

Pressure Ulcers: Treatment and Prevention

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Goal

Consider the possibility of
pressure ulcer development

Objectives

- Identify ulcer stage during exam
- Recognize risk factors
- Implement strategies for prevention
- Utilize proper treatment
- Abandon unproven treatments

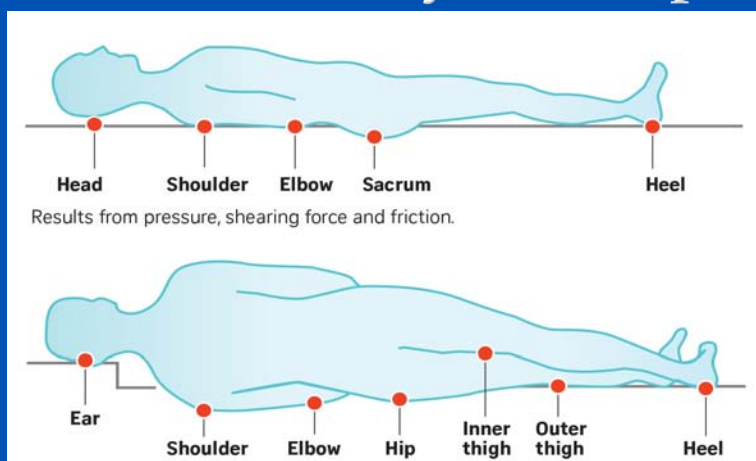
What is a Pressure Ulcer?

- Any lesion caused by unrelieved pressure resulting in damage to underlying tissue
- Result of prolonged tissue ischemia
- Development is variable due to severity of illness and comorbid conditions

Why does it matter?

- 60,000 patients die yearly
- \$11,000,000,000 spent yearly for treatment
- Up to \$150,000 per ulcer
- 2,500,000 new pressure ulcers yearly
- 17,000 lawsuits per year
- Medical facilities are primarily responsible for prevention

Where do they develop?

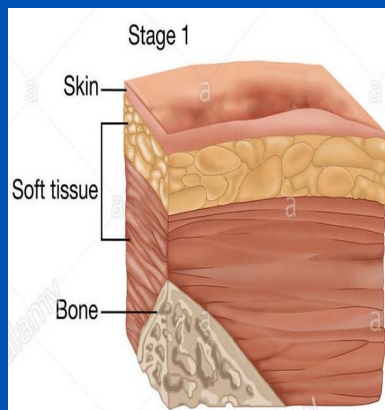


How are they staged?

- Pressure ulcers are staged I - IV
- Eschared ulcers are called unstageable
- Deep tissue injury is a precursor to a pressure ulcer

Stage I Ulcer

- Skin still intact
- Painful
- Density changes
- Temperature changes
- Color changes
- Non-blanchable

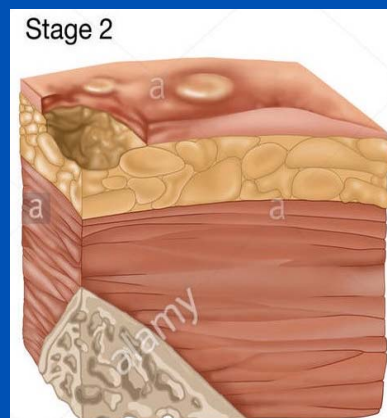


Stage I Ulcer

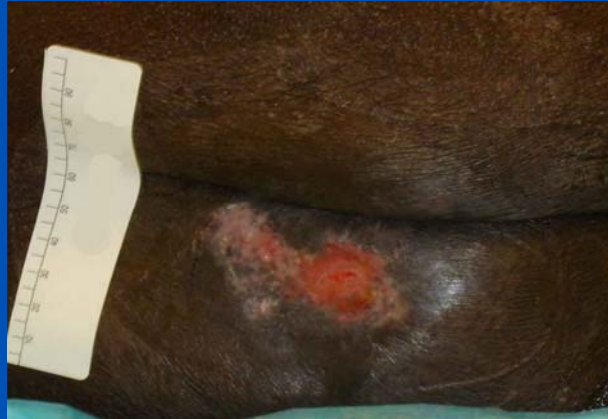


Stage II Ulcer

- Partial thickness
- Loss of dermis
- Bulla
- Minimal slough
- No bruising

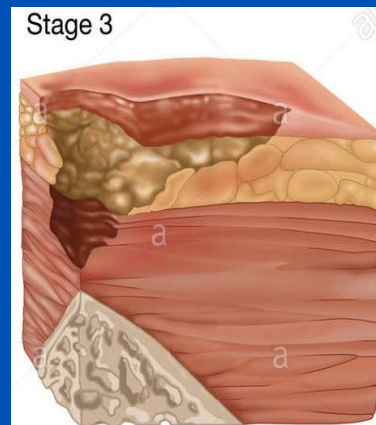


Stage II Ulcer



Stage III Ulcer

- Full thickness
- Undermining
- Tunneling
- No exposed structures
 - muscle, tendon, bone

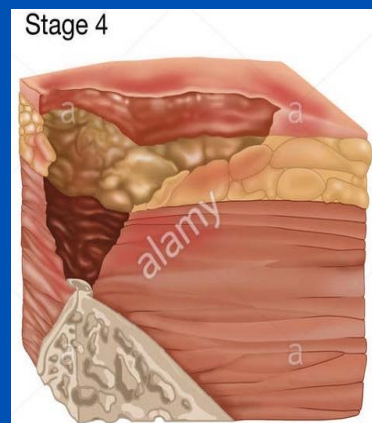


Stage III Ulcer



Stage IV Ulcer

- Full thickness
- Exposed structures
- Osteomyelitis risk

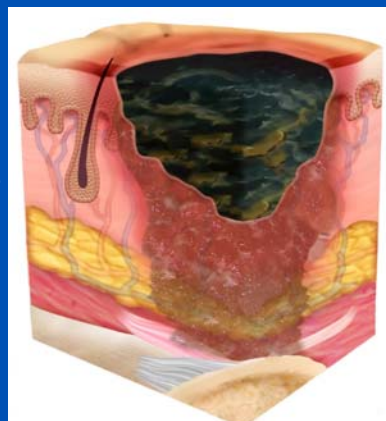


Stage IV Ulcer



Unstageable Ulcers

- Full thickness
- Unable to visualize base
- Keep in place
- Protective



Unstageable Ulcers



Risk Factors

- Intrinsic: disease states and physiologic factors that increase the risk
 - Age over 70
 - Malnutrition (low BMI)
 - Arterial disease
 - Dementia
 - Delirium
 - Frailty

Risk Factors

- Extrinsic: external factors that damage skin
 - Pressure
 - Friction
 - Shear forces
 - Incontinence (urinary, bowel)
 - Tissue hydration (hyper, hypo)

Risk Assessment Scales

- Norton Scale
 - Physical condition
 - Mental condition
 - Level of physical activity
 - Mobility
 - Incontinence

Risk Assessment Scales

- Braden Scale
 - Sensory perception: ability to respond to pressure-related discomfort
 - Moisture: degree of exposure to moisture
 - Activity: degree of physical activity
 - Mobility: ability to change and control body position
 - Nutrition: usual food intake
 - Friction/Shear: lateral forces due to movement

Prevention Strategies

- Skin care
- Nutritional status
- Mechanical pressure reduction
- Mobility
- Support surfaces

Prevention Strategies Skin Care

- Daily skin assessment and cleaning
- Manage skin hydration
 - Moisturize when dry
 - Incontinence issues
- Special attention to bony prominences
- Manage shear forces and friction
 - Routine turn and position
 - Skin lubricants

Prevention Strategies Nutritional Status

- Protein-calorie malnutrition
 - Link to poor wound healing inconclusive
- Correct deficiencies only
 - No benefit in over-supplementing
- Enteral/parenteral route in severe cases
 - Need to discuss goals with patient/family

Prevention Strategies Mechanical Pressure Reduction

- Heel ulcer account for over 20%
 - Assess and moisturize
 - Socks to reduce friction
- Reposition every 2 hours
- Keep head of bed as low as possible
- Shift weight when sitting every 15 minutes
 - 'Doughnut pillows' no longer used

Prevention Strategies Mobility

- Patient's ability to change and control body position
- Improved mobility prevents ulcers
- Immobility leads to pressure ulcers
- Aggressive PT/OT when appropriate
- Passive ROM exercises beneficial

Prevention Strategies Support Surfaces

- Use for all at-risk patients
- Static support surface
 - Air, gel, water, foam
- Dynamic support surface
 - Alternating air mattress, low-air-loss mattress
 - Indicated for failure of static support surface
 - Morbid obesity, significant bony prominences

Treatment Plan

- Plan based on several factors:
 - Comorbid conditions
 - Patient participation
 - Care goals per patient and family
 - Location and quality of ulcer

Initial assessment

- Etiology of wound
- Exacerbating comorbidities
 - Peripheral vascular disease
 - Autoimmune disease, immunocompromise
 - Medications
 - Malnutrition
- Patient care and compliance
 - Caregiver competency
 - Patient care goals

Management

- Debridement
- Wound dressings
- Nutritional support
- Surgical options

Management Debridement

- Sharp debridement
 - Use of sharp instrument to remove tissue
 - Direct visualization of result
 - Allow for optimization of the 'woundscape'
 - Removal of callous
 - Optimized margins
 - Management of slough, devitalized tissue

Management Debridement



Management Debridement



Management Debridement

- Enzymatic debridement
 - Collagenase ointment (Santyl) most common
 - Breaks down necrotic tissue
 - No harm to living tissue, granulation tissue
 - Use in conjunction with sharp debridement
- Autolytic debridement
 - Not preferred
 - Allows dead tissue to dissolve spontaneously
 - Very slow process

Management Debridement

- Biotherapy
 - Use of live, disinfected maggots (fly larvae)
 - Digest only dead tissue
 - Applied for 2 - 3 days with special dressing
 - Not commonly used

Management Debridement



Management Debridement

- Mechanical (wet-to-dry, wet-to-moist)
 - Not recommended
 - Dead tissue adheres to dressing as it dries
 - Very painful when removed
 - No effective method to reduce pain
 - Live tissue often damaged during removal

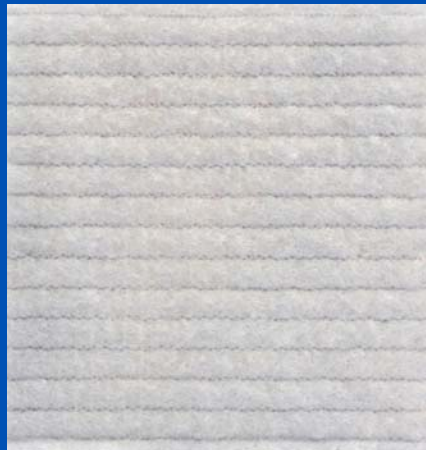
Management Dressings

- Basic principle is to optimize moisture
 - Absorptive dressings for draining wounds
 - Hydrating dressings for dry wounds
 - Addition of silver for high bioburden

Management Dressings

- Wounds with moderate - heavy exudate
 - Alginate
 - Highly absorptive, forms gel
 - Derived from seaweed
 - Biodegradable
 - Hydrophilic dressing (foam)
 - Highly absorptive
 - Typically used over alginate
 - Can help cushion wound

Management Alginate Dressing



Management Dressings

- Wounds that are dry or minimal exudate
 - Hydrogels
 - Gel, impregnated gauze, sheet
 - 90% water
 - Will help to hydrate dry wounds
 - Often use for burn and partial thickness wounds

Management Dressings

- Wounds with heavy bioburden
 - Most dressings have silver option
 - Silver gel, silver alginate
 - Silver is a natural antimicrobial
 - Used to reduce local bioburden
 - Does not replace need for antibiotic

Management Nutrition Support

- Malnutrition can slow tissue repair
- Correct identified deficiencies
- Ensure adequate calorie and protein intake
 - > 30 calories/kg/day
 - > 1.5 grams protein/kg/day
- Multi- vitamin/mineral supplements not supported by evidence

Management Surgical Options

- Direct closure
 - skin grafting
 - Flaps - skin, musculocutaneous , free flaps
 - Does not correct underlying cause
 - High rate of recurrence
 - Must undergo anesthesia
 - Comorbid conditions that lead to ulcer often exclude surgical option

Management Surgical Options



Management Surgical Options



Wound Clinics

- Discrete clinics specializing in wound care
- Staffed by certified physicians
- Highly structured treatment plan
 - Proven systematic approach
 - Management of comorbid conditions
 - Management of debridement and dressings
- Will follow patient regularly until healed

Take home points

- Identifying high-risk patients is the key to prevention and early detection
- Pressure ulcers can lead to serious morbidity and mortality
- Unrelieved pressure, excessive moisture, friction and shear must be minimized
- Do not hesitate to refer to a wound clinic

Cases



Cases



Cases



Cases



Cases



Cases

