

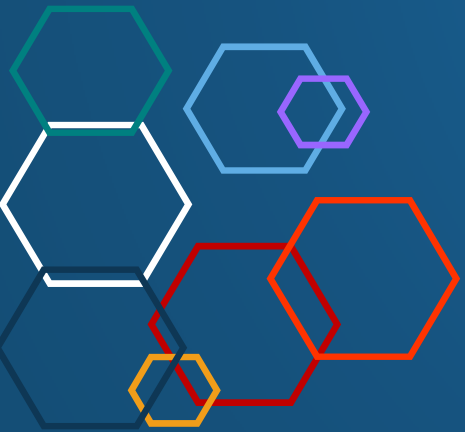
RANCHO LOS AMIGOS
NATIONAL REHABILITATION CENTER



Skin Management & Pressure Injury Prevention of the Spinal Cord Injury Patient

March 11, 2023

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Objectives:

By the end of the presentation the audience will be able to:

- 1.State three interventions to prevent pressure injuries.
2. Describe the factors contributing to skin breakdown in spinal cord injury (SCI) patients.
3. Identify measures to prevent medical device related pressure injuries (MDRPI)



SCI Facts:

- "Individuals with SCI are at a higher risk of developing pressure injuries compared to general medical population." Chen, et al. (2020)
- "25%-30% will develop pressure injuries (PI) within the 1st five years of SCI" Chen, et al. (2020)
- "85% will develop a PI some point in their lifetime" Chen, et al. (2020)





Additional SCI Facts

- SCI patients “nowadays can survive up to the age of 80 years old or more”
- “If a patient had SCI at an early age (15 years old) they will develop a pressure ulcer in their life on average of one pressure ulcer each year or more”
- “The percentage of patients who do not develop pressure ulcers or whom develop one per 5-10 years, are a very small percentage (2%) of the spinal cord population”

Rubayi, S. (2016). A.C.R.M. '93 Annual Conference: The USC & Rancho Los Amigos N.R.C. Pressure Ulcer Prevention Study.



Skin Breakdown in SCI

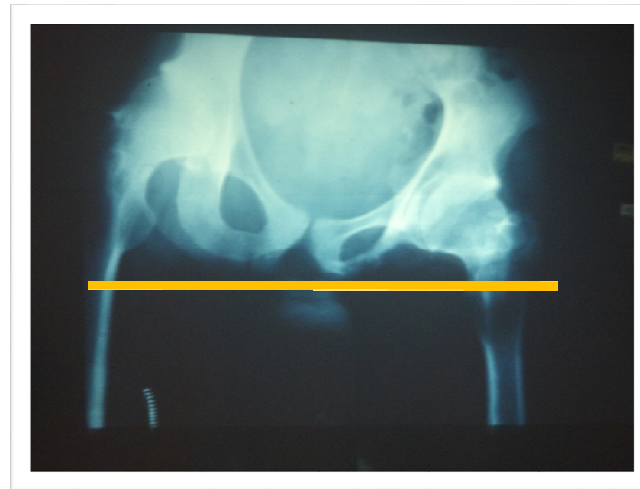
- Collagen Degradation → Fragile Skin
- Compromised Peripheral Blood Flow → Decreased oxygen & nutrient supply to tissues
- Muscle Atrophy → Reduced soft tissue “padding” over bony prominences
- Paralysis & Sensory Impairment → Areas of skin being subjected to pressure for prolonged periods of time





Skin Breakdown in SCI

- Joint contractures & muscle spasms → Increased pressure & shear
- Skeletal pathology → Increased pressure over bony prominences.





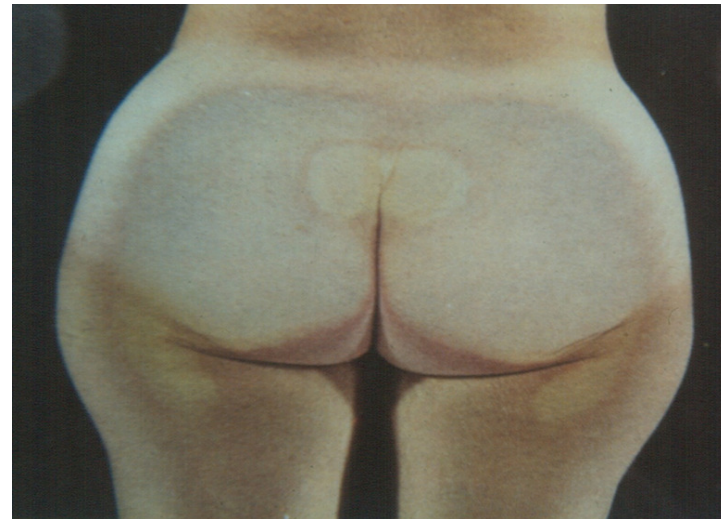
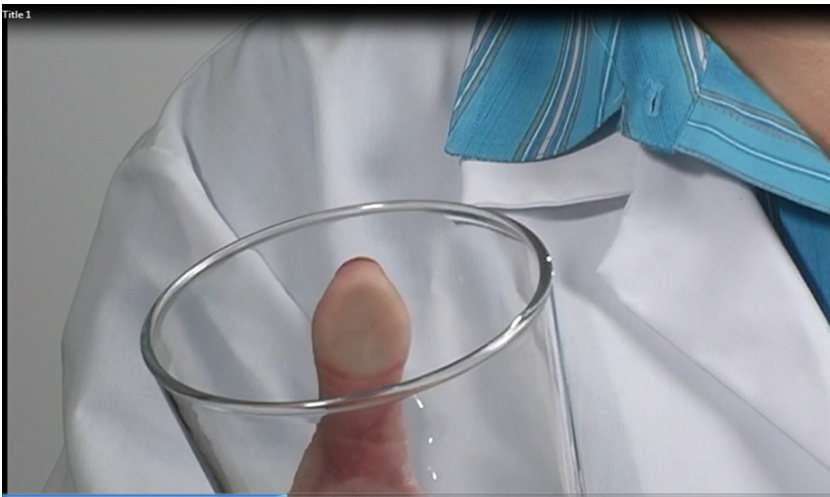
What is a pressure injury ?

- Localized damage to the skin and /or 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
- Occurs as a result of intense and /or prolonged pressure or pressure in combination with shear



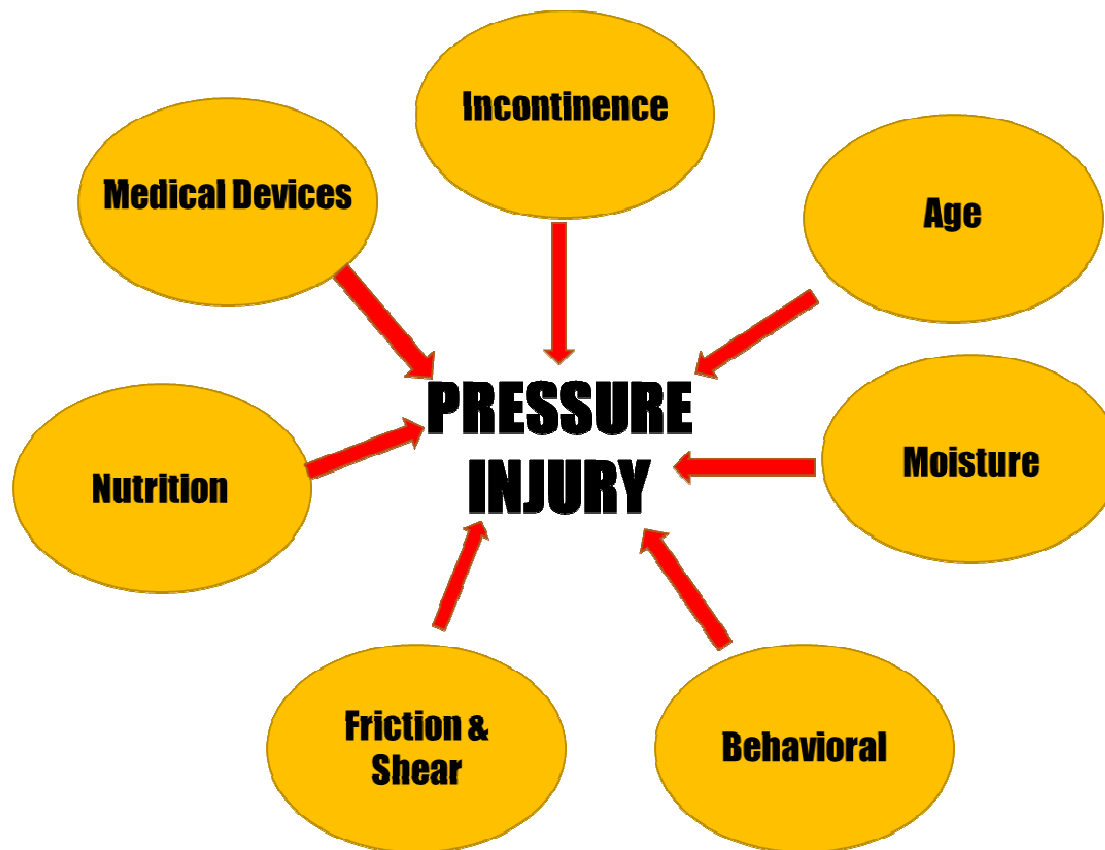
Interface Pressure

- 32mmHg of pressure, that's all it takes to block capillary perfusion!
- In a study of 46 SCI persons, it took **111 seconds** for tissues to return to unloaded levels during pressure reliefs after sitting upright (*Mortenson, et.al. (2018)*)





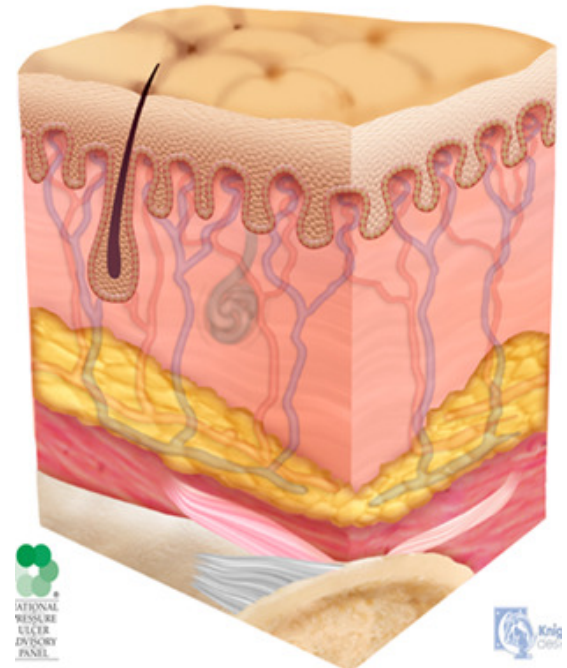
Factors leading to pressure injuries





Pressure Injury Staging



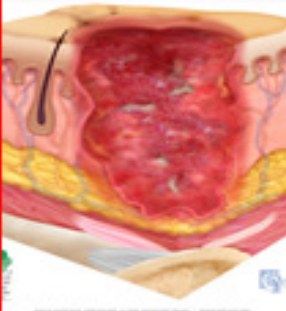






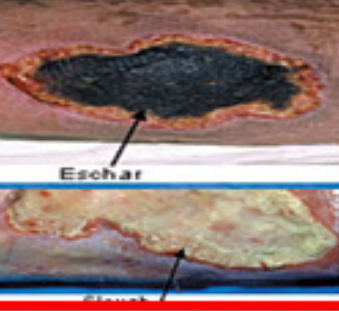
- **ETIOLOGY MUST BE FROM PRESSURE!**
- CLASSIFY ACCORDING TO THE AMOUNT OF VISIBLE TISSUE LOSS
- NO REVERSE STAGING
- ONE STAGE PER BONY PROMINENCE
- PRESSURE INJURIES LOCATED ON MUCUS MEMBRANES THAT ARE CAUSED BY A MEDICAL DEVICE, SHOULD NOT BE STAGED.





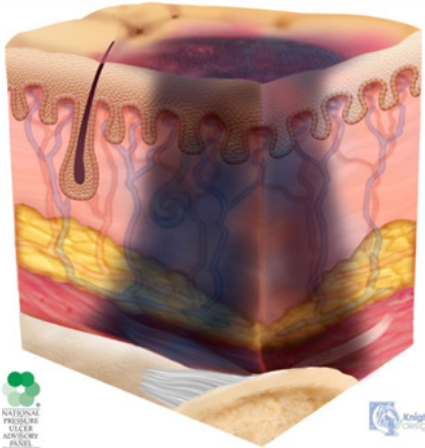
NPIAP Pressure Injury Staging

Not Linear in Progression

STAGE 1	STAGE 2	STAGE 3	STAGE 4	UNSTAGEABLE
				
				
<ul style="list-style-type: none">• Intact Skin• Nonblanching	<ul style="list-style-type: none">• Partial Thickness• Viable Tissue• Or Serous filled blister	<ul style="list-style-type: none">• Full Thickness• Adipose/slough• Granulation	<ul style="list-style-type: none">• Full Thickness• Muscle, bone, tendon, cartilage	<ul style="list-style-type: none">• Full Thickness• Can't see wound bed• Will be Stage 3 or 4



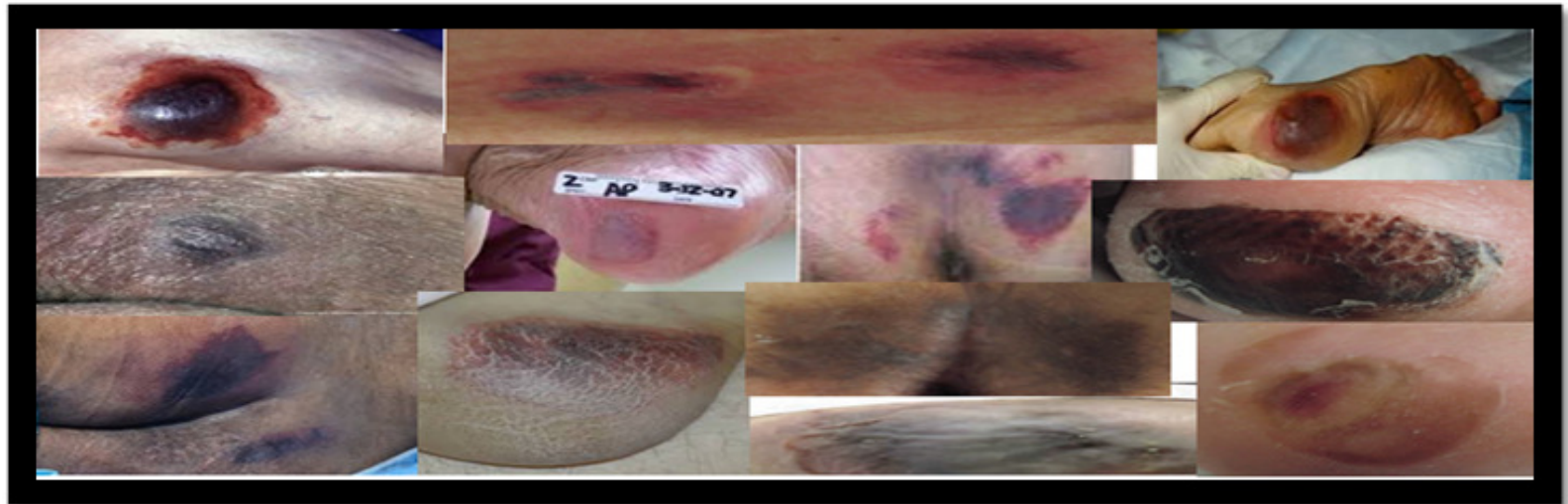
Deep Tissue Pressure Injuries(DTPI)



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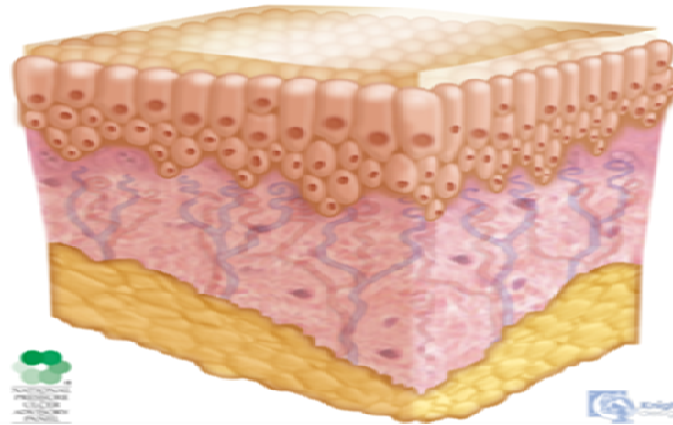


- Often begins intact
- Maroon, purple, **deep red**
- Blood-filled blister
- Skin may begin to peel
- May resolve at skin surface completely
- May advance to Stage 3, 4, Unstageable





Mucosal Membrane Pressure Injuries



- Injury caused from devices over mucus membranes
- **DO NOT STAGE!**





Prevention is the Key

Pressure Injury Prevention (PIP) bundle

S KIN INSPECTION/RISK ASSESSMENT (BRADEN)

S URFACES

K EEP MOVING/TURNING

I NCONTINENCE & MOISTURE MANAGEMENT

N UTRITION/ HYDRATION

M EDICAL DEVICES

E DUCATION

D OCUMENTATION





Skin Inspection





Braden Scale:

Risk assessment tool for pressure injury development

- The lower the score the higher the risk for pressure injury development
- Should match head-to-toe assessment
- Score all subscales:
Sensory Perception(1-4)
Mobility(1-4)
Nutrition(1-4)
Activity (1-4)
Moisture (1-4)
Friction and shear (1-3)
- **Low subscale scores of 1-2 require interventions**

Sensory & Perception	1 Completely	2 Very	3 Slightly	4 None
Moisture	1 Constantly	2 Very	3 Occasionally	4 Rarely
Activity	1 Bedfast	2 Chairfast	3 Walk occ	4 Walk fre
Mobility	1 Completely	2 Very	3 Slightly	4 No
Nutrition	1 Poor	2 Inadequate	3 Adequate	4 Excellent
Friction & Shear	1 Problem	2 Potential	3 'None	



Surfaces

- **Assess surface appropriateness**
e.g. mattresses, wheelchair cushions, **padded** commodes, **padded** shower benches
- **Minimize layers of linen (2 or less)**





Wheelchair Cushions

- Posture
- What's under your patient?
- Feel cushion prior to placing patient



Image 1



Image 2



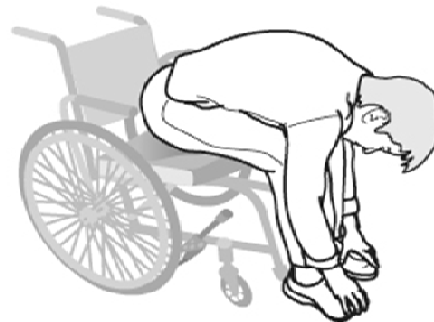


Keep Moving/Turning: Pressure Relief

- Weight shifting in wheelchair
 - Every hour for 2 full minutes
 - Recommended to be done more often if patient has pressure injury (e.g. 15 minutes for 15 seconds)
- Can do more frequently if needed



Side to Side



Forward leaning



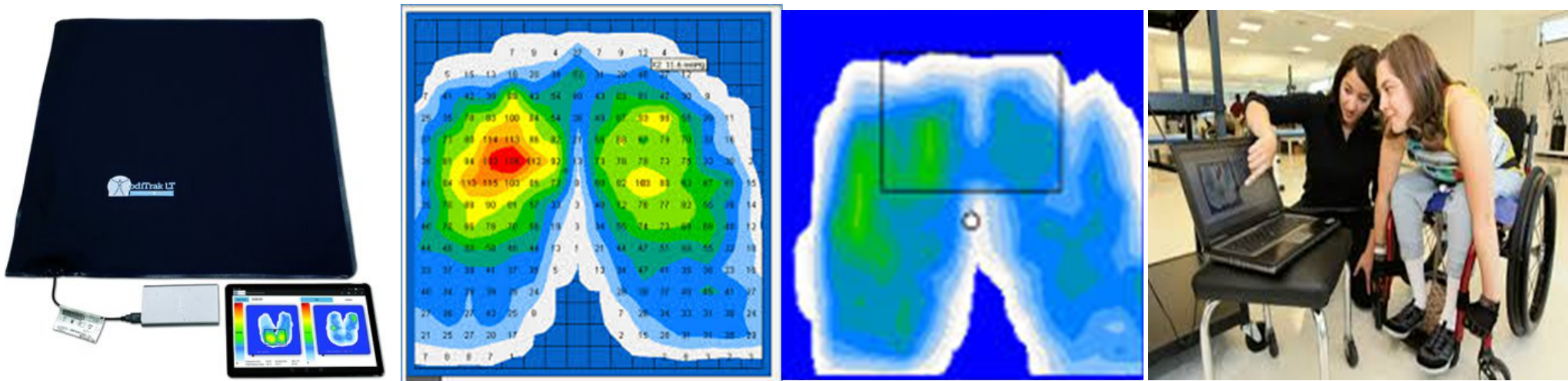
Raises





Pressure Mapping

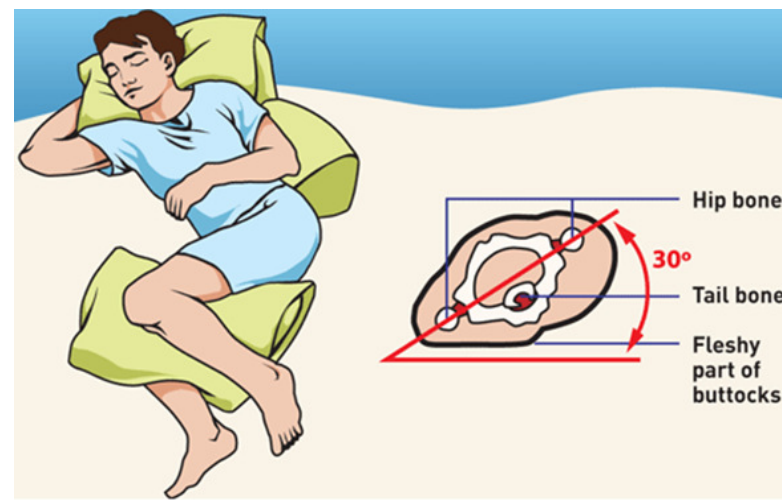
- Seat map with thousands of pressure sensors
- **Red** = high interface pressure between body & underlying surface
- Provides real-time feedback over body's pressure points (10-200mmHg)





Keep Moving/ Turning

- Turn/ reposition in bed Q2hrs
- Alternate positions
 - Left (30 degree pelvic tilt)
 - Supine
 - Right (30 degree pelvic tilt)
- Avoid placing on any areas with wounds
- Keep head of bed 30 degrees or less unless medically contraindicated
- Offload bony prominences (e.g heels with heel protectors)
- Discontinue " DO NOT TURN" orders as soon as medically possible
 - Perform microshifts as appropriate







Incontinence/ Moisture

- **Identify the source**
 - Stool or urine incontinence, perspiration, trach secretions, gastrostomy tube leak etc.
- If, from bowel and bladder incontinence :
 - Perianal Care
 - **Apply skin barrier paste to exposed areas**
 - Inform MD and develop plan!
 - Bladder and Bowel program**





Nutrition and Hydration

- Monitor patient's daily meal consumption
- Minimum of 30-35 kcalories per kg body weight per day
- Minimum of 1.25-1.5 grams of protein per kg body weight per day
- 1 ml of fluid intake per kcalorie per day
- Consult Dietary as needed





Medical Devices

- ✓ Choose the correct size for the individual
- ✓ Right purpose
- ✓ Stabilize (e.g indwelling urinary catheters, nasogastric tubes, condom catheter)
- ✓ Pad and protect the skin in high-risk areas
- ✓ Remove to inspect skin under and around. Unless medically contraindicated.
- ✓ Optimize skin condition (e.g. moisturize dry skin)
- ✓ Rotate Sites and Reposition (if feasible)
- ✓ Change rigid C-collar to softer collar when medically cleared
- ✓ Question if still needed
- ✓ Be aware of edema/ spasms under devices





Education & Documentation

- Skin inspection
- WC cushion
- Pressure reliefs
- Turning in bed
- Patient refusals/conversations
- **Investigate Refusals of Care**
 - Knowledge deficit, needs/ request, coping
 - Consult to Psychology
- **Caregiver Training**
- Nutrition



❖ **IF ITS NOT DOCUMENTED.....**



Impacts of Pressure Injury: Rehabilitation

- Disrupts quality of rehab program
- Requires aggressive interdisciplinary team efforts
 - Specialty Surface
 - Management of medical issues
 - Wound treatments
 - Turning Q2hrs avoiding positioning on wound
 - Dietary Consult for dietary supplements
 - Customized wheelchair cushions
 - Electrical Stimulation
 - **Restricted wheelchair sitting times**
 - Additional bowel and bladder management
 - Psychology Consult for adjustment
 - Additional Education/ Caregiver training
- **May delay rehabilitation due to need for myocutaneous flap surgery**





Interprofessional Approach : SSKIN HUDDLE





REFERENCES

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תודה
Dankie Gracias
Спасибо شكراً
Merci Takk
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Grazie Dziękujemy Dékojame
Ďakujeme Vielen Dank Paldies
Kiitos Täname teid 谢谢
Thank You Tak
感謝您 Obrigado Teşekkür Ederiz
감사합니다
Σας ευχαριστούμε ขอบคุณ
Bedankt Děkujeme vám
ありがとうございます
Tack