

Ulcer Bed sore

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ULCER

- **Definition:**
- An ulcer is a break in the continuity of the covering epithelium, either skin or mucus membrane.
- **Parts of an Ulcer**



Fig.4.14.— Diagrammatic representation of various parts of an ulcer. See the text.

Margin – junction between normal epithelium and ulcer

Edge – area between margin and floor of ulcer

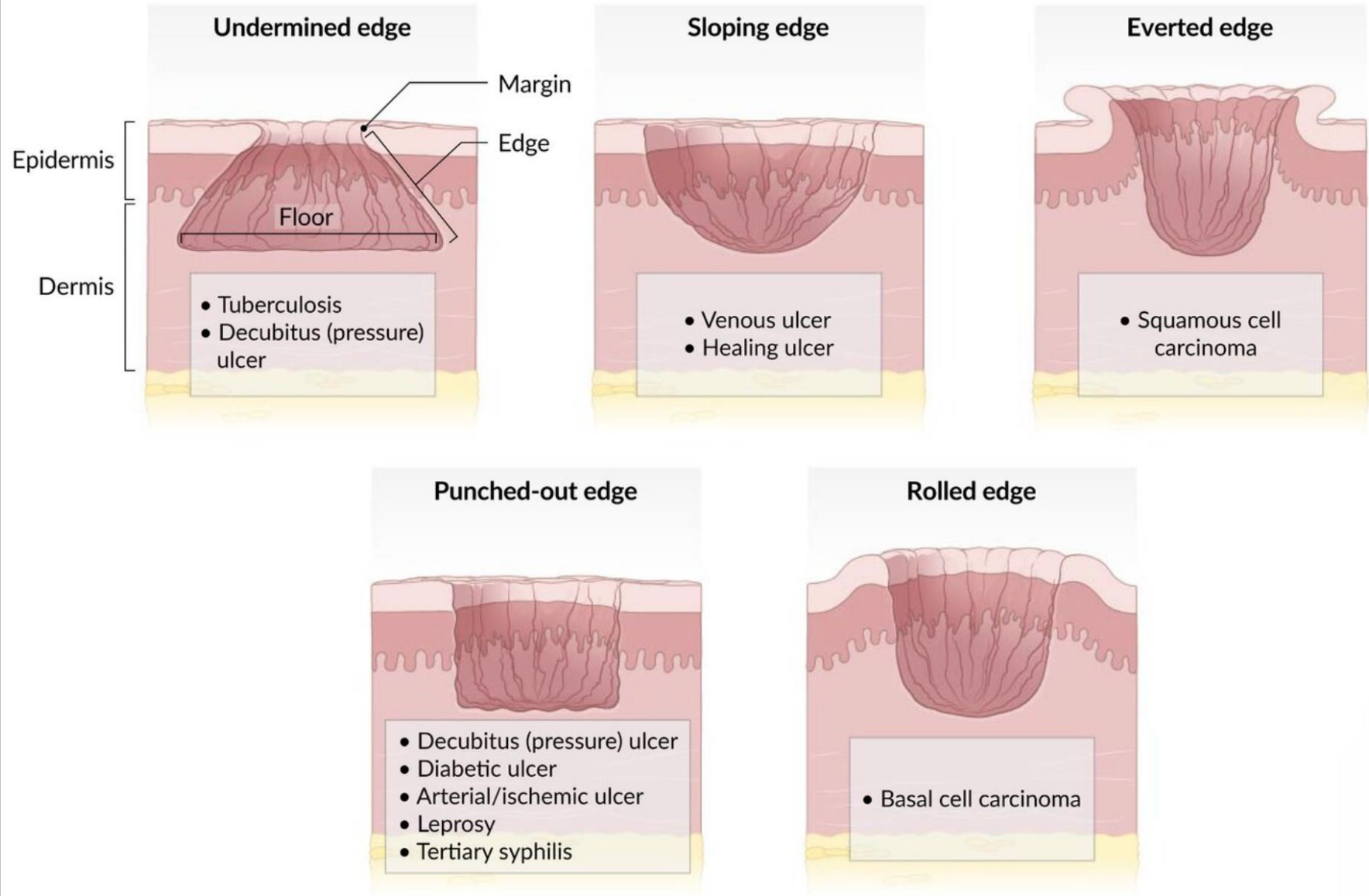
Floor – exposed surface of ulcer

1. Margin: It may be regular or irregular , It may be rounded or oval.
2. Edge: Edge is the one which connects floor of the ulcer to the margin. *Different edges are*:
 - ***Sloping edge***. It is seen in a healing ulcer. Its inner part is red because of red, healthy granulation tissue. Its outer part is white due to scar/fibrous tissue. Its middle part is blue due to epithelial proliferation.
 - ***Undermined edge*** is seen in a tuberculous ulcer. Disease process advances in deeper plane (in subcutaneous tissue) whereas (skin) epidermis proliferates inwards.
 - ***Punched out edge*** is seen in a gummatous (syphilitic) ulcer and trophic ulcer. It is due to end arteritis.
 - ***Raised and beaded edge*** (pearly white) is seen in a rodent ulcer (BCC). Beads are due to proliferating active cells.
 - ***Everted edge (rolled out edge)***: It is seen in a carcinomatous ulcer

due to spill of the proliferating malignant tissues over the normal skin.

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Types of edges in ulcers



3. *Floor*: It is the one which is seen. Floor may contain discharge, granulation tissue or slough.
4. *Base*: Base is the one on which ulcer rests. It may be bone or soft tissue.

- **Assessment of an Ulcer**

- Cause of an ulcer should be found – diabetes/ venous/ arterial/infective.
- Assessment of wound is important – anatomical site; size and depth of the wound; edge of the wound; mobility; fixity; induration; surrounding area; local blood supply.
- Clinical type should be assessed.

- **Wagner's grading/classification of ulcer**
- Grade 0 – pre-ulcerative lesion/healed ulcer.
- Grade 1 – superficial ulcer.
- Grade 2 – ulcer deeper to subcutaneous tissue exposing soft tissues or bone.
- Grade 3 – abscess formation underneath/osteomyelitis.
- Grade 4 – gangrene of part of the tissues/limb/foot.
- Grade 5 – gangrene of entire one area/foot.

Investigations for an ulcer

- *Study of discharge*: Culture and sensitivity, AFB study, cytology.
- *Edge biopsy*: **Biopsy is taken from the edge because edge contains multiplying cells.** Usually two biopsies are taken. Biopsy taken from the centre may be inadequate because of central necrosis.
- X-ray of the part to look for periostitis/osteomyelitis.
- FNAC of the lymph node.
- Chest X-ray, Mantoux test in suspected case of tuberculous ulcer.
- Haemoglobin, ESR, total WBC count, serum protein estimation(albumin).
- **Note:** Ulcer will not granulate if haemoglobin is less than 8 g/dL and serum albumin is <3 g/dL. (The normal range for

albumin is 3.5 to 5.5 g/dL).

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• Treatment of an Ulcer

- Cause should be found and treated so Investigate properly.
- Correct the deficiencies like anaemia (Transfuse blood if required), protein and vitamins deficiencies.
- Control the pain.
- Control the infection and give rest to the part.
- Care of the ulcer by *debridement, ulcer cleaning and dressing is done.*
- Remove the exuberant granulation tissue
- Topical antibiotics for infected ulcers only like *framycetin, silver sulphadiazine.*
- Antibiotics are not required once healthy granulation tissues are formed.
- Once granulates, defect is closed with secondary suturing, skin

graft, flaps.

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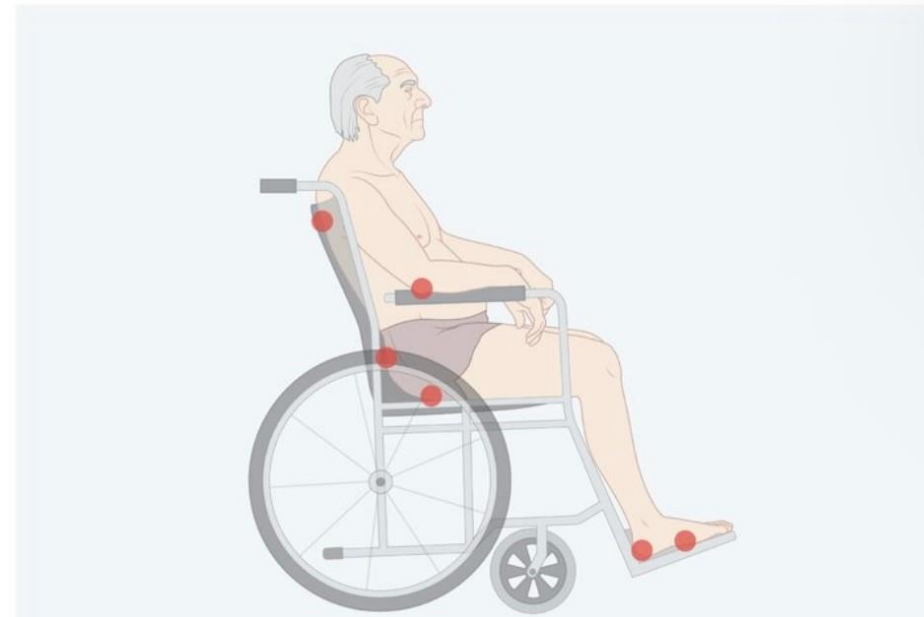
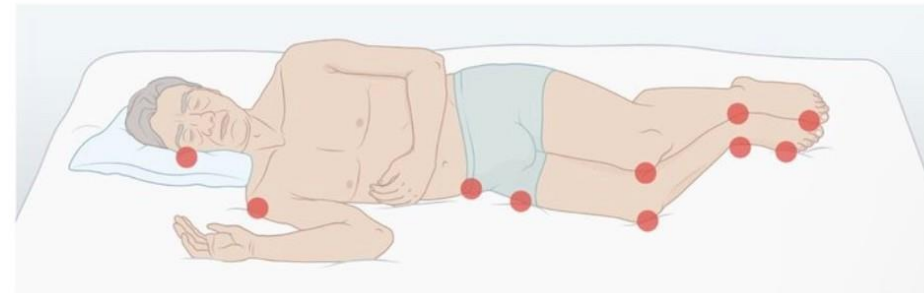
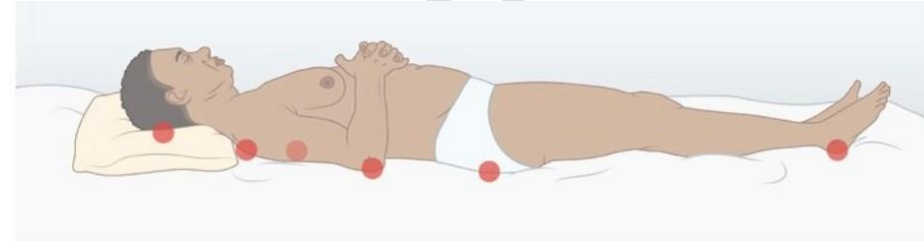
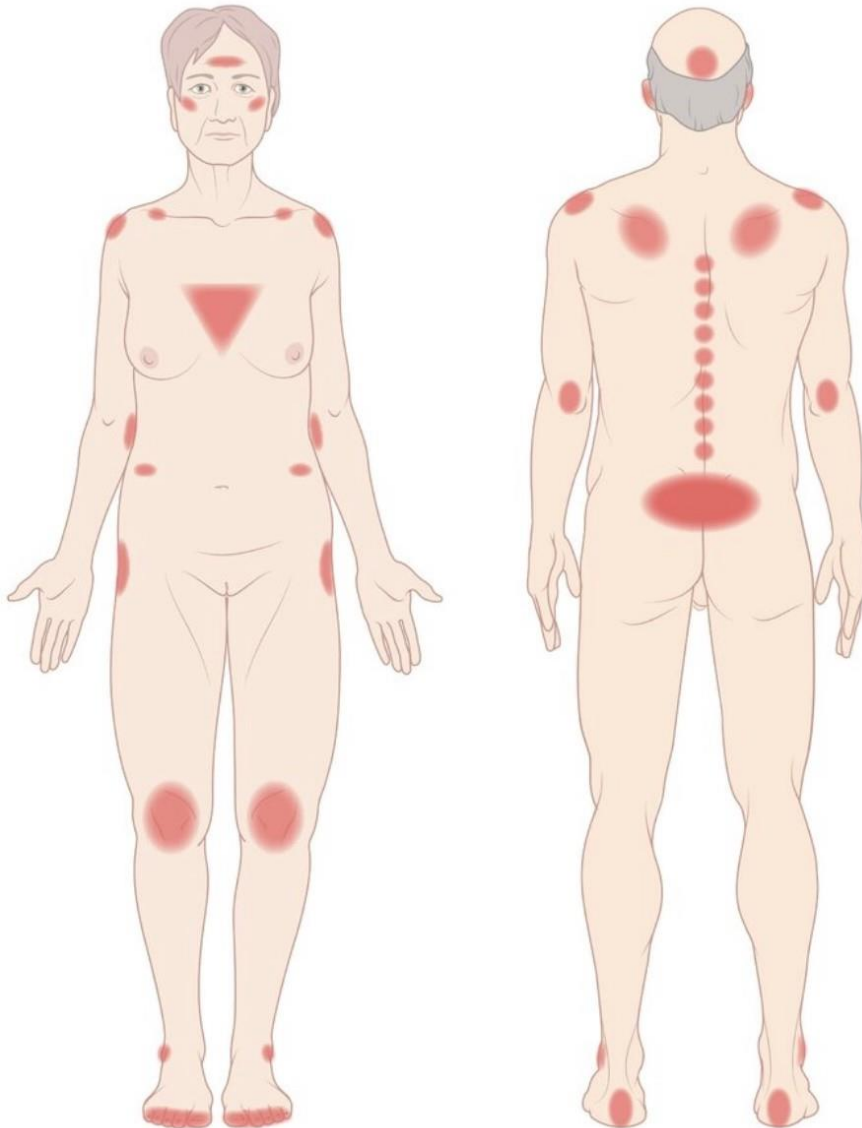
BEDSORE , DECUBITUS ULCER

- ▶ Defined as tissue necrosis with ulceration due to prolonged pressure.
- ▶ Blood flow to the skin stops once external pressure becomes > 30 mmHg (more than capillary occlusive pressure) and this causes tissue hypoxia, necrosis and ulceration.
- ▶ It is more prominent between bony prominence and an external surface.
- ▶ Preventable but occur in approximately 5% of all hospitalised patients
- Common sites: Occiput, sacrum, ischium, scapula, calcaneum
- Bedsores are trophic ulcers.
- It is due to:
 - Impaired nutrition.
 - Defective blood supply.
 - Neurological deficit.
- Urinary incontinence in hemiplegic & paraplegic patients causes skin soiling, maceration- infection-necrosis
- The best treatment is prevention with good skin care, alpha bed and urinary or faecal diversion in selected cases.

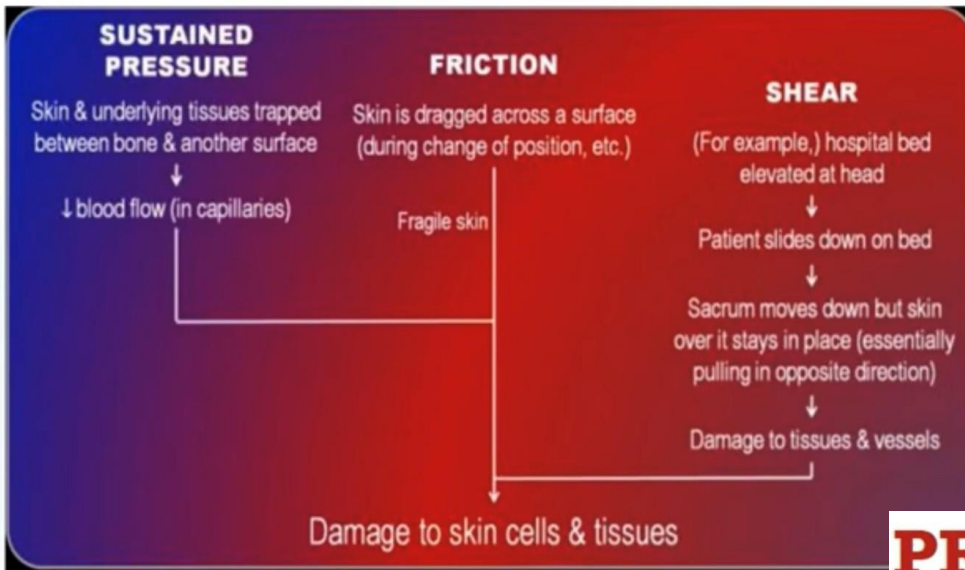
- **Typical location:** over bony prominences, such as the **sacrum**, **ischium**, **heel**, greater trochanter, lateral malleolus, elbows 🗨️

- **Initial presentation**

- Focal area of nonblanchable erythema with/without edema 🗨️
- Evidence of decreased skin perfusion (increased capillary refill time)
- Painful, unless there is sensory loss (e.g., due to spinal cord injury) [6]



PRESSURE SORE- Pathology



PRESSURE SORE- Risk Factors

Predisposing factors [2][3]

- **Old age**
- Cachexia or malnourishment
- Multimorbidity
- **Diabetes mellitus**
- **Prolonged reduction** in any of the following:
 - **Mobility** (e.g., secondary to illness, frailty, or paralysis)
 - Perception of pain (e.g., due to **polyneuropathy**, cognitive impairment, or anesthesia)
 - Skin perfusion (e.g., in peripheral artery disease, heart failure, vasoconstriction, or shock)
- Skin breakdown (maceration) due to urinary or fecal incontinence
- Certain medications (e.g., immunosuppressants, steroids, or vasopressors) [2][4]
- Prolonged pressure from medical devices such as feeding tubes, oxygen delivery devices, or tracheostomy tubes

Etiology	Basis
Old age	↓ skin cell regeneration
DM, vascular diseases	↓ vascular supply
Bedridden, tetanus, paraplegia, coma	Immobility
Sensory loss	Inability to detect discomfort @ need to change position
Head injury	Unable to execute preventive measures
Malnutrition	↑ tissue breakdown
Moisture/ dry skin	↑ friction

Staging of decubitus ulcers

[4]

Stage	Clinical features
1	<ul style="list-style-type: none"> Intact <u>skin</u> (i.e., no <u>ulceration</u>) with nonblanchable <u>erythema</u>
2	<ul style="list-style-type: none"> Partial-thickness <u>skin</u> loss
3	<ul style="list-style-type: none"> Full-thickness <u>skin</u> loss Exposure of <u>subcutaneous tissue</u>, but intact <u>fascia</u>
4	<ul style="list-style-type: none"> Full-thickness tissue loss Exposure of muscle, <u>fascia</u>, <u>tendons</u>, or bone
Unstageable	<ul style="list-style-type: none"> The wound bed is fully covered with slough or <u>eschar</u>.



stage 1



stage 2






stage 3



stage 4

► Warning signs of pressure ulcers are:

- Unusual changes in skin color or texture
- Swelling
- Pus-like draining
- An area of skin that feels cooler or warmer to the touch than other areas
- Tender areas
- characterised punched out edge

Stage	Features	Picture
I	<ul style="list-style-type: none"> *Reddish skin (which NO blanch on touch) *Painful/ tender *Soft/ firm *Warm/ cool 	
II	<ul style="list-style-type: none"> *Loss of epidermis & dermis *Shallow, pink/ red wound (resembles blister) 	
III	<ul style="list-style-type: none"> *Near-total skin loss (some fat is exposed) *Crater-like *Floor may contain some yellowish (dead) tissue 	
IV	<ul style="list-style-type: none"> *Total skin loss (muscles/ tendons/ bones exposed) *Floor contains crusty & yellowish/ dark (dead) tissue 	

- **Complications of pressure ulcers**, some life-threatening, include:
- **Cellulitis**. Cellulitis is an infection of the skin and connective soft tissues.
- **Bone and joint infections**. An infection from a pressure sore can burrow into joints and bones.
- **Cancer**. Long-term, nonhealing wounds (Marjolin's ulcers) can develop into a type of squamous cell carcinoma
- **Sepsis**. Rarely, a skin ulcer leads to sepsis.

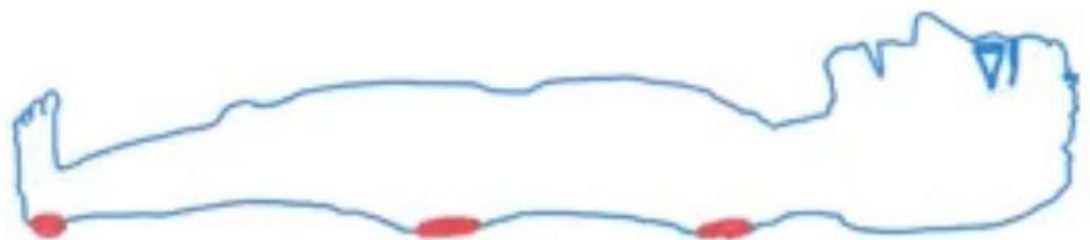
Management of decubitus ulcer

Surface should be smooth

Kkeep moving

Incontinence management

Nutrition



Treatment of bed sore

Supportive care [2][11][10]

Redistribute pressure ▶ Hyperbaric Oxygen

Pressure relief over the affected or vulnerable area is one of the most important aspects of management.

- Immobile patients and patients with several or refractory ulcers: [3]
 - Frequent position changes (**every 2 hours**)
 - Pad all pressure points.
 - Alternating pressure mattress
- Mobile patients
 - Optimize bedding with a foam mattress or overlay.
 - Assist with movement for patients with limited mobility.
- All at-risk patients: pad pressure points on devices such as CPAP masks and physical restraints.

Rigorous skin care

- Keep the skin clean and moisturized in order to prevent skin erosion and laceration.
- Advise caregivers to regularly inspect other at-risk areas to identify early stages of decubitus ulcers.
- Catheterization, bowel programs, and/or highly absorbent incontinence products (e.g., diapers, pads) may be helpful for patients with incontinence.

Nutrition

- Ensure adequate hydration and nutrition in all patients, preferably in consultation with a nutritionist.
- Protein supplementation is recommended. [12]
- Consider increasing daily calorie requirement and supplementing micronutrients to facilitate healing.



Pressure relief and regular skin care are the most important steps for the prevention and treatment of decubitus ulcers.

Wound management [2][12][10]

- **Cleaning**

- Perform frequently to reduce the bacterial load.
- Normal saline is a suitable cleaning agent.
- Limit the use of antiseptic fluids, because they inhibit the formation of granulation tissue. [10]

- **Dressings** (e.g., hydrocolloids, foam dressings): Perform frequently to absorb excess exudate while keeping the wound moist

- **Debridement**

- Used to remove devitalized tissue or biofilms to prevent or treat infection and enable healing
- Modalities: sharp (surgical), mechanical, biological, enzymatic, and autolytic
- In patients with suspected infection, obtain a swab or tissue for culture following debridement.

- **Adjunctive treatment options:** electrical stimulation, negative pressure wound therapy, and administration of platelet-derived growth factor [12]

► Radical wound debridement
(+ skin grafting/ local rotation
flaps s.o.s.)