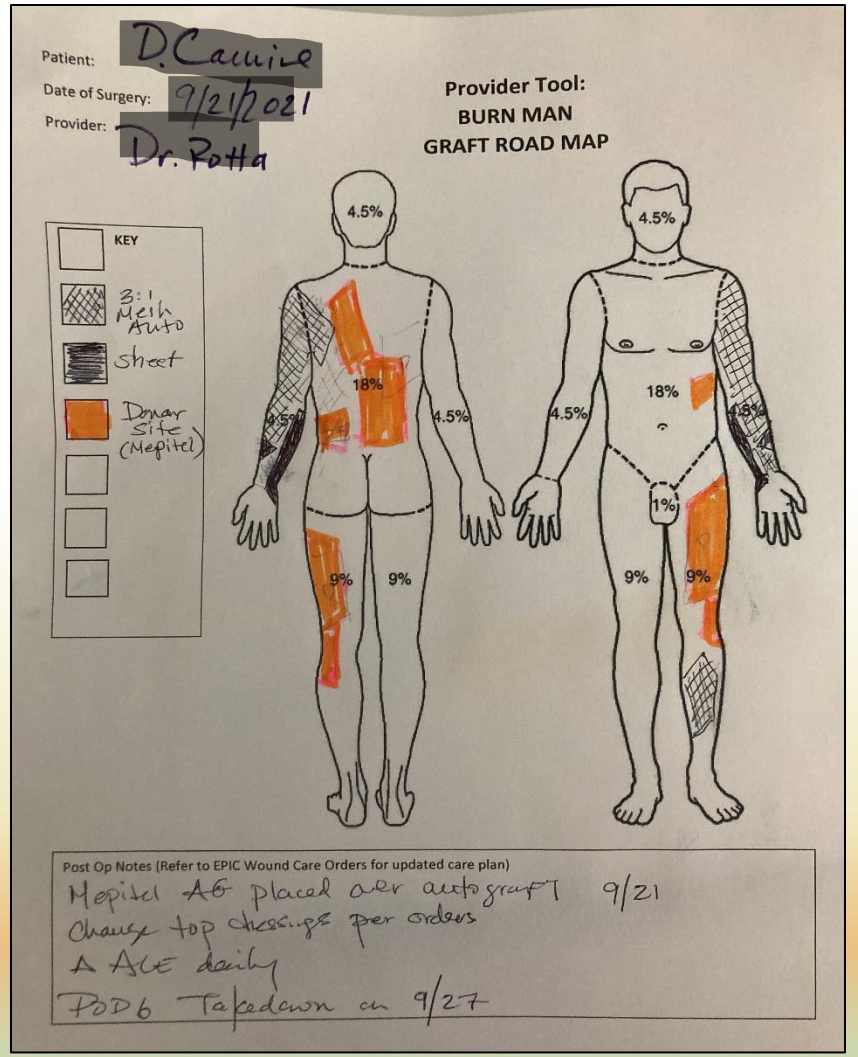
- Epidermal suspension “spray”
- Decreases wound closure time
- Small donor site
- TBSA >30%

Nursing:

- Telfa Clear – POD 6
- NO SOAKS
- Minimize shear



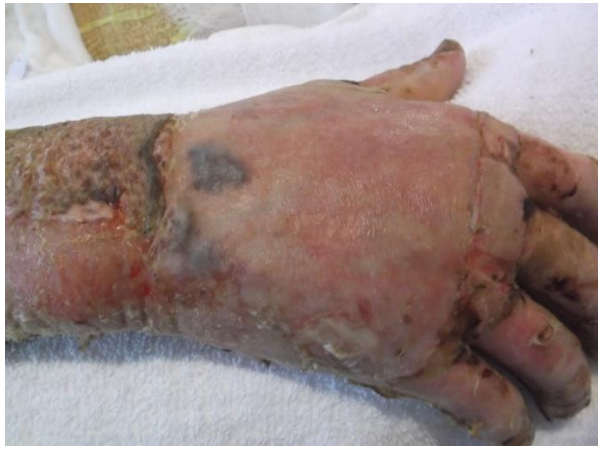
Burn Man Graft Road Map



Updated by BST team after every grafting surgery

Always refer to Wound Orders in Epic for up to date POC

Graft Post-Op Care: Nursing Considerations



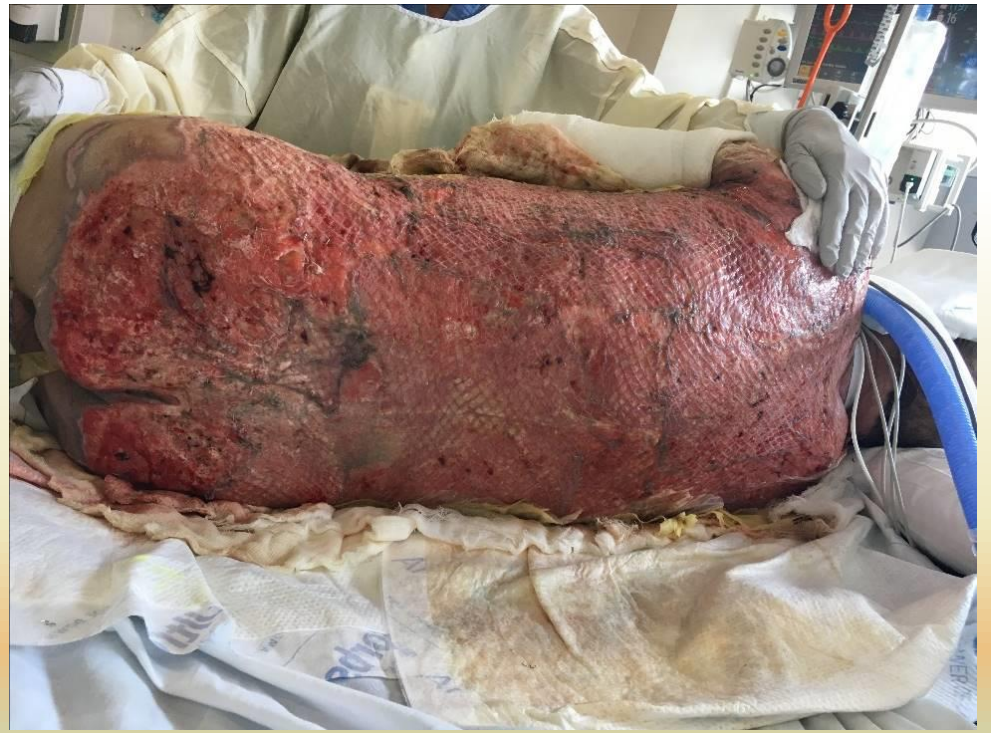
POD 0 – 6 *Protect graft!* **Dressing securement
Manage pain/bleeding
Soaks/drainage management – outers PRN
Donor site care

POD 3-6 – Anticipate bolster /VAC takedown

POD 6 – Full "takedown" (conformant) to view graft

POD 6-8 – Continue staple removal

POD 7-14 – Donor site care



Daily Tasks:

- Change ACE wraps
- Change outer gauze PRN for saturation

“Continuous Soaks” over grafts

- Ex order: “Apply ____ moistened gauze and re-soak TID or Q8hrs”
- Solutions:
  - » Vashe
  - » Mafenide
  - » Acetic Acid 1% or 3%
  - » Other options: Dakins ¼ strength, Ampho/Mafenide, Normal Saline
- Goals:
  - Maintain *moist* (<u>not wet</u>) environment promote moist wound healing and prevent tissue desiccation
  - Provide a consistent antimicrobial to wound surface, prevent/slow bacteria colonization

Nursing tips re: “soaks”

- Gauze should be MOIST, *not dripping wet*
  - Wring out excess fluid from gauze prior to application
- Apply moist dressings either over contact layer or directly to graft (per orders)
- Use large syringe to re-moisten dressings over grafted areas.
- OK to soak through ACE wraps
  - Mark areas for next RN
- **Gauze is changed out daily. Moisten prior to removal!**

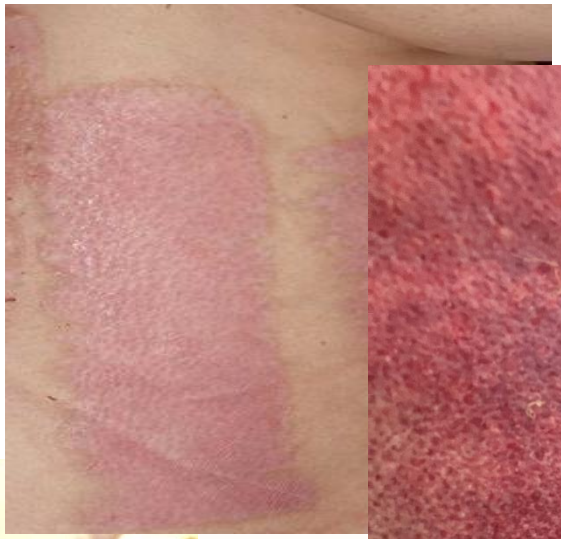
- ***Change in practice coming!***
  - RN to order a new bottle of solution for next dressing change PRN

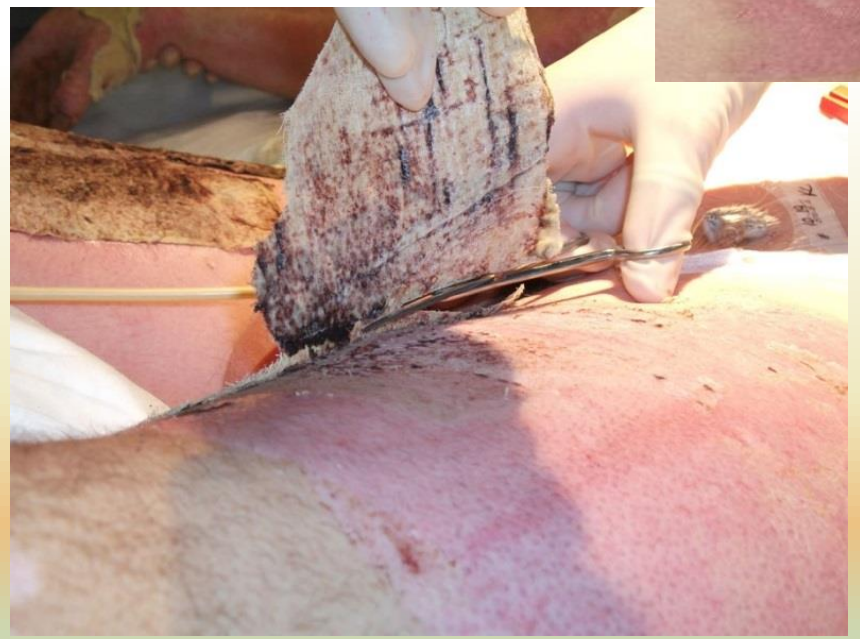
Skin Graft & Skin Substitute Post-Operative Management Guidelines | Maine Medical Center

Graft type		Contact Layer/ Primary Dressing *	Outer Dressings	Soaks	Dressing Change Frequency	Cleansing	1st Take Down	Post Take Down Care
Autografts	Split-thickness Mesh	Conformant	Gauze/ Stretch Netting/ ACE	Y/N	ACE: daily No soaks: Outer gauze: PRN saturation Soaks: Outer gauze: apply wet daily, re-soak Q8hrs	Before POD 6: Normal Saline, use to remove outers Concern for colonization? 10 min Vashe cleanse during drsg change After POD 6: Soap & water, shower	POD 6: conformant takedown, switch to Xeroform	Xeroform daily until re-epithelialized Allograft overlay: trim as it lifts Lotion when healed
	Split-thickness Mesh with Allograft Overlay	Xeroform					POD 3: takedown of Xeroform, change Q3 days and PRN	
	Split-thickness Sheet	Conformant		N	ACE: daily Outer gauze: daily Check for blebs POD 1-3		POD 6: conformant takedown, switch to Xeroform	
	Full-thickness	Conformant/ Xeroform Bolster		N	Bolster dressing to remain in place until takedown		POD 3-6: Remove bolster	
	Autologous Cell Suspension (ReCell)	Telfa Clear		N	ACE: daily Outer gauze: daily	Normal Saline No Vashe	POD 6: Takedown Telfa Clear Dressings per prders	Contact layer: Mepitel One Lotion when healed
Skin Substitutes	Cadaver Skin (Allograft)	Soaks: Conformant No Soaks: Xeroform	Gauze/ Stretch Netting/ ACE	Y/N	ACE: daily No soaks: Outer gauze: daily Soaks: Outer gauze: apply wet daily, re-soak BID	Before POD 6: Normal Saline, use to remove outers Concern for colonization? 10 min Vashe cleanse After POD 6: Soap & water, shower	Change contact layer POD 3, then Q3days Staple removal typically in OR	Return to OR for autografting. If not autografting: Contact layer: Xeroform, Lotion when healed
	Primatrix/ Integra							Return to OR POD 14-28 for autografting
	Biodegradable Temporizing Matrix (BTM)	Gauze					OR after POD 14-21	
	Suprathel	Raylon	Xeroform/ Gauze/ Stretch Netting/ ACE	N	Raylon/Xeroform to remain in place Change top gauze PRN for saturation until POD 6	Keep dry Shower per orders only	D/c top dressings down to Raylon after POD 6 Discontinue Raylon per orders	Lotion when healed

Donor Site Care - Nursing Considerations

- Pain management
- Anticipate increased drainage POD 0-2
    - » ACE for 24 hrs
- Vascular support
    - » Elevation
    - » ACE when OOB
- Dry healing approach
    - » Leave dressings OTA
    - » No ointments
- Monitor for s/s colonization, cellulitis
- Lotion when healed

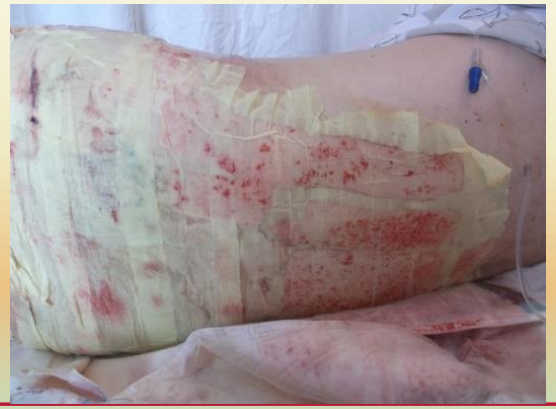




Donor Site Dressings

Xeroform

- Do not remove
- Discontinue top dressings POD 1, allow to dry
- Ok to shower
- No ointments
- Trim edges

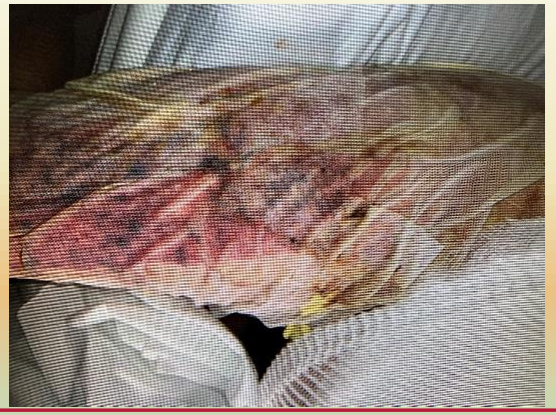


Mepilex AG Foam

- Overlap 1-2" onto intact skin
- POD 1 RN removes staples + secures border w/ **Hypafix tape**
- Change only if >75% saturated and/or lifting off
- **Keep dry and OTA**
- No soaks

Suprathel

- Left for 1-2 weeks
- Change top gauze only for saturation
- Keep dry at least 1 week
- Product eventually lifts off

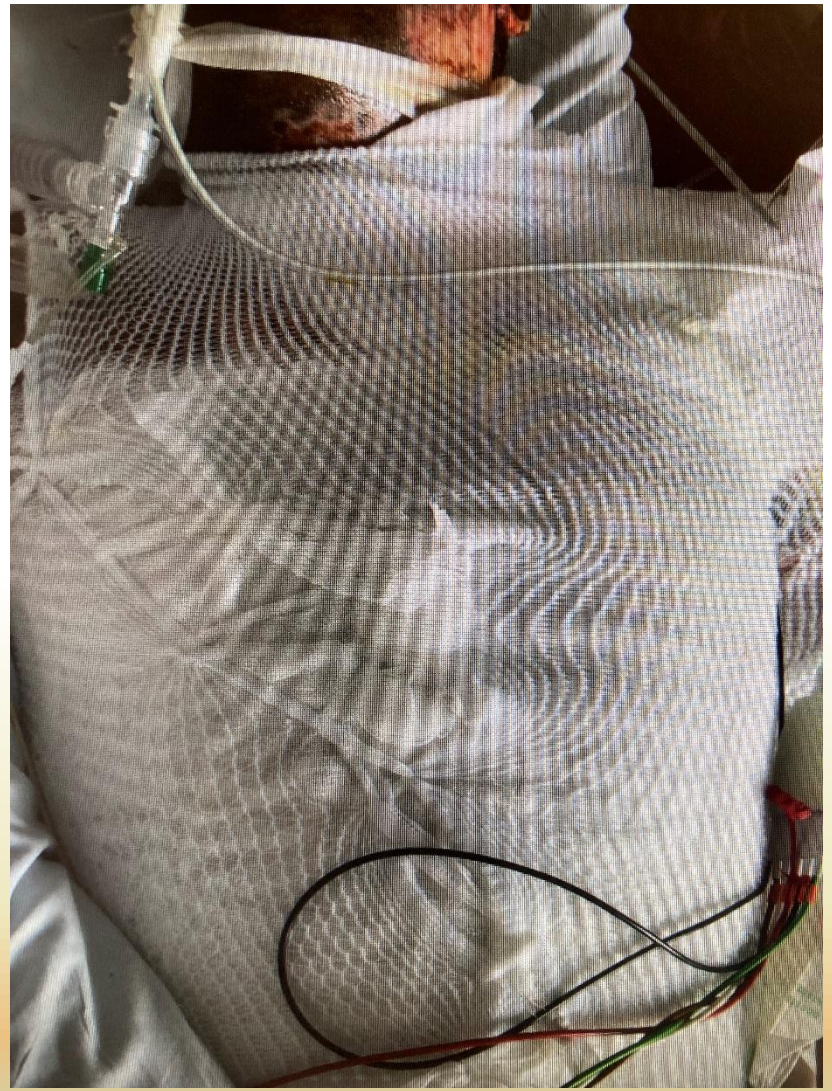


Donor Site Post-Operative Management Guidelines
Burn & Soft Tissue Service | Maine Medical Center

	Contact Layer	Top Dressing Change Frequency	Primary Dressing Removal	Post Takedown Care	Considerations
Donor Site Dressings	**Mepilex AG Foam** Applied in OR, replaced PRN by nursing Cut to fit, apply foam adherent side down, extend 1-2" border onto healthy tissue	No top gauze required ACE wrap for 24hrs, change daily and PRN for comfort POD 1-3 remove staples and apply **Hypafix** tape to border. Check site daily and reinforce tape PRN	**Only** replace foam <POD 7 if >75% saturated or lifting from wound bed, causing discomfort POD 8-14 Soak off with soapy water in shower Remove gently, avoid trauma to wound bed	Lotion TID to healed skin May apply Xeroform to open areas PRN	KEEP DRY. May cover with plastic in shower. If dressing gets wet, change immediately. Imperative for dressing borders to be secured. Check site daily and reinforce tape PRN May remove dry after POD 10 in clinic or at home No soaks
	Xeroform Applied directly to wound bed in OR, reinforced PRN by nursing	Top dressing: gauze and ACE Discontinue top dressings on POD 1-3 and allow site to dry If donor site is close to skin graft and top dressings cannot be d/c, **must remove top gauze POD 1 and change daily** to prevent adherence	Leave in place until healed, trim edges as they lift	Lotion TID to healed skin	Concern for colonization? Apply 10 min Vashe cleanse OK to shower and get dressing wet after POD6 Do NOT apply ointments on top of Xeroform, allow to dry
	Suprathel Applied in OR	Raylon/Xeroform to remain in place Change top gauze/outer dressings PRN for saturation until POD 6 Xeroform takedown POD 6 Discontinue Raylon per orders	Leave in place until healed	Lotion TID to healed skin	Keep dry, Shower per orders only

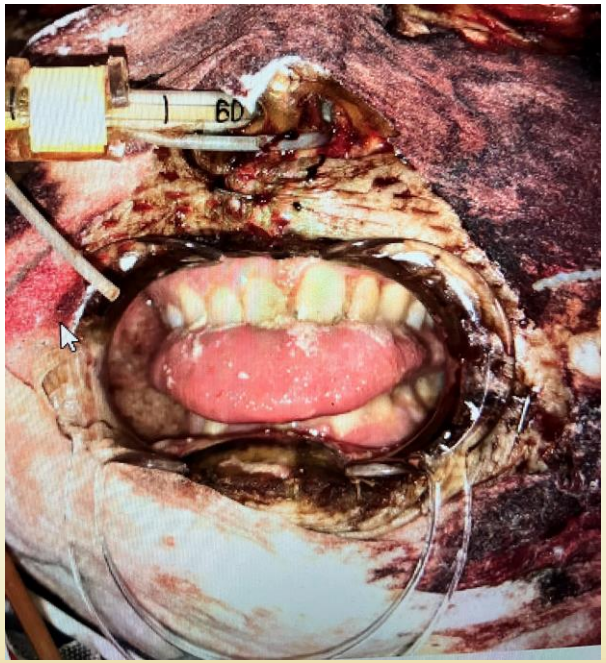
Dressing Changes - RN Tips

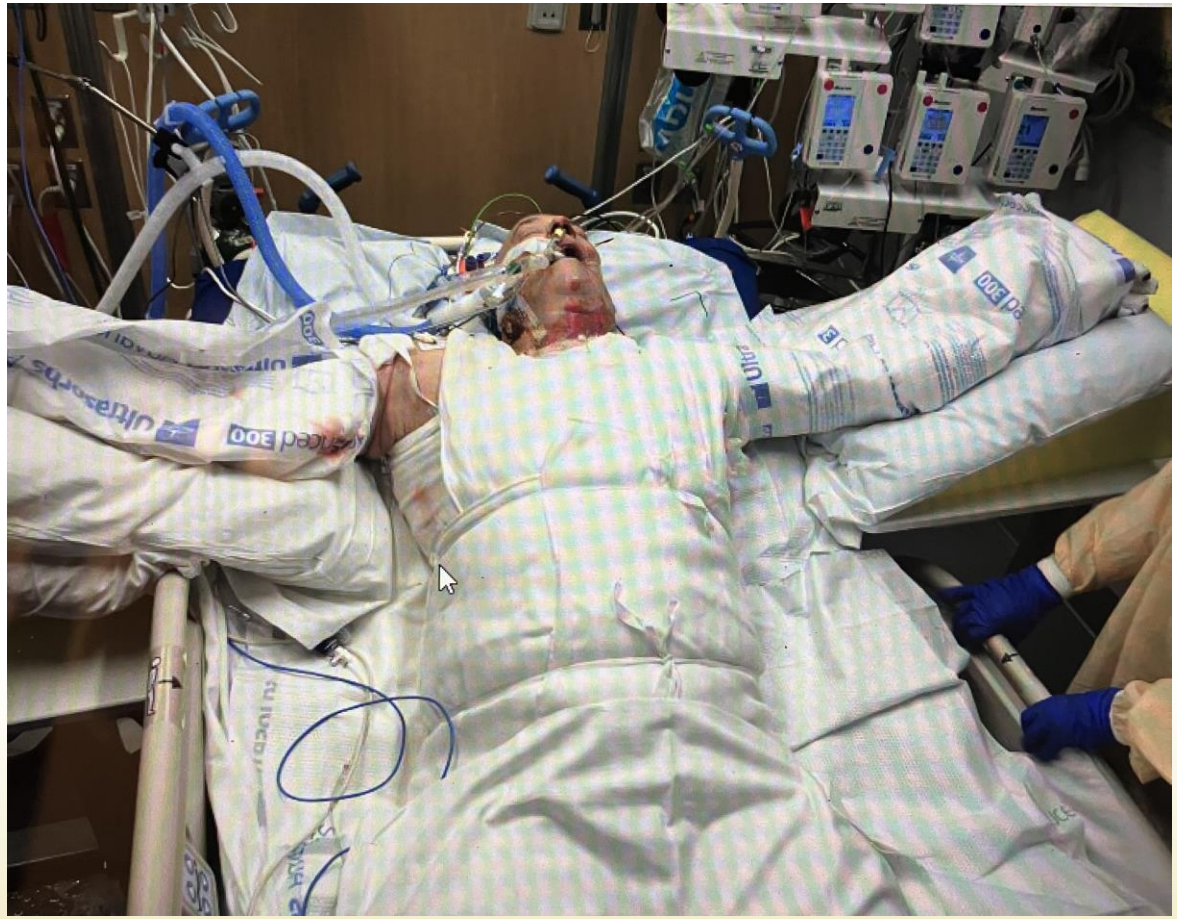
- Keep patient warm
- Be efficient, but don't be in a rush!
  - » Gather supplies
  - » Pre-prep dressing before cutting off old ones
  - » Order supplies for next wound care
- Pre-medication may be key for success
- *Always wash the wound before taking a photo
- Know your resources!
  - » Burn/Wound Resource Nurse
  - » R3 Burn Nurse
  - » WOCN Team
  - » BST APP, Resident



Therapy is crucial!

- Collaborate dressing changes
- Frequent ROM, stretching
- Positioning
- Mobility
- Splints
- Scar massage





*These are all **shared responsibilities** between Nursing and Therapists!*

Wound care is not just about the wounds!

"Treat the whole patient, not the hole in the patient"

Psychosocial Support

- Nursing support is key
- Identify patients support system
- Educate family/caregivers early, involve them in care
- Burn Psychologist, Psych, Palliative Care

Wound & Burn Nurse Upcoming Education

- MMC Wound Class & Skills – CWOCN team **CME available
  - » Thursday MAY 25th in Dana - Sign up via LMS
- Intro to Burns class (biannually) **CME available
  - » July 27 & Oct 26 12:00-4:30 in Dana 7 - Sign up via LMS
- ABLS on June 10
- Burn Therapy Education Series
- Burn Skills Labs
- Burn Monthly Education Series in the works
  - » Burn Resuscitation
  - » Burn Pain Management
- Huddles (suggest a topic!)

Ongoing BST meetings to know about…

- Morning BST rounds in SCU at 8am on Mondays + Wednesdays
- Weekly Burn Multidisciplinary Rounds
  - 12:00-1:00 on Wednesdays in R3 conf room
  - ZOOM option for SCU
- Monthly large group Burn Leadership Meeting
  - Third Thursdays
  - See Outlook Calendar invite
- **Quarterly Burn Nurse Meeting, next in July 2023**
- **THE FLAME** Quarterly Newsletter

References

- MMC Burn Manual
- MMC Guidelines:
  - BST Service Wound Consult Grid
  - Burn Pain and Sedation Guideline
  - Showering a Burn Patient Guideline
  - MMC Burn Pain Medication Administration
- MMC Policies:
  - Initial care of burn patient
  - Adult placement of Burn patients
  - Infection control
- ABLS Provider Manual Link: http://ameriburn.org/wp-content/uploads/2019/08/2018-abls-providermanual.pdf
- American Burn Association Link: http://ameriburn.org/

Questions?