Pressure Sore

Siamakrakei deparment of surgery

Chronic wounds mostly affect people over the age of 60.[The incidence is 0.78% of the population and the prevalence ranges from 0.18 to 0.32%. As the population ages, the number of chronic wounds is expected to rise. Ulcers that heal within 12 weeks are usually classified as acute, and longer-lasting ones as chronic.

زخم بستر (زخم فشاری)

واژه های متعددی جهت زخمهای فشاری (بستر) به کار رفته است که معمول ترین آنها Decubitus ulcer و Bedsore است.

واژه Decubitus از کلمه لاتین دکومبر Decumber به معنای دراز کشیدن مشتق شده است و دلالت بر این دارد که این زخمها صرفا درنتیجه خوابیدن به مدت طولانی ایجاد می شوند. علت نامگذاری bedsore بروز مکرر این زخمها در بیماران بستری در تخت است.

با توجه به تعاریف از آن جایی که فشار عامل اصلی ایجاد زخم است واژه pressure ulcer یا زخم فشاری صحیح ترین و مناسب ترین واژه برای توصیف این زخم ها است.

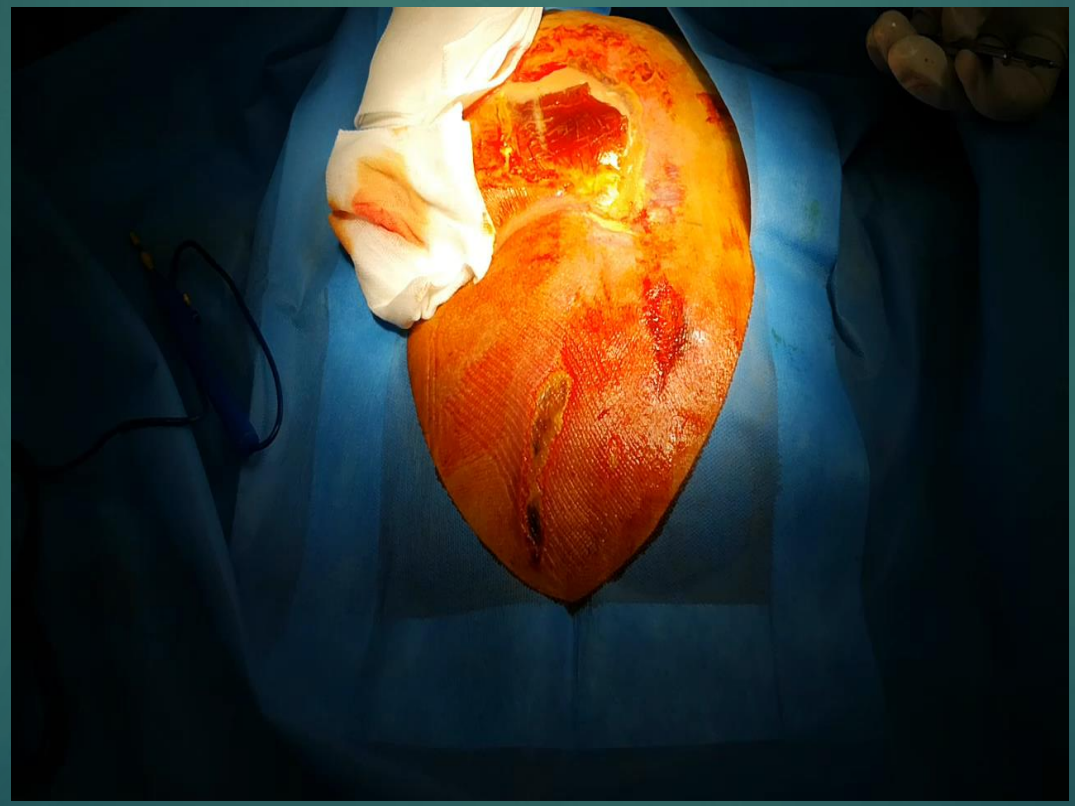
تعاریف:

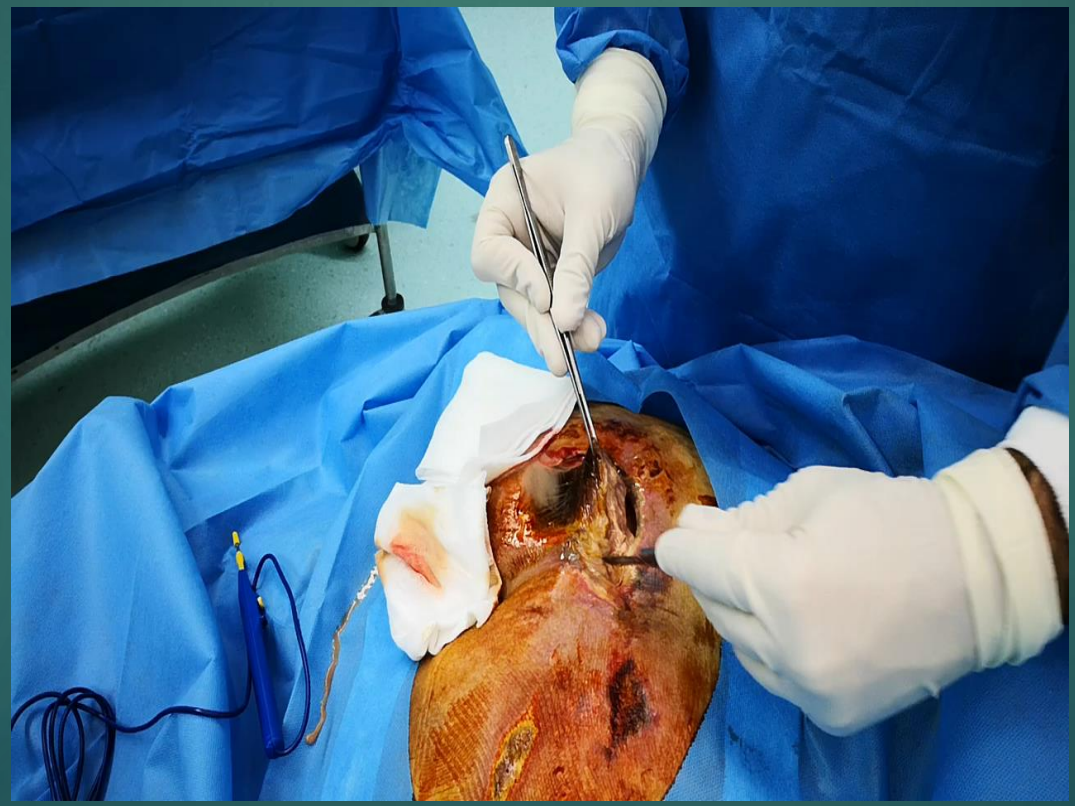
- زخم فشاری به زخمی گفته می شود که به علت وارد آوردن فشاری بیش از فشار طبیعی مویرگها(۳۲میلیمترجیوه) به مدت طولانی بر سطح پوست ایجاد می گردد که موجب نکروز ناحیه محدودی از بافتهای نرم می شود.

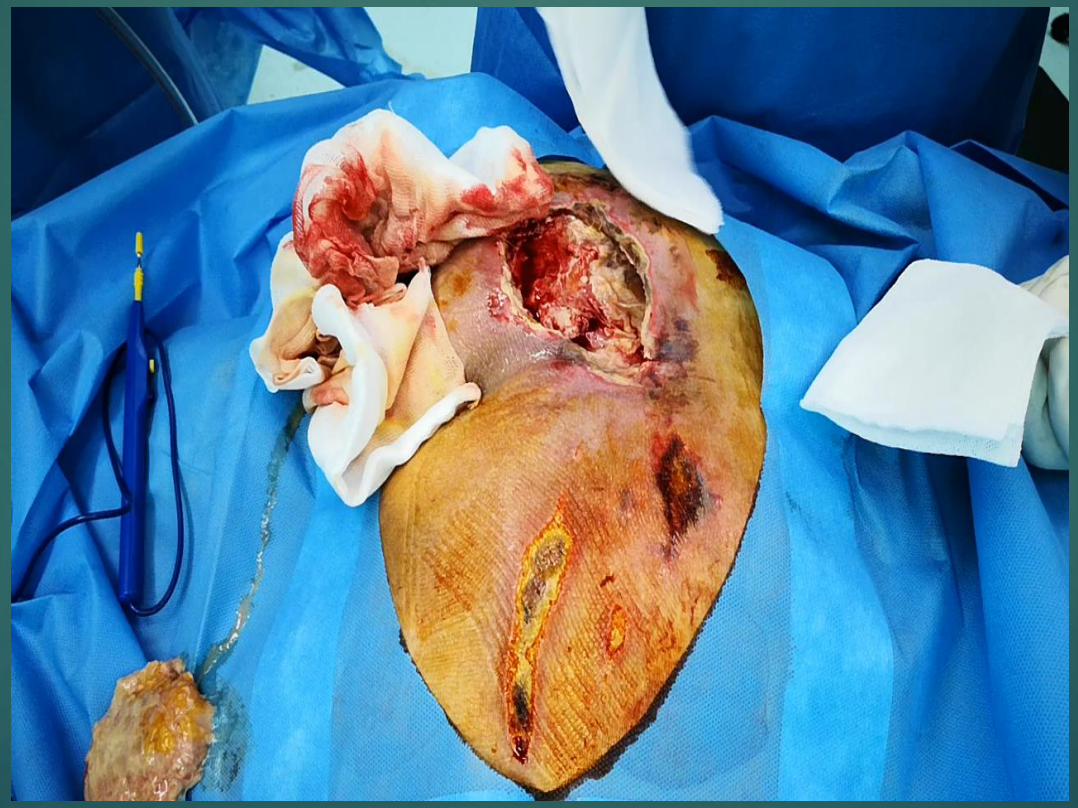
- زخم بستر یا Bedsore زخم فشاری یا (Pressure sore) ضایعه ای است که در پوست و بافت های زیر پوستی و بر اثر فشار ممتد و طولانی مدت بر پوست ایجاد میشود.

Objectives

- An understanding of how pressure ulcers develop and what can be done to prevent and manage them
- An understanding of the education and support that can be provided to patients to help them manage their own risk of pressure ulcers
- An understanding of every trained nurse's professional responsibility in relation to the prevention and management of pressure ulcers







EPIDEMIOLOGY

- In 1999 Amlung *et al.l* performed a l-day pressure ulcer prevalence survey of 356 acute care facilities and 42 817 patients. The overall pressure ulcer prevalence rate was 14.8%; facility-acquired ulcers accounted for 7.1%.
  with dehydration, advanced age, moist skin,
  higher Braden scores, diabetes, and pulmonary disease all associated with higher rates of ulceration.

در 14 مطالعه انجام شده در ایران با حجم نمونه 5973 نفر که در طی سال‌های 1377 تا 1393 انجام شده‌اند، شیوع زخم بستر در ایران 19 درصد (فاصله اطمینان 95درصد: 13 تا 25) بود. هم‌چنین شیوع زخم بستر درجه 1، درجه 2 و درجه 3 به ترتیب 38 درصد، 41 درصد و 9 درصد بود. شیوع شایع‌ترین محل زخم بستر (ساکروم)، شیوع زخم بستر در بیماران آسیب مغزی، آسیب حرکتی و کمایی نیز به ترتیب 54 درصد، 25 درصد، 19 درصد و 46 درصد بود.

جدول شماره ۱: مشخصات مقالات مورد بررسی در مورد شیوع زخم بستر در ایران

شماره رفرنس	نام نویسنده اول	سال انجام مطالعه	شهر انجام مطالعه	جامعه آماری	شیوع زخم بستر (درصد)	تعداد نمونه
(۲)	حامد ریحانی کرمانی	۱۳۸۵	کرمان	بیماران آسیب نخاعی و مغزی	۲۲/۷	۱۹۸
(۱۳)	وحید نجاتی	۱۳۸۶	قم	سالمندان	۴/۶	۱۵۱
(۳)	محمد امین ولیزاد حسنلویی	۱۳۹۰	ارومیه	بیماران بستری در بخش مراقبت های ویژه	۱۷/۳	۲۴۹
(۱۴)	آذر سوزنی	۱۳۸۷	شاهرود	بیماران بستری در بخش های مختلف	۳/۸	۱۸۶۴
(۱۵)	علی اکبری ساری	۱۳۸۶	تهران	بیماران بستری در بخش مراقبت های ویژه	ـــــ	۳۱۰
(۱۶)	محبوبه مقارنی	۱۳۷۸	شیراز	بیماران بستری در بخش های داخلی	۱۹/۱	۶۰۲
(۵)	طیبه جمند	۱۳۸۶	بوشهر	بیماران بستری در بخش های مختلف	۱۴	۲۲۲
(۱)	جلیل عظیمیان	۱۳۸۶	قزوین	بیماران بستری در مراکز اموزشی درمانی	ـــــ	۱۰۰
(۷)	فرح مادرشاهیان	۱۳۸۴	بیرجند	بیماران بستری در بخش های مختلف	۴۴	۵۴۹
(۱۲)	بوالحسن افکار	۱۳۹۳	گیلان	بیماران بستری در بخش مراقبت های ویژه	۳/۶	۶۷۳
(۱۷)	رحیم بقایی	۱۳۹۰	ارومیه	بیماران بستری در بخش های مختلف	۳۹/۲	۳۳۵
(۱۸)	طاهره طولابی	۱۳۷۷	لرستان	جانبازان	۷۵/۵	۴۰
(۴)	سمیرا امیری فر	۱۳۹۰	رشت	بیماران بستری در بخش های مختلف	۲۲/۶	۳۵۰
(۹)	فریبا بلورچی فرد	۱۳۸۸	تهران	بیماران بستری در بخش های مختلف	۱۳/۹	۳۳۰

جدول شماره ۲: شیوع زخم بستر در زیر گروه های مورد بررسی در ایران

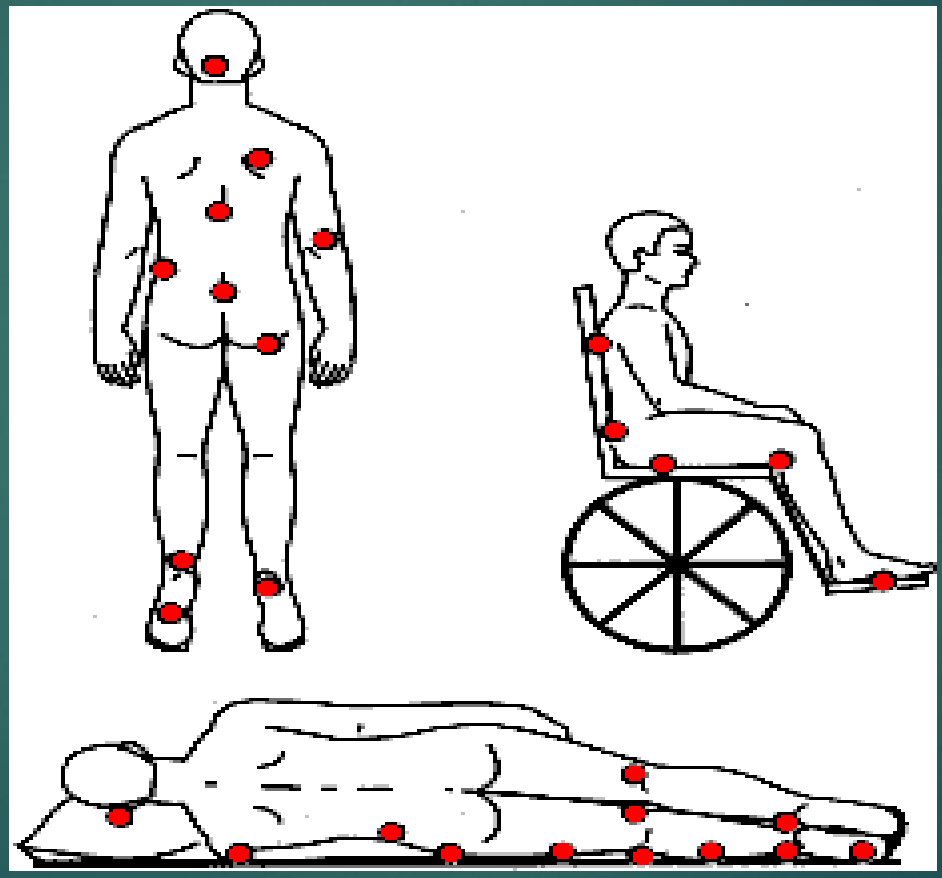
زیر گروه ها	تعداد مطالعه	تعداد نمونه	شیوع زخم بستر(درصد) (فاصله اطمینان ۹۵درصد)	بیش ترین شیوع زخم بستر (درصد) (فاصله اطمینان ۹۵درصد)	کم ترین شیوع زخم بستر (درصد) (فاصله اطمینان ۹۵درصد)
شیوع زخم بستر کل	۱۲	۵۵۶۴	۱۹ (۱۳ – ۲۵)	۴۴ (۴۰ – ۴۸)	۴ (۲ – ۵)
شیوع زخم بستر در زنان	۳	۲۶۳۵	۵ (۱ – ۱۰)	۱۸(۸-۲۴)	۲ (۱ – ۳)
شیوع زخم بستر در مردان	۳	۲۶۳۵	۵ (۱ – ۹)	۱۳(۷-۱۸)	۲(۱ – ۳)
شیوع زخم بستر درجه ۱	۵	۳۵۹۹	۳۸ (۱۷ – ۵۹)	۶۵(۵۹ – ۷۲)	۱۲(۱ -۲۴)
شیوع زخم بستر درجه ۲	۵	۳۵۹۹	۴۱ (۲۱ – ۶۰)	۷۴(۶۲ – ۸۵)	۴(-۸ – ۱۶)
شیوع زخم بستر درجه ۳	۵	۳۵۹۹	۹ (۲ – ۱۹)	۴۲ (-۱۴ – ۹۸)	۰ (-۶ – ۶)
شیوع شایع ترین محل زخم بستر (ساکروم)	۵	۳۴۳۵	۵۴ (۳۱ – ۷۸)	۸۲ (۷۴- ۹۰)	۲۹ (۱۷ – ۴۱)
شیوع زخم بستر دربیماران آسیب مغزی	۳	۲۶۶۴	۲۵ (۲۱ – ۲۸)	۲۶ (۲۲ – ۳۰)	۲۱ (۱۵ – ۲۷)
شیوع زخم بستر دربیماران آسیب حرکتی	۳	۱۱۱۰	۱۹ (۶-۳۲)	۲۸(۱۲- ۴۴)	۴ (-۳۳ – ۴۱)
شیوع زخم بستر دربیماران کمایی	۳	۲۰۶۲	۴۶ (۱۶ – ۷۶)	۶۲(۵۰ – ۷۳)	۳۱ (۲۲ – ۴۰)
شیوع زخم بستر در بیماری های مزمن	۱	۲۲۹	۴۶ (۲۴ – ۶۸)	۴۶(۲۴ – ۶۸)	۴۶ (۲۴ – ۶۸)
شیوع زخم بستر در بیماری های جاد	۱	۲۲۹	۵۴ (۳۴ -۷۴)	۵۴(۳۴ – ۷۴)	۵۴ (۳۴ – ۷۴)

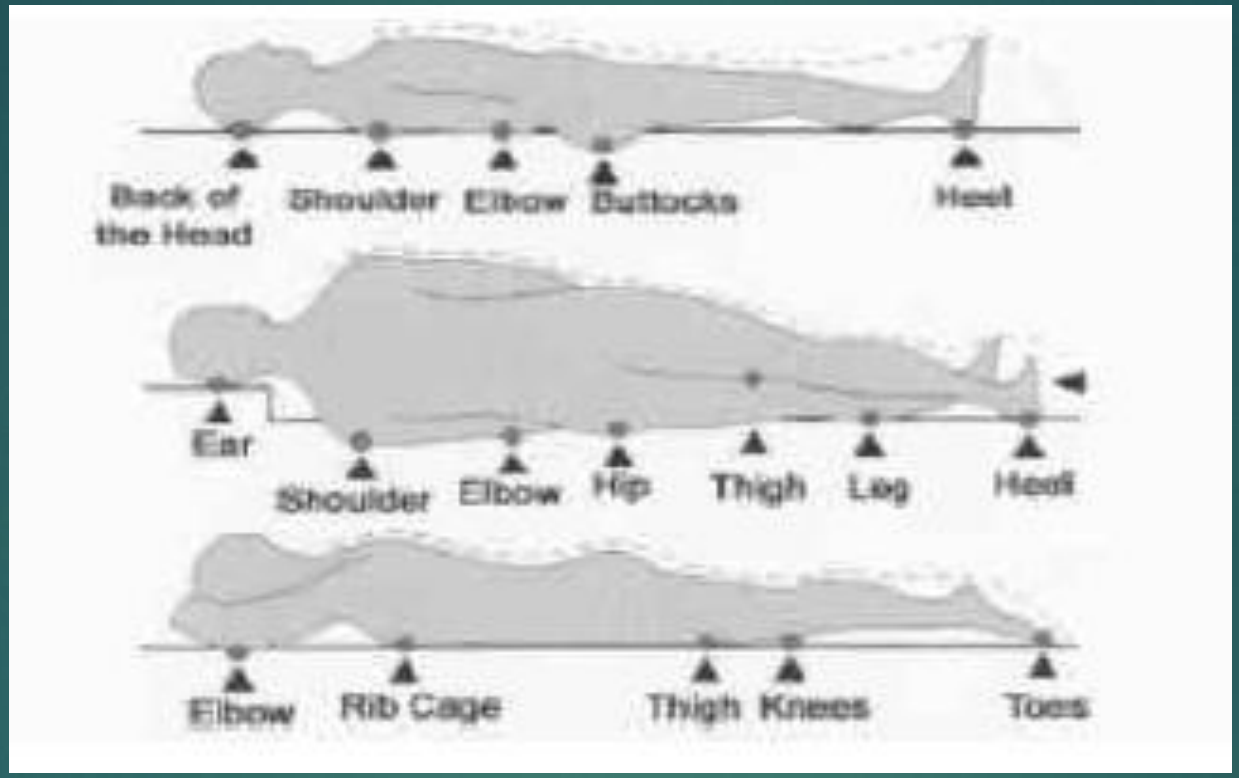
- Incidencewas highest in the acute care setting and associated with longer wait before surgery, ICU stay, longer surgery, and general anesthetic.Spinal cord injury (SCI)

Anatomic distribution

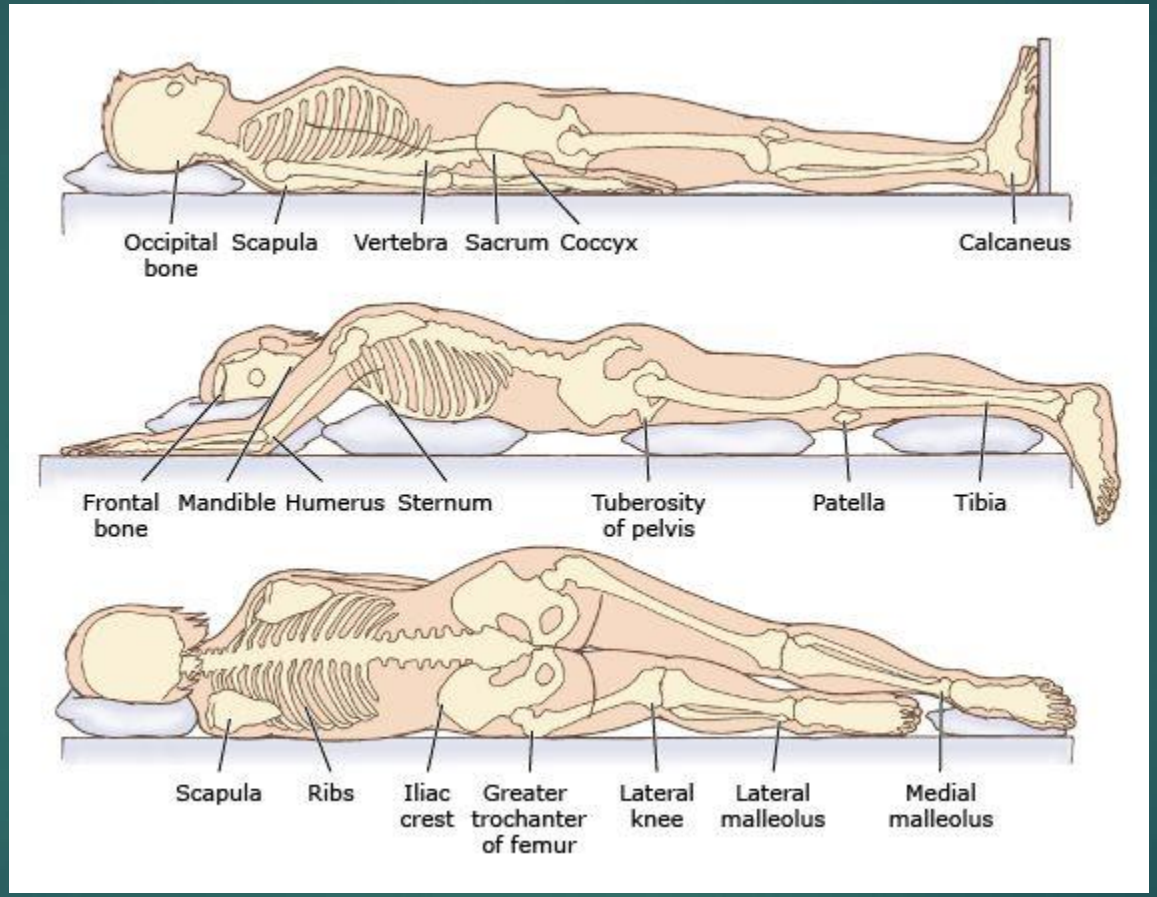
- the most common site of occurrence was the sacrum (36%),
- followed by the heel (30%).
- More recently VanGilder *et a/.2* reported that the sacrum (28.3%) and the heel (23.6%) were the most common sites for pressure ulceration,
  followed by the buttocks (17.2%).

Which areas are prone to pressure ulcers?

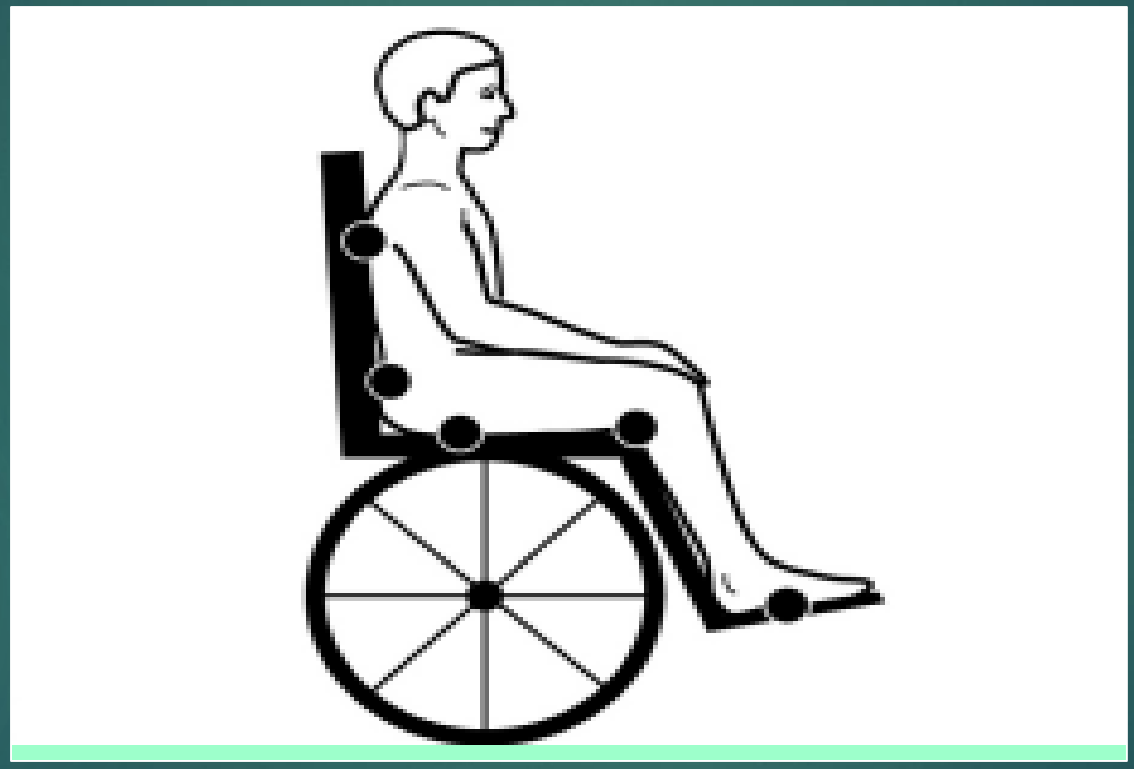




As can be seen, the most likely areas of tissue damage are those that are situated over bony prominences. The precise areas that are at risk are dependent upon the position in which the patient remains.
(Diagram courtesy of the Tissue Viability Society.)


Occipital bone
Scapula
Vertebra
Sacrum
Coccyx
Calcaneus
Frontal bone
Mandible
Humerus
Sternum
Tuberosity of pelvis
Patella
Tibia
Scapula
Ribs
Iliac crest
Greater trochanter of femur
Lateral knee
Lateral malleolus
Medial malleolus

Pressure Areas In Wheelchairs



Medical devices and equipment

What is a pressure ulcer?

A Pressure Ulcer is Defined as:

"an area of localised damage to the skin and underlying tissue caused by pressure, shear, friction and/or a combination of these factors"

European Pressure Ulcer Advisory Panel EPUAP

افراد مستعد

۱MS. افراد مبتلا به ضایعات نخاعی ، فلج عضلانی ، و دیگر، مشکلات عصبی که منجر به کاهش حس درد در آنها شده .

۲. افراد با بستری طولانی مدت در بخش مراقبت های ویژه

۳. افراد با دوران نقاهت طولانی پس از جراحی

۴. افراد سالمند یا افراد دیگری که بهر دلیل و بدون کمک دیگران قادر به تغییر وضعیت بدن خود نیستند و یا از صندلی چرخدار استفاده می کنند .

RISK FACTORS

- Intrinsic: physiologic factors or disease states that increase the risk for pressure ulcer development
  - Age
  - Nutritional status
  - Decreased arteriolar blood pressure

- Extrinsic: external factors that damage skin
  - Pressure, friction, shear
  - Moisture, urinary, or fecal incontinence

FACTORS PREDICTIVE OF PRESSURE ULCER DEVELOPMENT

- Age 70+
- Impaired mobility
- Current smoking
- Low BMI
- Confusion
- Urinary and fecal incontinence
- Malnutrition
- Restraints

- Many other disorders: malignancy, diabetes, stroke, pneumonia, CHF, fever, sepsis, hypotension, renal failure, dry skin, history of pressure ulcers, anemia, lymphopenia, hypoalbuminemia

عوامل موثر در پیدایش زخم های فشاری

۱- عوامل خطرساز در پیدایش زخمهای فشاری

۲- فاکتورهای زمینه ساز

عوامل خطرساز در پیدایش زخمهای فشاری:

A (بی حرکتی

b (کاهش درک حسی

c (کاهش سطح هوشیاری

d (گچ ،تراکشن، وسایل ارتوپدی و سایر تجهیزات

E (جراحی با طول مدت ۴ ساعت یا بیشتر

F (مدت قرار گرفتن شخص در یک وضعیت

G (بیماری های نورولوژیک

۲- فاکتورهای زمینه ساز

a) نیروی شرینگ

نیروی شرینگ سبب می شود که عروق خونی زیر جلد تحت فشار قرار بگیرند و در نتیجه سبب انسداد جریان خون و نکروز در آن ناحیه می شود.

b) نیروی اصطکاک

- اصطکاک در حقیقت نیروی مکانیکی خارجی است که هنگامیکه پوست بر روی سطح خنثی کشیده می شود ایجاد می شود.
- جداشدن اپیدرم و ایجاد خراش در پوست .

c) **رطوبت**

- رطوبت خطر تشکیل زخمهای فشاری را ۵ برابر می کند.پوست در معرض رطوبت در اثر جذب آب نرم و نازک می شود و در نتیجه مقاومتش در برابر فاکتورهای فیزیکی مثل فشار نیروی شرینگ کاهش می یابد.

d) **سوء تغذیه**

- در بیمارانی که دچار سوءتغذیه هستند اغلب آتروفی عضلانی شدید و کاهش در بافت زیرجلدی دیده می شود
- **کاهش آلبومین** سرم **کاهش سطح پروتئین توتال** فشار اسموتیک کلوئیدی را کاهش داده که منجر به تجمع مایع در فضای میان بافتی و کاهش اکسیژن رسانی به بافتها می گردد.
- سوءتغذیه همچنین **تعادل آب والکترولیت** بدن را بر هم می زند و فرد را مستعد زخم می کند.
- **کاهش ویتامین C**

e) آنمی

- کاهش اکسیژن قابل تحویل به بافتها
- کاهش متابولیسم سلولی
- تاخیر بهبودی زخمها

f) کاشکسی

- حالت لاغری مفرط بوده که در بیماریهای شدید مثل کانسر و مراحل نهایی بیماریهای قلبی ریوی دیده می شود.بیمار کاشکسیک بافت چربی لازم جهت محافظت از برجستگی ها استخوانی را در برابر فشار از دست می دهد.

g) چاقی

- عروق خونی کمتری دارند و در نتیجه در برابر آسیبهای ایسکمیک زودتر تخریب می شوند.

h) عفونت

- افزایش نیازهای متابولیک بدن
- ایجاد هیپوکسیک
- تب ناشی از عفونت نیز منجر به تعریق زیاد می شود که رطوبت پوست را افزایش داده

i) اختلال در گردش خون محیطی

- هیپوکسی
- مستعد تخریب ایسکمیک

j) سن

- .تقلیل چربی بافت زیرجلدی،پوست چروکیده دارند و مستعد زخمهای فشاری هستند

Pressure

- Pressure is an ***external*** force where soft tissue is compressed between a bony prominence and a hard surface e.g. a mattress or a chair
- The capillaries become occluded and the tissues starved of vital nutrients and oxygen, and become ***ischaemic***
- If pressure is unrelieved, tissue ***necrosis*** will take place

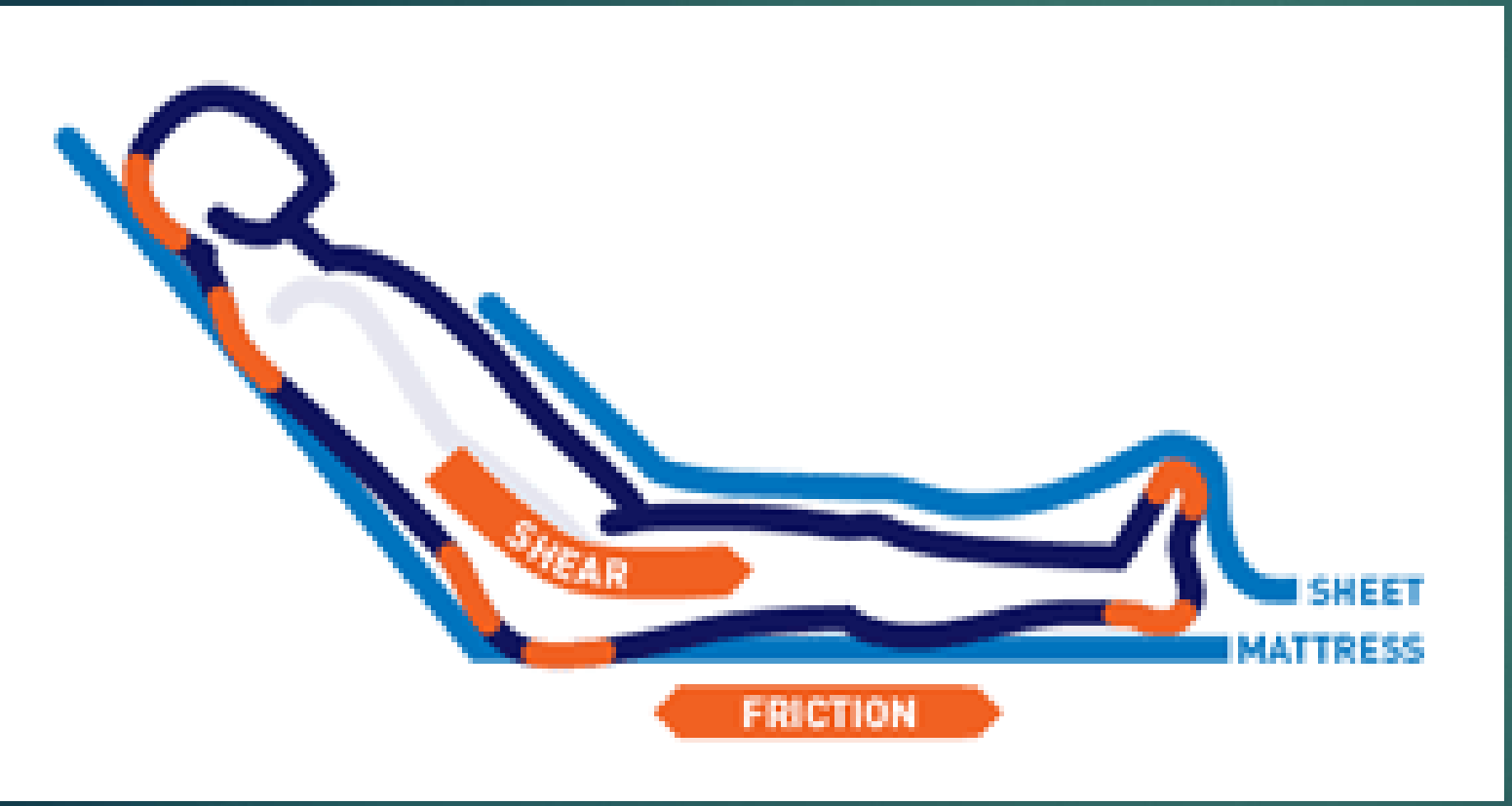
Shear

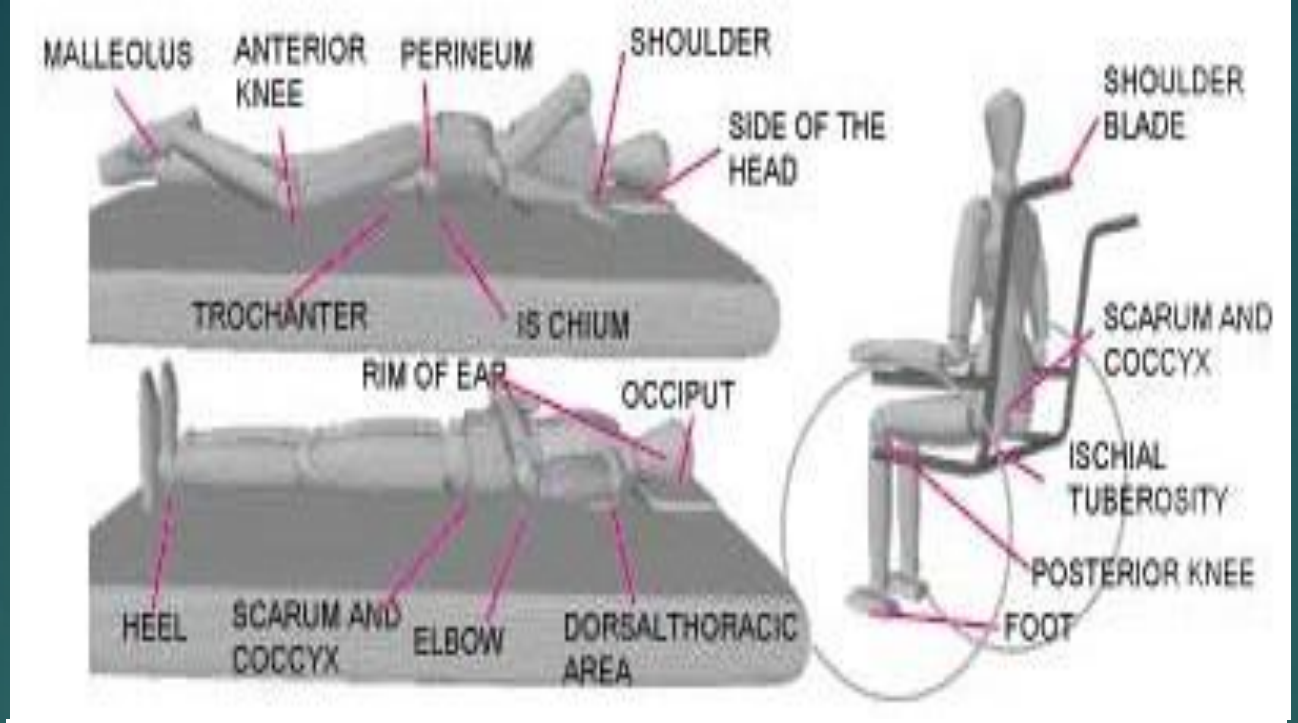
- Shear is an ***external*** force which causes distortion, stretching and eventual tearing of the blood vessels
- Shearing occurs if the patient slides down in the bed or chair
- The skeleton moves, but the ***skin stays still***
- The tearing of blood vessels can also lead to ischemia and **cell death**

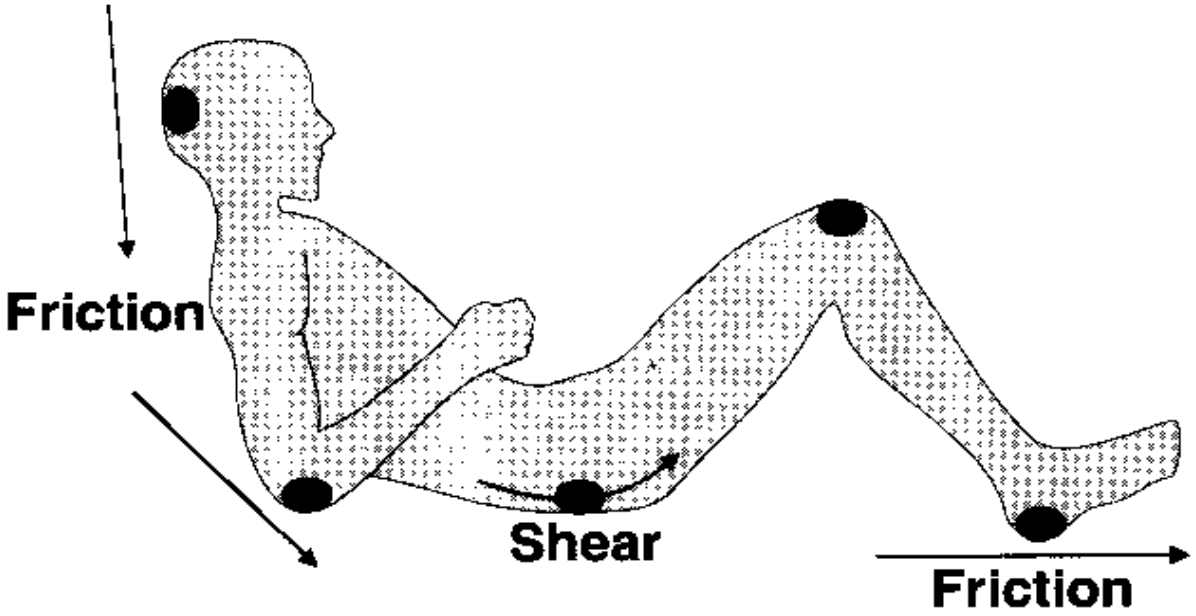
Friction

- Friction is a ***surface force*** which occurs when two surfaces rub together e.g.
  - dragging the patient up the bed
  - rubbing vigorously when washing
- Friction leads to ***superficial damage***
  - the uppermost layers of epithelial cells are scraped off, leading to skin grazes

Friction and Shear Forces







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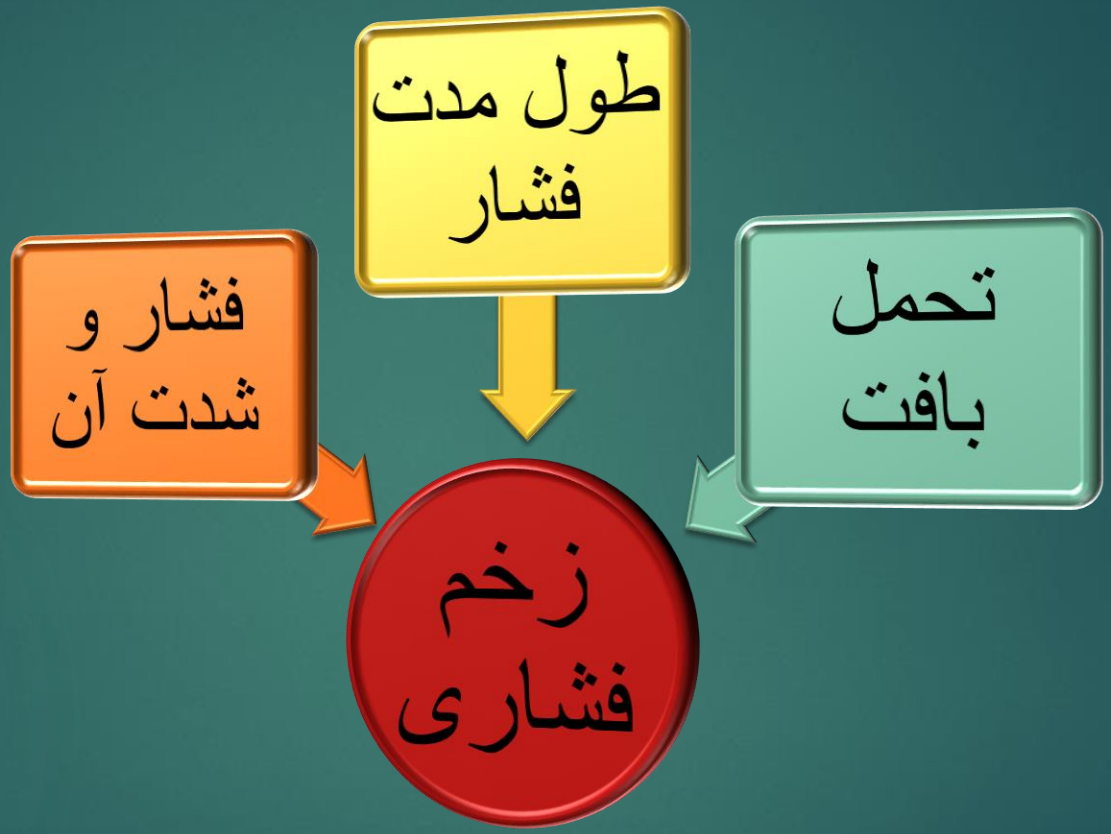
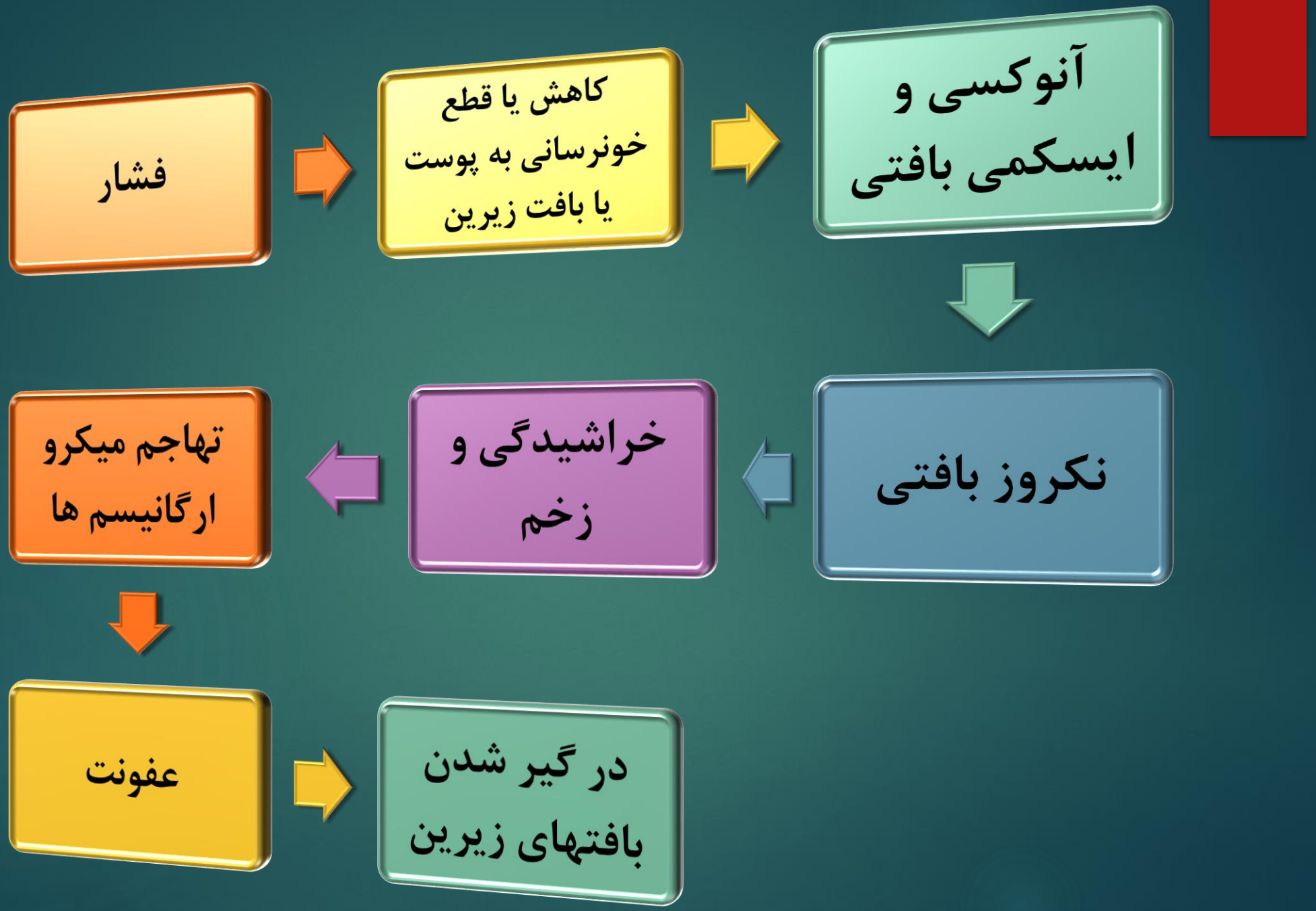
Etiology of pressure ulcers

- Pressure ulcers are due to localized **ischemia**, a deficiency in the blood supply to the tissue.
- The tissue is compressed between two hard surfaces, usually the surface between the bed and the skeleton, when the blood cannot reach the tissue, the cells are deprived of oxygen and nutrients, waste products of metabolism accumulate in the cells, and the tissue consequently dies. Prolonged, unrelieved pressure also damages the small blood vessels.

After the skin has been compressed, it appears pale, as if the blood had been squeezed out of it. When pressure is relieved, the skin takes on a bright red flush called **reactive hyperthermia.** The flush is due to **vasodilatation**, a process in which extra blood supply to compensate for the preceding period of impeded blood flow.

پاتو فیزیولوژی




آنوکسی و ایسکمی بافتی
کاهش یا قطع خونرسانی به پوست یا بافت زیرین
فشار
نکروز بافتی
خراشیدگی و زخم
تهاجم میکرو ارگانیسم ها
عفونت
در گیر شدن بافتهای زیرین

Assessment factors1:

- *Intrinsic factors:*
- Reduced mobility
- Sensory impairment
- Neuropathy
- Acute illness.
- Level of consciousness.

- Extremes of age.
- Vascular disease.
- Severe chronic or terminal illness.
- Previous history of pressure damage.
- Malnutrition and dehydration.

Assessment factors 2:

- *Extrinsic factors:*
- Pressure.
- Shearing.
- Friction.

- *Other factors:*
- Medication.
- Moisture to the skin.

Risk Assessment

- Effective ***risk assessment*** can prevent pressure ulcer development
- The ***Waterlow Score*** is a risk assessment tool used throughout the country to identify patients who are at risk of developing pressure ulcers
- ***Recognising*** patients at risk of pressure damage:
  - enables resources to be effectively allocated, such as pressure reducing equipment
- Holistic assessment increases the ***effectiveness*** of the care being delivered

Risk Assessment

- Initial risk assessment should take place ***within 6 hours of admission*** using the Waterlow risk assessment tool ***and*** clinical judgement

- If not at risk initially, ***reassessment*** should occur if there is a change in the patient's condition

Risk Assessment

Risk factors include:

- level of mobility
- sensory impairment
- continence
- level of consciousness
- acute, chronic and terminal illness
- Co-morbidity (blood supply, infection, pain, medication)
- posture
- cognition
- previous pressure damage
- extremes of age
- nutrition and hydration status
- moisture to the skin

REMEMBER!
Reassess on an on-going basis

BRADEN SCALE FOR PREDICTING PRESSURE SORE RISK

Patient's Name _____ Evaluator's Name _____ Date of Assessment

SENSORY PERCEPTION ability to respond meaningfully to pressure-related discomfort	**1. Completely Limited** Unresponsive (does not moan, flinch, or grasp) to painful stimuli, due to diminished level of consciousness or sedation OR limited ability to feel pain over most of body.	**2. Very Limited** Responds only to painful stimuli. Cannot communicate discomfort except by moaning or restlessness OR has a sensory impairment which limits the ability to feel pain or discomfort over ½ of body.	**3. Slightly Limited** Responds to verbal commands, but cannot always communicate discomfort or the need to be turned OR has some sensory impairment which limits ability to feel pain or discomfort in 1 or 2 extremities.	**4. No Impairment** Responds to verbal commands. Has no sensory deficit which would limit ability to feel or voice pain or discomfort.				
MOISTURE degree to which skin is exposed to moisture	**1. Constantly Moist** Skin is kept moist almost constantly by perspiration, urine, etc. Dampness is detected every time patient is moved or turned.	**2. Very Moist** Skin is often, but not always moist. Linen must be changed at least once a shift.	**3. Occasionally Moist** Skin is occasionally moist, requiring an extra linen change approximately once a day.	**4. Rarely Moist** Skin is usually dry, linen only requires changing at routine intervals.				
ACTIVITY degree of physical activity	**1. Bedfast** Confined to bed.	**2. Chairfast** Ability to walk severely limited or non-existent. Cannot bear own weight and/or must be assisted into chair or wheelchair.	**3. Walks Occasionally** Walks occasionally during day, but for very short distances, with or without assistance. Spends majority of each shift in bed or chair.	**4. Walks Frequently** Walks outside room at least twice a day and inside room at least once every two hours during waking hours.				
MOBILITY ability to change and control body position	**1. Completely Immobile** Does not make even slight changes in body or extremity position without assistance.	**2. Very Limited** Makes occasional slight changes in body or extremity position but unable to make frequent or significant changes independently.	**3. Slightly Limited** Makes frequent though slight changes in body or extremity position independently.	**4. No Limitation** Makes major and frequent changes in position without assistance.				
NUTRITION usual food intake pattern	**1. Very Poor** Never eats a complete meal. Rarely eats more than ⅓ of any food offered. Eats 2 servings or less of protein (meat or dairy products) per day. Takes fluids poorly. Does not take a liquid dietary supplement OR is NPO and/or maintained on clear liquids or IVs for more than 5 days.	**2. Probably Inadequate** Rarely eats a complete meal and generally eats only about ½ of any food offered. Protein intake includes only 3 servings of meat or dairy products per day. Occasionally will take a dietary supplement OR receives less than optimum amount of liquid diet or tube feeding.	**3. Adequate** Eats over half of most meals. Eats a total of 4 servings of protein (meat, dairy products) per day. Occasionally will refuse a meal, but will usually take a supplement when offered OR is on a tube feeding or TPN regimen which probably meets most of nutritional needs.	**4. Excellent** Eats most of every meal. Never refuses a meal. Usually eats a total of 4 or more servings of meat and dairy products. Occasionally eats between meals. Does not require supplementation.				
FRICTION & SHEAR	**1. Problem** Requires moderate to maximum assistance in moving. Complete lifting without sliding against sheets is impossible. Frequently slides down in bed or chair, requiring frequent repositioning with maximum assistance. Spasticity, contractures or agitation leads to almost constant friction.	**2. Potential Problem** Moves feebly or requires minimum assistance. During a move skin probably slides to some extent against sheets, chair, restraints or other devices. Maintains relatively good position in chair or bed most of the time but occasionally slides down.	**3. No Apparent Problem** Moves in bed and in chair independently and has sufficient muscle strength to lift up completely during move. Maintains good position in bed or chair.					
				Total Score				

European Pressure Ulcer Advisory Panel Classification (EPUAP)

- Category/Stage I - Discolouration of intact skin (non-blanching erythema)

Category/Stage II

- Stage/Category II – Partial-thickness skin loss or damage involving epidermis and/or dermis
- The pressure ulcer is superficial and presents as a blister, abrasion or shallow crater

Category/Stage III

- Category/ Stage III – Full thickness skin loss involving damage of subcutaneous tissue but not extending to the underlying fascia
- This presents as a deep crater with or without undermining of adjacent tissue

Category/Stage IV

- Category/Stage IV – Full thickness skin loss with extensive destruction and necrosis extending to underlying tissue

Objectives

Participants will be able to:

- Assess Stage I-IV and Unstageable ulcers
- Choose the correct product based on the stage of the ulcer
- Document an accurate detailed assessment in the ED Progress notes.
- Order the correct bed based on the stage of the pressure ulcer.
- Correctly place a WOCN consult on the intranet when necessary.

The Goal

- To recognize all existing pressure ulcers and prevent skin breakdown on patients that are admitted to the Emergency Dept.
- Provide optimal treatment for existing pressure ulcers and preventative care for those patients at risk.

Why Prevent Skin Breakdown?

- It's the right thing to do!
- Patient's quality of life is decreased.
- Patient may have increased pain and decreased function.
- May be discharged to a Nursing home instead of their home.

Why Preventing Skin Breakdown Is Important

- The number of hospital patients who develop pressure sores has risen by 63% over the last 10 years and nearly 60,000 deaths occur every year from hospital-acquired pressure sores.

- The average stay for patients admitted to the hospital for treatment of hospital-acquired pressure sores was 13 days, with an average cost of $37,500 dollars per hospital stay.

Why Preventing Skin Breakdown Is Important

Nonpayment by Medicare

Medicare has made a provision that they will not pay for treatment of **hospital acquired** pressure ulcers.

- This could result in millions of lost revenue for the hospital.

NICE Guidelines:

- The National Institute for Clinical Excellence recommends the following in terms of pressure ulcer prevention:
- *Assessment of a patient's risk of pressure injury within 6 hours of admission to hospital for each episode of care, and regularly thereafter depending upon the severity of the issues identified.*

Assessment factors1:

- *Intrinsic factors:*
- Reduced mobility
- Sensory impairment
- Neuropathy
- Acute illness.
- Level of consciousness.

- Extremes of age.
- Vascular disease.
- Severe chronic or terminal illness.
- Previous history of pressure damage.
- Malnutrition and dehydration.

Assessment factors 2:

- *Extrinsic factors:*
- Pressure.
- Shearing.
- Friction.

- *Other factors:*
- Medication.
- Moisture to the skin.

Care Plans:

- Use the body maps in the generic assessment documentation to record where there is skin damage.
- Use the daily check charts to record on a daily basis that every area has been checked and if there is a pressure ulcer grade it accordingly.

Care Plans 2

- A patient who is unable to reposition themselves MUST have a repositioning plan. Plan on 2 hourly repositioning day and night. Include 30° tilt on bed rest.
- Repositioning regimes need to:
  - Minimise prolonged pressure on bony prominences.
  - Minimise friction and shear damage – ensure good manual handling with the correct equipment.
  - Specify that repositioning takes place regularly – *even with pressure-relieving devices in situ.*
  - Establish a means of recording when this repositioning takes place – YOU MUST RECORD EVERY INSTANCE OF REPOSITIONING

Care Plans3:

- Any patient with a pressure ulcer which is EPUAP grade 2 or higher should have a wound care plan.
- Any equipment required, whether it has been already obtained, or, whether it has been requested, when and by whom.
- Dates and times should be set for the evaluation of pressure ulcer and wound care plans so that regular updates can take place.

Pressure reducing or relieving?

- Pressure reducing mattresses distribute the patient's weight more evenly across the surface of the mattress
- Pressure relieving mattresses, such as alternating mattresses, are designed to completely remove the pressure from areas of the patient's skin

Pressure ulcer management.

- Each pressure ulcer should have an individual care plan detailing the wound care and more general measures to reduce further risk.
- Ulcers which develop to EPUAP grade 2 or above are **NOT TO BE RETRO-GRADED.** They become ‘healing grade 3 heel ulcers,’ or ‘healing grade 4 sacral ulcers.’

Pressure Ulcer Care plans.

Pressure ulcer care plans should detail:

- Where the ulcerated areas are.
- What measures are currently being used to reduce risk, with special reference to nutrition, continence, pain management and mobility.
- If a regime of turning the patient is in place, there must be a means of documenting each time that this is done, and by whom.
- These care plans should set up review dates, and these need to be reviewed when indicated.

Check Skin

Patient involvement:

Please encourage patients to maintain their nutrition:

- Meat, fish, or alternatives.
- Fruit and vegetables.
- Bread, potatoes and cereals.
- Cheese, milk and dairy products.
- Plenty of fluids stop the skin becoming dehydrated and can reduce the risk of ulceration.

Advice Regarding Skin Care 1:

- Avoid massaging bony parts of the body. This can cause addition damage to skin which may already be delicate.
- In bed, your position should be changed every 2 hours. Bed sheets should have no creases.
- If you cannot move yourself, ask for help.
- Try to avoid dropping crumbs or other food debris in bed which you might lay on.

Advice Regarding Skin Care 2:

- If you can move around in your chair, try changing position every 15 minutes.
- Avoid being dragged when you are lifted – dragging causes friction and increases risk.
- Do not use ring cushions as these increase rather than reduce pressure.
- Avoid staying in one position for more than 2 hours – try to spread your weight evenly.

Advice Regarding Skin Care 3:

- Use warm (not too hot) water and mild soap to cleanse. Use a moisturiser to avoid dry skin, and avoid cold or dry air.
- If you have a problem with perspiration or incontinence, your skin should be cleansed as soon as you are aware of it. Using a soft cloth or sponge should reduce friction.
- Check your skin at least once daily, or ask a carer to help. A mirror will help to see hard-to-reach areas. Attend especially to those areas where pressure is heaviest.

Advice Regarding Skin Care 4:

- Look out for skin changes:
  - Reddening on light skin.
  - Purple or bluish patches on dark skin.
  - Swelling, especially over bony parts.
  - Blisters.
  - Shiny areas.
  - Dry patches or hard areas.
  - Cracks, callouses, wrinkles or broken skin.
- Let your nurse know if you notice any of these things.

Mental Capacity

- 2 stage process of assessment
- If patient has capacity, then their wishes must be respected. In these situations, each and every individual refusal must be recorded.
- If patient does not have capacity, care must be provided under ‘best interests’ provision of Mental Capacity Act.

Delegating care

- Under NMC code, it is the registered nurse's responsibility to ensure that if we delegate care duties to non-qualified staff, that they are competent and confident to complete the tasks set out to the standard that we require.
- This is of particular relevance in primary care when registered nurses are delegating this care to home carers or patient's relatives…..

RCA process

It is now an NHS LA requirement that all GRADE 3 and 4 pressure ulcers, wherever they occur within the Trust, are to be reported as a Serious Incidents Requiring Investigation and to be investigated in accordance with the Root Cause Analysis process and SIRI policy.

Initial Assessment is Imperative

- **A full assessment of the patient's skin must occur on any admitted patient!**
- **Documentation of any existing skin breakdown must be charted on admission to the ED. If this is not done the hospital will not be paid for pressure ulcer treatment because it will be assumed it was hospital acquired.**

Pressure Ulcer Risk Factors

- Age
- Lack of mobility
- Poor diet
- Unwanted moisture
- Pressure ulcers in the past
- Mental, neurological and other physical problems
- Friction & sheering
- Wrinkled sheets or hard objects left in the bed.

Age

- Normal aging process changes the skin and circulation
- Skin can become dry and very fragile
- Skin can be easily irritated, break open in to a sore and can tear easily
- Older patients may have poor circulation- less O2 to the tissue

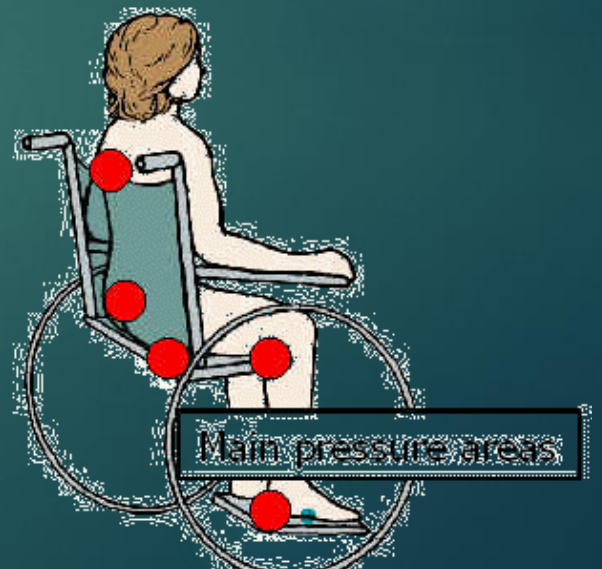
Lack of Mobility

- Pressure ulcers can start within

  1-2 hours. ED average length of stay is 4 hours.
- Pressure ulcers can form when a patient stays in a chair or wheel chair for a long time.
- Pressure ulcers form when a

  patient is left in one position

  in bed for too long.

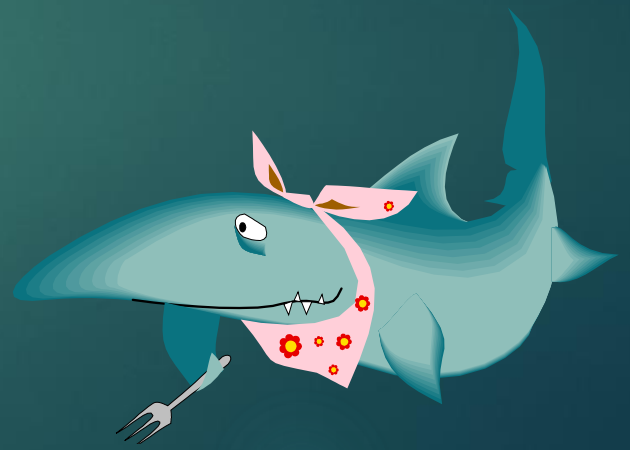


Lack of Mobility continued

- The weight of the body pushes against a bony area to cut off the blood and O2 to the area.
- The sacrum, hips, spine, elbows, ears, shoulders, toes and heels are areas that can break down if a pt is kept in one position for a long period of time.

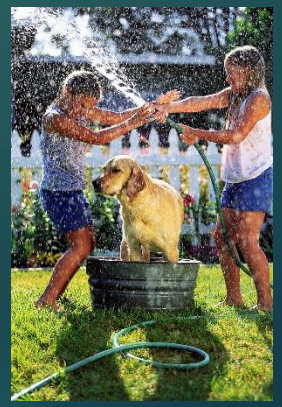
Poor Appetite

- Pts who are dehydrated or have a poor appetite are at risk for pressure ulcers.
- The skin and other tissues of the body do not get the food and nutrition they need to stay healthy and to repair damaged skin.



Unwanted Moisture

- Patients that are incontinent of urine or stool or those who sweat are at risk for a pressure ulcer.
- Pts with draining wounds over areas of a boney prominence are at risk for pressure ulcers.



Mental, Neurological and other physical problems

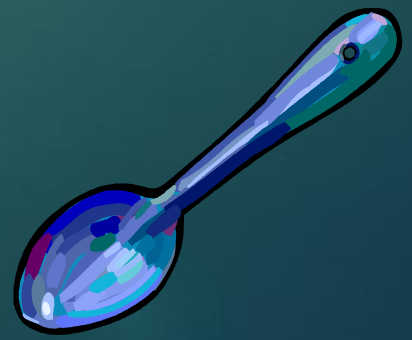
- Confused or very sleepy patients may not turn themselves like alert patients.
- People who have a lessened sensation to pain or do not have the physical ability to turn are at risk for pressure ulcers.
- Comatose patients are at HIGH risk!

Friction and Sheering

- Friction and sheering occur when a patient is pulled up in the stretcher, bed or chair.
- These forces can irritate the skin and can cause the skin to break down.

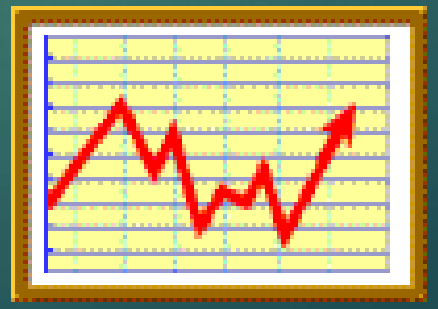
Bed Sheets and Objects left in Bed

- Uneven pressure is created when sheets are wrinkled. This can lead to pressure ulcers.
- Objects such as spoons, tissue boxes, food crumbs, and other hard objects left in the bed or chair can cause pressure ulcers.



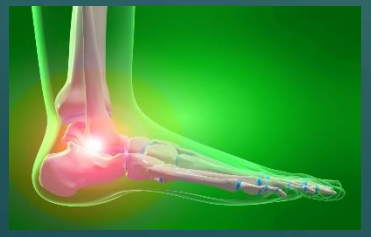
Pressure Ulcers in the Past

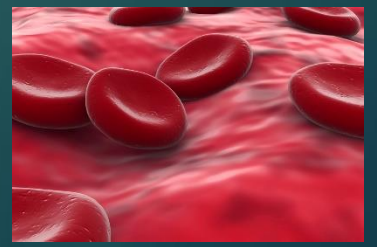
- Patients who have had a pressure ulcer in the past are at greater RISK of getting another one.



How do Pressure Ulcers Form

- A warning sign of a pressure ulcer is when pink skin on a bony area turns deep red and is slow to blanch after pressure is relieved.
- Blood cells have “rushed” to the area of pressure turning the skin red





Class	Composition	Characteristics and function	Commercial examples
Gauze	Woven cotton fibers	Permeable with desiccation; debridement; painful removal	Curity, Mapilex, Mepitel
Tulles	Open-weave cloth soaked in soft paraffin or chlorhexidine, textiles, or multilayered or perforated plastic films	Low adherent; suitable for flat, shallow wounds with low exudates	Adaptic, Grassolind, Jelonet, Tullegras, Urgotul
Film	Plastic (polyurethane); semipermeable	Allows water vapor permeation; adhesive; impermeable for liquids and bacteria	OpSite, Tegaderm
Foam	Hydrophilic (wound side) and hydrophobic (outer side) polyurethane or silicone foams; semipermeable	Highly absorbent; for necrotic and exudative wounds	Lyofoam, Allevyn, Tielle
Hydrogel	Water (96%) and polymer (polyethylene oxide)	Aqueous environment; requires secondary dressing; no adherence; not recommended if infection is present; semipermeable	Aquaform, Intrasite, Purilon, Vigilon, Aquasorb
Hydrocolloid	Hydrophilic colloidal particles and adhesive	Absorbs fluid; necrotic tissue autolysis; little adherence; occlusive	Comfeel, DuoDERM, IntraSite, Tegasorb
Absorptive powder, paste and fiber	Starch copolymers, hydrocolloid particles	Absorbs exudate; used as a filler; good for deep wounds	Aquacel, Gelperm, GranuGel paste, DuoDERM granules
Alginate	Calcium and sodium salts of alginic acid found in brown seaweed	Absorbs exudate and forms a hydrophilic gel after ion exchange with wound fluid; not suited for dry wounds	Algisite, Algosteril, Kaltostat SeaSorb, Sorbsan, Suprasorb
Antimicrobial dressings	1. Silver (in ionic or nanocrystalline form) 2. Iodine (a) as povidone-iodine (b) as cadexomer iodine 3. Metronidazole gel 4. Octinidine gel	Suited for colonized or infected wounds: 1. Absorptive: cadexomer iodine (caution: thyroid diseases) 2. Control of odor caused by anaerobic bacteria, used for fungating malignant wounds 3. Used for burns	1. Acticoat, Actisorb, Silver 200, Aquacel Ag 2. Iodosorb 3. Metrotop Gel 4. Octinidine/Lavanid Gel
Silicone	Silicone sheets	Sheet induces a localized electromagnetic field and increased skin temperature; decreases scar formation?	Sil-K, Mepitel, Mepilex
Subatmospheric pressure	Vacuum pump, sponge, plastic film	Sponge conforms to wound and vacuum removes edema fluid and bacteria; stimulation of granulation, vascularization, and wound cell proliferation	VAC device
Dermal collagen replacement	Fine-mesh fabric (silicone, nylon) with dermal porcine collagens	Nonadherent; semipermeable	Biobrane
Dermal matrix replacement	Acellular matrix	Permeable; increased stimulation of repair?	AlloDerm (human, dermis), SIS (porcine, small-bowel submucosa), Integra (bovine collagen, shark cartilage, and silicone sheet)
Dermal living replacement	Absorbable matrix populated with allogenic human fibroblasts	Permeable; increased stimulation of repair?	Dermagraft (bioabsorbable scaffold), TransCyte (nylon mesh coated with porcine collagen)
Epidermal living replacement	Autologous keratinocytes on murine feeder cells	Permeable; increased stimulation of repair?	Epicel
Skin living replacement	Bovine collagen matrix populated with neonatal human fibroblasts with an outer layer of human keratinocytes	Impermeable; increased stimulation of repair?	Apligraf, OrCel

*Multiple brands within each class are available, and a partial list is given. No particular brands are recommended.
(Modified from Lorenz et al.[7] and Enoch et al.[10])

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