



Action plan for pressure ulcers






Supporting life

Care of Sweden is an innovative company in the medtech sector, devoted to the cause of eliminating pressure ulcers around the world. Our product range covers mattresses, positioning pillows and seat cushions, used as an aid in the prevention as well as treatment of pressure ulcers.

Our head office, R&D and production are located in Tranemo, western Sweden, and our products are used in care facilities across Sweden as well as in other parts of the world.



CONTENTS

| | |
|--|----|
| Introduction | 5 |
| Definition of pressure ulcers | 6 |
| Risk assessment | 6 |
| Location | 8 |
| Classification | 9 |
| IAD | 10 |
| Skin inspection | 11 |
| Preventive measures | 14 |
| Skin assessment/Skin care | 14 |
| Pressure redistribution/Pressure relief | 14 |
| Changing position | 17 |
| Nutrition | 19 |
| Treating pressure ulcers | 22 |
| Action plan for preventing pressure ulcers ... | 26 |
| Mattress inventory | 28 |
| References | 31 |

Introduction

Pressure ulcers are a complication that causes considerable problems not only for those who are affected, but also for others who are close to them and for personnel. Caring for people with pressure ulcers represents a challenge for the health service in the form of increased costs.

Pressure ulcers are among our most common healthcare injuries⁽²⁶⁾. The Swedish Patient Safety Act (2010) defines a healthcare injury as suffering, physical or mental injury, illness or death that could have been avoided if appropriate measures had been taken during the patient's contact with the health and medical care services. The Act stipulates that healthcare providers have a duty to work systematically on patient safety issues. Healthcare providers must take the necessary measures to prevent patients from sustaining healthcare injuries. A timetable must be drawn up for any measures that cannot be taken immediately^(12,26). Most pressure ulcers can be prevented by early identification of people who are in the risk zone and by taking selective medical and nursing measures^(1,2,3).

Definition of pressure ulcers

A PRESSURE ULCER IS DEFINED AS FOLLOWS:

"A pressure ulcer is a localized injury to the skin and/or underlying tissue, usually over a bony prominence, resulting from sustained pressure (including pressure associated with shear). A number of confounding factors are also associated with pressure ulcer; the primary of which are impaired mobility and impaired sensory perception".

(EPUAP, NPUAP, PPPIA, 2014 p. 38-39)

A large number of risk factors have been described for the occurrence of pressure ulcers. Whether or not a pressure ulcer occurs is determined by a combination of various risk factors together with external pressure.

Some of the documented patient-related risk factors are: activity capacity, reduced mobility, advanced age, reduced general health, incontinence, acute illness, neurological conditions, cardiovascular disease, terminal stage illness and previous pressure ulcers.

External causes, known as environment-related risk factors, are the effect of pressure, shearing, friction, moisture and heat (microclimate).

Factors affecting the occurrence of pressure ulcers are the extent of the pressure and for how long the pressure applies. Long periods of time spent lying down or sitting, especially on parts of the body that are exposed to pressure, incorrectly used transfer technique and transfer aids, and medical devices such as endotracheal tubes, nasal tubes, catheters, drains and central venous catheters^(4,5,6).

Risk assessment

The risk of pressure ulcers must be assessed as soon as possible after arrival but within 24 hours. According to global guidelines, risk assessment should be carried out within 8 hours. Preventive measures should be taken and an individual care plan prepared for all patients at risk. The care plan describes objectives, planned measures and how they will be carried out, and the results are described and evaluated^(2,4).

Risk assessments must thereafter be conducted regularly and during changes in state of health, after major surgical intervention, as well as prior to discharge. Risk assessment

and a clear policy for preventing pressure ulcers allow at-risk patients to be identified and selective preventive measures to be taken.

Risk assessment can be based on various risk assessment tools, and it can be used as a supplement to clinical assessment.⁽⁶⁾

The Modified Norton Scale

assesses eight areas: mental state, physical activity, ability to move, food intake, fluid intake, incontinence and general health. The maximum score is 28, with individuals scoring 20 or less being at risk of developing pressure ulcers⁽⁷⁾.

RAPS/RBT

assesses physical activity, ability to move, the degree to which the skin is exposed to moisture, food intake, fluid intake, sensation, friction, shearing and body temperature. The maximum score is 35; persons with 29 points or less run the risk of developing pressure ulcers⁽⁸⁾.

Braden

assesses five different areas: sensory perception, moisture, activity, mobility, friction and shearing. 15–18 points indicates a low risk of the occurrence of pressure ulcers. 13–14 points indicates a medium risk of the occurrence of pressure ulcers. 10–12 points indicates a high risk of the occurrence of pressure ulcers. 9 points indicates a very high risk of the occurrence of pressure ulcers⁽⁹⁾.

Waterlow

assesses nine areas: BMI, incontinence, skin type, medication, length of operation, neurological problems, mobility, screening for malnutrition, gender and age. 10+ – risk of developing pressure ulcers. 15+ – high risk of developing pressure ulcers. 20+ very high risk of developing pressure ulcers⁽¹⁰⁾.

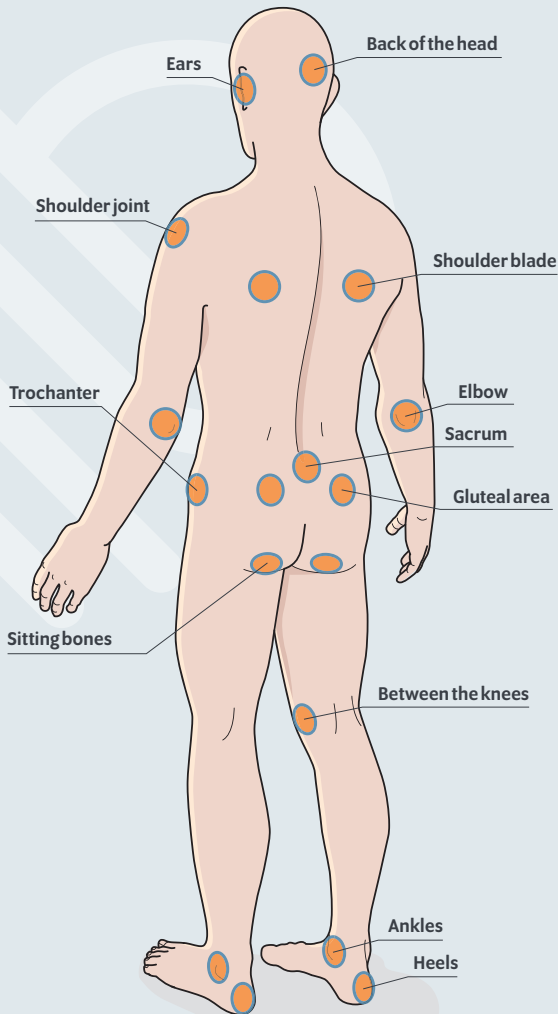
All measures must be documented and followed up in order to ensure communication between professional categories and to permit exchanges of information within the care team, so that the planning of care is adequate and allows long-term monitoring of an individual's condition. Risk factors that are identified by risk assessment should result in an individualised care plan^(4,6,11).

Risk assessment, skin inspection and preventive measures must be documented and entered into the case notes. This is extremely important for patient safety and for ensuring that the measures can be quality-assured^(2,12,13).

Location

Pressure ulcers can occur on all parts of the body. Points that are particularly prone to pressure ulcers are the rump-bone, sitting bones, iliac crest, sacrum, shoulder blades, back of the head, heels and ankles⁽¹⁴⁾. Other

parts of the body can also be affected, so be particularly aware that medical equipment such as catheters, plaster casts and nasal tubes can cause pressure, as can when the person is intubated^(4,6,15).



CLASSIFICATION, PRESSURE ULCERS

Category I – Redness that does not reduce on pressure

Intact skin with redness in a clearly defined area, usually above a bone protuberance, that does not reduce on pressure. Dark, pigmented skin might not show this sign, though the colour is different from the surrounding areas of skin. The area may be painful, solid or soft, and warmer or colder than other areas of skin. Category I pressure ulcers may be difficult to detect in people with dark skin tones. Category I pressure ulcers may be a sign that the patient is in the risk zone for developing deeper pressure ulcers⁽²⁸⁾.



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Category I - Redness that does not reduce on pressure, whole skin.

Category II – Partial skin damage

Partial skin damage that appears as a superficial open ulcer with a pinkish-red wound bed without fibrin slough. It may also be an intact or open/ruptured serum-filled or blood-filled blister. Appears as a shiny or dry superficial ulcer without fibrin slough or superficial haematoma. This category should not be used to describe skin tears, tape burns, incontinence-associated dermatitis or maceration⁽²⁸⁾.



© Care of Sweden

Category II - Partial skin damage, small ulcer or blister through the epidermis and the cutis.

Category III – Full skin damage

Full skin damage. Subcutaneous fat is visible, though not bone, tendon or muscle. Fibrin slough may be visible, though without obscuring the depth of the injury. May include undermining and tunnelling. The depth of a Category III ulcer may vary depending on its anatomical location. The bridge of the nose, ears, back of the head and ankles do not have any subcutaneous fatty tissue and Category III pressure ulcers may be superficial at these locations. In contrast, areas of significant subcutaneous fatty tissue can develop extremely deep Category III pressure ulcers. Bone/tendon is not visible or palpable⁽²⁸⁾.



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Category III - Full skin damage, through the epidermis, the cutis down in the fatty tissue; no involvement of the muscles/joints. The depth can vary depending on the anatomical location.

Category IV – Deep full-tissue damage

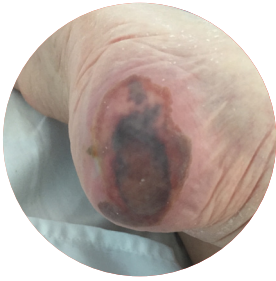
Deep full-tissue damage involving bone, tendon or muscle. There may be visible fibrin or necrosis. There is often undermining and tunnelling. The depth of Category IV pressure ulcers varies depending on anatomical location. For example, there is no subcutaneous fatty tissue at the bridge of the nose, ears, back of the head or ankles, and ulcers at these locations may be superficial. Category/grade IV pressure ulcers may involve muscles and supporting structures (e.g. fascia, tendons or joint capsules), which means that osteomyelitis and osteitis may occur. Exposed bone and muscle is visible or directly palpable⁽²⁸⁾. Black necrosis is assessed as category/grade 4 even if the skin is intact, as may be the case with the heels, for example⁽²⁾.



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Category IV - Deep full-tissue damage – Deep full skin damage, through all skin layers; involves muscles or tendons. The depth can vary depending on the anatomical location.

Pressure ulcers often occurs over bone protuberances. The edges of wounds are usually well defined, and necrosis may occur^(4,6).



The classification system devised by EPUAP/NPUAP and PPIA also describes the following: Unstageable: Depth Unknown and Suspected Deep Tissue Injury: Depth Unknown for pressure ulcers that cannot yet be classified.

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IAD, Incontinence associated dermatitis

Always caused by incontinence (urinary and/or faecal). IAD often occurs in skin folds as superficial damage. The edges of the wounds are often diffuse and irregular.

IAD causes disruption of the skin's protective barrier and leads to inflammation. Healthy skin is acidic, with a pH between 4 and 6. Urine and faeces have a caustic effect on the skin, causing irritation and superficial abrasions in the form of incontinence dermatitis. Skin exposed to urine/faeces becomes overhydrated, causing swelling of the outermost layer of the skin (the stratum corneum) that leads to damage and maceration. IAD leads to an increased risk of the occurrence of pressure sores, particularly if both urinary and faecal incontinence are present⁽²²⁾.

Pressure ulcers and IAD (Incontinence-Associated Dermatitis) can often be seen as a combination, and the causes can be difficult to assess. Always make sure of the diagnosis before treatment by relieving the pressure or reducing the risk of damage due to incontinence.



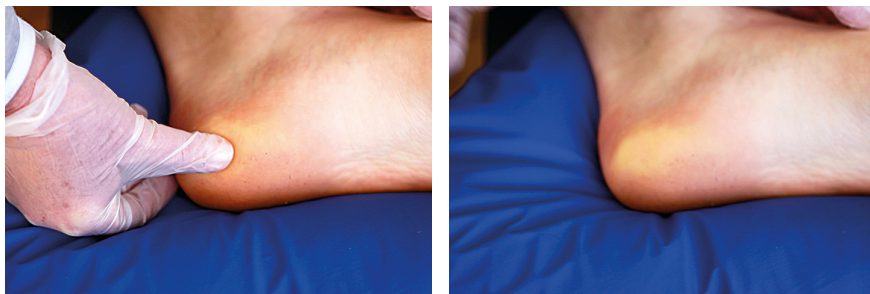
⁽²²⁾ Beekman D et al. Proceedings of the Global IAD Expert Panel. Incontinence-associated dermatitis: moving prevention forward. Wounds International 2015.

Incontinence aids

It is important to remember that diapers and other plastic material can impair the sitting and lying surface and reduce the chance of preventing pressure ulcers. All “unnecessary” material should therefore be removed. The least possible material between the person and the base helps to increase pressure relief. The skin's mechanical properties change in response to moisture and temperature variations; the skin becomes more sensitive and the risk of pressure, shearing and friction increases.^(4,6)

Tumb test

- Use the thumb test to determine whether the redness is blanchable or not.
- Apply light pressure to the reddened area for about 3 seconds using your thumb.
- Remove your thumb and inspect the skin: a change of colour from white to a return to red means that circulation is present. This is called reactive hyperaemia.
- No change of colour means a category I pressure ulcer^(4,6).



Skin inspection

Areas that are exposed to pressure are inspected as soon as possible after arrival. Pressure ulcers are classified on a scale of I–IV. Inspection must be repeated daily for all patients at risk, anyone who is bed-ridden or who uses a wheelchair, or who spends much of the day sitting⁽²⁾.

Do not forget to inspect below/around medical devices, such as catheters, plaster casts, nasal tubes or drains, twice daily⁽⁴⁾.

An assessment for IAD must be part of all skin assessments and form part of the measures to prevent pressure ulcers^(2,22).

It is important that nursing staff who inspect the skin know how to assess and categorise pressure ulcers. A web-based training programme, PUCLAS (Pressure Ulcer Classification) has been developed within EUPAP in order to improve knowledge. PuClas 3 consists of 4 different modules and consists of:

- Introduction to PuClas 3
- Pressure Ulcer Classification
- Introduction to Incontinence-Associated Dermatitis
- Differentiation between Incontinence-Associated Dermatitis (IAD) and Pressure Ulcers⁽²¹⁾.





Preventive measures

Preventing pressure ulcers is a team job, and the following measures should be considered:

Skin assessment/Skin care

Inspection of the skin must include an assessment of dry or moist skin, crack formations, oedema, increase in heat, calluses, broken skin or if there is eczema or a rash. Regular inspections of the skin are necessary in order to detect early signs of pressure ulcers. The skin must be kept dry and clean, soft and supple with moisturising cream. Skin care products must be unscented and free of allergenic substances. Broken skin (maceration) must be protected, for example using barrier cream.

Where skin is exposed to moisture in the form of urine/faeces there is an increase in the skin's pH value. "Normal" soap is usually alkaline, with a pH value between 9.5 and 11. When washing, therefore, use acidic products that are closer to the body's own pH value⁽²²⁾.

Never use massage as a preventive measure, since this compresses the capillaries and increases the risk of damage. The skin must not be scrubbed when cleaned as scrubbing is painful and can cause tissue damage, especially in delicate elderly patients^(2,4,5,6).

Pressure redistribution/Pressure relief

A first preventive measure is to look at what type of mattress or chair cushion is being used by a person at risk of developing pressure ulcers. All persons in the risk zone should be prescribed a pressure-redistributing or pressure-relieving base⁽²⁾.

Pressure-redistributing products reduce pressure on the skin; materials used are foam, fibre, gel and static products. These products are also termed "reactive products".

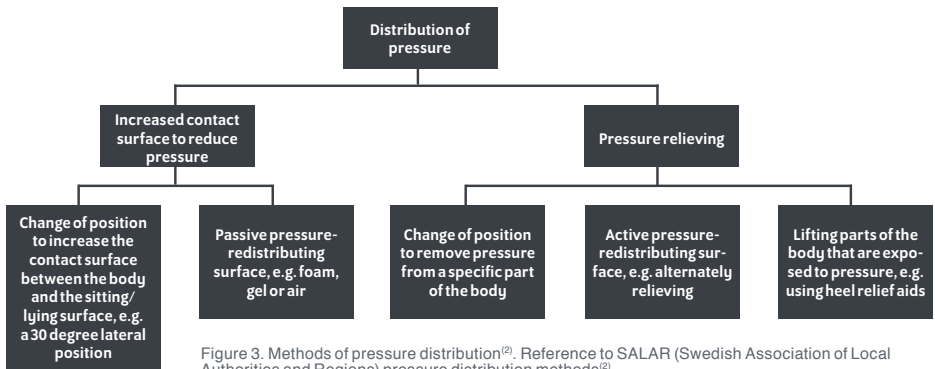
When pressure-redistributing products are being used, the IP (interface pressure – the pressure between the body and the supporting surface) is always constant as long as no change in position occurs. A pressure mat can be used to evaluate pressure-redistributing products. This uses digital technology and consists of a pressure mat containing a large number of sensors. A software program reads the pressure and the results are

PRESSURE-REDISTRIBUTING MATTRESS

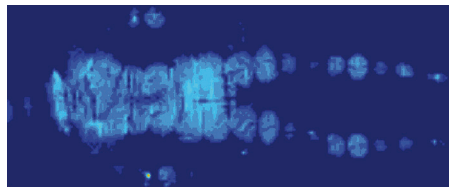


PRESSURE-RELIEVING MATTRESS





presented as the PAI (Pressure Area Index). The PAI refers to the proportion of the measured pressure (as a percentage) that lies below predetermined threshold values. For mattresses, pressures of 30, 20 and 10 mmHg are used, which are considered to correspond to the pressures in the alveoli, capillaries and venules⁽²³⁾.



Pressure relieving eliminates pressure on the skin; alternating pressure is used⁽⁶⁾. With alternating pressure, the pressure switches between the cells at regular intervals to simulate the movements of the body. Periods are created in which the pressure is lower or completely absent. This provides good conditions for the skin to recover and to prevent injury.

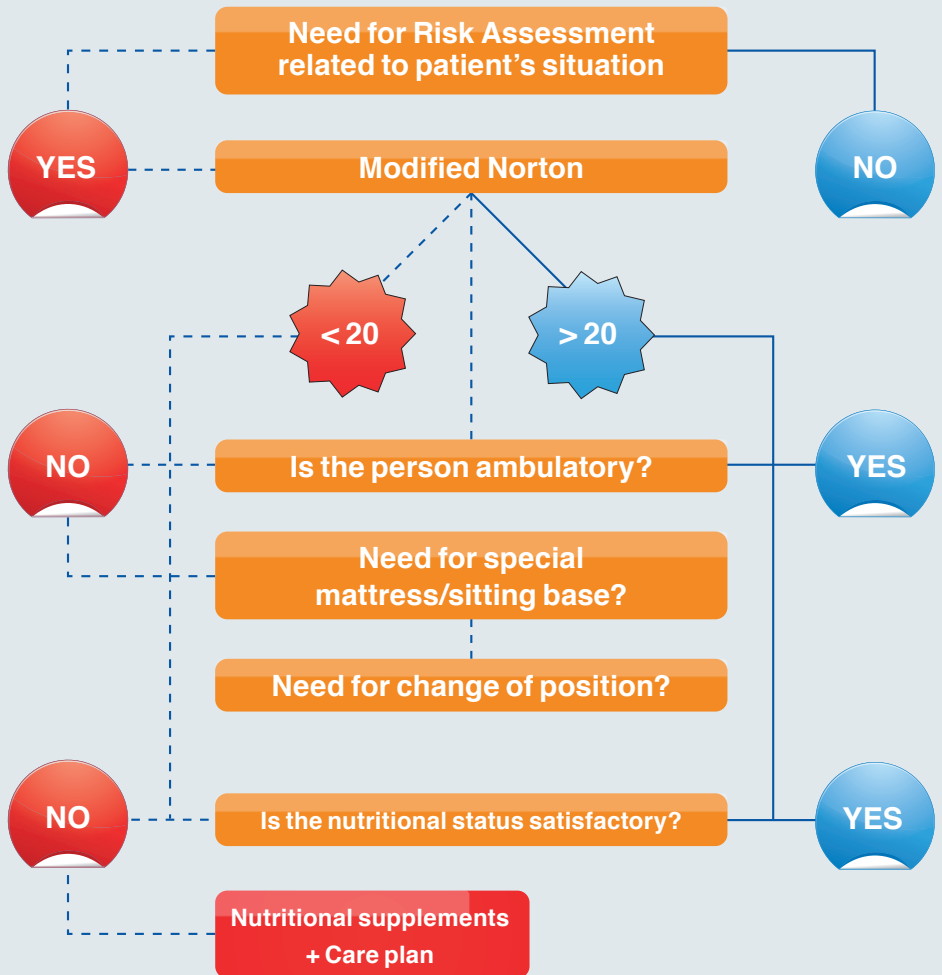
The PRI (Pressure Relief Index) is used as a measure in the evaluation of pressure-relieving products. This shows how pressure-alternating mattresses relieve the pressure below the clinically relevant pressure levels (30, 20 and 10 mmHg) during predetermined cycle periods. The PRI refers to the time as a percentage of a complete cycle⁽²³⁾.

The choice of base should be determined by the person's individual needs for pressure relief and in order to facilitate mobilisation. Attention must be paid to weight, occurrence of ulcers, ulcer category, time spent lying/sitting and mobility. The type of bed also affects the choice. The bed height must not be too high if the person is able to get into and out of bed themselves. Needs can change over time, and so the skin must always be checked regularly.

Regardless of which base is chosen, work with changes in position must always be in accordance with the individual's needs and wishes.

Bases that are used for 24 hours per day, 365 days per year, are exposed to extreme wear and tear and must be inspected regularly and replaced if necessary. Both mattresses and chair cushions are perishable products^(2,5,6).

Modified flowchart of risk assessment by Eila Sterner, 2012.





Activity

Motion is the body's defence against pressure ulcers and other complications from being bedridden. People with reduced sensitivity, paralysis, contractions or unconsciousness do not respond to the body's warning signals, due to reduced or failed reaction or inability to feel pain or discomfort. Therefore, help is needed regularly to change position. Small, frequent changes in position are often sufficient for the circulation to work⁽¹⁵⁾.

Changing position

This should be based on the person's individual needs and status. How often changes of position need to be made will be determined by the skin's tolerance and status, the level of activity and mobility, and the individual's general condition⁽⁴⁾. Always continue to change position, irrespective of which type of pressure-redistributing/pressure-relieving surface is used. Use some form of turning schedule that describes the frequency, time and change of position⁽⁴⁾. Lying and sitting positions must be adapted so as to keep the pressure between skin, bone protuberances and the base to a minimum. The time the person can sit or lie without changing position should not exceed two hours, but must always be adapted to the individual. Brief high pressure over bone protuberances and prolonged low pressure over bone protuberances are equally damaging⁽⁴⁾.

Wherever possible, use aids to move patients or change position; this helps both staff and users and reduces the risk of shearing or friction damage. Never place a user directly on bone protuberances or on a skin surface that is already reddened. Redness indicates that the body has not yet recovered from earlier pressure and that the skin requires more time before any pressure can be put on it. In order to reduce the risk of someone developing pressure ulcers, it is important to reduce the duration and force of the pressure to which the person is exposed^(4,15).

Lying

30° tilted position, alternating between the left and right side, relieves the rump-bone, iliac crest, hips and heels. If necessary, use a cushion between the patient's knees to relieve strain. Make sure that the ankles are also relieved of strain; changes in position always create increased pressure on another part of the body^(4,25).

A half-sitting position in bed increases pressure on the sacrum; the risk of shearing increases if the patient slides down. Various cushions can be used to relieve pressure and position the patient based on diagnosis, needs and general condition^(15,18,19).

Heels

Heels are an area at high risk of developing pressure ulcers. Microcirculation is low and the heel bone is close to the skin. Total pressure relief is extremely important.

For example, a cushion can be placed along the calf. NB: make sure the pressure does not increase on the Achilles tendon and that the heel is uncovered. The foot end of the bed can be raised 10° if necessary in order to increase venous return and reduce the risk of thrombosis in the calf^(4,5,6). The various medical devices for heel relief must always be used in accordance with the manufacturer's recommendations. Always make sure that these aids are not too rigid and do not create excessive pressure. The aids must be removed at regular intervals to allow the skin to be inspected⁽⁴⁾.

Sitting

In a sitting position, the greatest part of your body weight is carried by the buttocks and thighs. Ulcers across the sitting bones (tuber ischii) are caused by insufficient pressure relief in a sitting position.

Time spent sitting is a decisive factor in the occurrence of pressure ulcers. The length of time a person can sit depends on the risk or pressure ulcer category, and it must always be adapted to the individual.

The correct sitting position is when the force of gravity falls in front of the back and down through the sitting bones. The correct sitting height is when the knees rest at the same height as the hips. The feet must always be supported by the floor or a footplate, otherwise sitting stability is lost and the person risks sliding forwards.

An incorrect sitting position increases pressure on the sitting bones. Prevent shearing and friction by making sure the patient does not slide down the chair. The most important objective for anyone sitting down for a long time is to sit comfortably, as comfort is an absolute requirement. The only person who can decide whether a sitting position is good or bad is the person who is sitting down.

Lying and sitting positions must be adapted so as to keep the pressure between the base and bone protuberances to a minimum^(5,16).

Microclimate and moist skin

The microclimate, in other words the temperature and humidity between the base and the person's skin, is very important in the development of pressure ulcers.

Avoid using hot water bottles, heating blankets, etc., directly on reddened skin. A rise in temperature increases the metabolism. The skin's mechanical properties change in response to moisture and temperature variations; the skin becomes more sensitive and the risk of pressure, shearing and friction increases⁽⁴⁾.

Nutrition

People who are underweight or overweight, dehydrated or with reduced nutritional intake are at a greater risk of developing pressure ulcers.

In order to meet their energy and food requirements, breakfast, lunch, dinner and three snacks should be served. Food should be adapted to the individual's needs, for example adapted food consistency or energy and protein-rich food. Measures to help the patient eat may also need to be reviewed. Nutritional status must be assessed in all patients and care recipients⁽¹⁷⁾.

High-protein nutritional drinks can be offered as a supplement to ordinary food. These nutritional drinks should be given between meals in order to avoid these having a negative effect on normal food and fluid intake⁽²⁾. Food and water intake should be recorded so

that food can be adapted according to the calculated energy intake⁽¹⁷⁾.

Assess the nutritional status of all people who are at risk of developing pressure ulcers. Be extra careful if there has been a weight loss of $\geq 5\%$ over 30 days or $\geq 10\%$ over 180 days. People with pressure ulcers or at risk of pressure ulcers should be offered extra calories, 30–35 kcal/kg body weight if they have been assessed as being malnourished. A fluid intake of 1 ml/kcal consumed/day is recommended⁽⁴⁾.

Example of nutritional assessment⁽²⁶⁾

© Nestlé, 1994, Revision 2009.
N67200 12/99 10M.

Nestlé NutritionInstitute Mini Nutritional Assessment MNA®

Efternamn: _____

Kön: _____ Ålder: _____ Vikt, kg: _____ Förmånt: _____

Fyll i poängsiffran i rubriken för bedömning (screening) och summera. Om poängerna är 11 eller mindre fortsätt med del II för att få en gradering av näringsläget.

Screening, del I

A Har förlorad vikt under de senaste tre månaderna på grund av förlämnat aptit, matsmältningsproblem, illag- eller sväljproblem?
 0 = ja, mycket allvarigt
 1 = ja, mindre allvarigt
 2 = nej, ingen förändring

B Vidstodt under de senaste tre månaderna
 0 = ja, mer än 3kg
 1 = väl ej
 2 = ja, mellan 1 och 3kg
 3 = nej, ingen viktökning

C Rörighet
 0 = är säng- eller rullstolsbunden
 1 = kan ta sig ur säng/rullstol men går inte ut
 2 = går ut mest eller aldrig någon gång

D Har varit fysiskt stressad eller haft akut sjukdom under de senaste tre månaderna?
 0 = ja
 1 = nej

E Neuropsykologiska problem
 0 = svår demens eller depression
 1 = lindrig demens
 2 = inga neuropsykologiska problem

F Body Mass Index (BMI) = Vikt (kg) / Höjd (m)²
 0 = BMI mindre än 19
 1 = BMI 19 till mindre än 21
 2 = BMI 21 till mindre än 23
 3 = BMI 23 eller mer

Screeningresultat (Subtotal max 14 poäng)
 12-14 poäng: Normal näringsstatus
 8-11 poäng: Risk för undernäring
 0-7 poäng: Undernärd

För en grundligare bedömning, fortsätt med frågorna G-R.

Screening, del II

G Har eget boande? (ej särskilda boendeformer / sjukhus)
 1 = ja
 0 = nej

H Intar mer än 3 ordinerade läkemedel dagligen?
 0 = ja
 1 = nej

I Har trycksår eller annat hudår?
 0 = ja
 1 = nej

J Är fullständigt huvudmät per dag?
 0 = 1 fullständig huvudmät
 1 = 2 fullständiga huvudmät
 2 = 3 fullständiga huvudmät

K Äter eller dricker vanligtvis
 (mjölk, ost, yoghurt?)
 • minst två portioner bäljväxter eller ägg per vecka
 • fisk, fjäder eller kött varje dag?
 0.0 = inget eller ett ja-svar
 0.5 = två ja-svar
 1.0 = tre ja-svar

L Äter minst två frukter eller två portioner med grönsaker dagligen?
 0 = ja
 1 = ja

M Dricker dagligen (vattnet / juice / kaffe / te / mjölk / öl)?
 0.0 = mindre än 3 glas / muggar
 0.5 = 3 till 5 glas / muggar
 1.0 = mer än 5 glas / muggar

N Kan äta själv eller behöver hjälp vid måltiden?
 0 = behöver mycket hjälp vid måltiden
 1 = äter själv men med svårighet
 2 = äter själv utan problem

O Bedömer själv sitt näringsläge som
 0 = svårt undermåligt
 1 = är osäker om sitt näringsläge / vet ej
 2 = ser sig som näringsproblem

P Jämteförelse med andra i samma ålder upptärrat alltillskottslösast som?
 0.0 = inte så bra som andras
 0.5 = väl ej
 1.0 = lika bra som andras
 2.0 = bättre än andras

Q Överarmens omkrets i cm (Mid Arm Circumference, MAC)
 0.0 = MAC mindre än 21 cm
 0.5 = MAC 21-22 cm
 1.0 = MAC mer än 22 cm

R Vadens omkrets i cm (Calf Circumference, CC)
 0 = CC mindre än 31 cm
 1 = CC 31-32 cm
 2 = CC 33 cm eller mer

Screening, del II (max 16 poäng)
 Screening, del I _____
 Total bedömning, del I + del II (max 30 poäng) _____

MNA resultat
 24-30 poäng: Normal näringsstatus
 17-23.5 poäng: Risk för undernäring
 Mindre än 17 poäng: Undernärd





Treating pressure ulcers

Always secure a diagnosis before treating a pressure ulcer in order to ensure that the pressure ulcer has been differentiated from other types of ulcer⁽⁴⁾.

Pressure ulcers are difficult to heal and a healing time of up to one year is not uncommon.

Those treating pressure ulcers must be very familiar with the procedure; it is recommended that each patient is treated by as few persons as possible.

Clean the ulcer carefully before the assessment. The assessment must be carried out based on category, position, size of the ulcer, signs of infection, pain, the appearance of the edges of the wound and the wound bed, the amount of exudate, presence of dead tissue, growth of new epithelial cells and granulation tissue.

Supplement the documentation with a photo or a drawing of the ulcer. Reverse categorisation can never be used to describe the healing process of an ulcer; lost muscle tissue, subcutaneous fat and dermis can never be replaced.

Lukewarm tap water is beneficial (depending on the quality of the water).

Sterile procedures must be used around joints and orifices.

If several ulcers are to be dressed at the same time, the cleanest ulcer must be dressed first and the dirtiest one last.

The aim of local treatment is to alleviate pain, reduce or eliminate the smell problem, reduce ulcer secretions, reduce dressing changes and provide pain-free dressing changes.

Mechanical cleaning with scissors, scalpel and tweezers must be carried out with care and after prescription of anaesthetic, Xylocaine jelly or EMLA cream.

Different pressure ulcer categories require different dressing strategies and different dressings. Choose dressings according to their properties and the type of ulcer.

In general, there should be as few dressings as possible, so that the ulcer has the chance to heal without unnecessary dressing changes.

No pressure ulcers in categories II–IV should be aired, as air cools and prevents the healing of the ulcers.

Dry ulcers must be protected; moist ulcers must be kept moist and the surrounding skin protected from loosening (maceration); necrotic tissue must be removed. Patients with

diabetes and reduced peripheral circulation, with dry black necrosis on the feet, must be treated with care and the necrosis must remain intact.

If an increased amount of ulcer fluid is saturating the dressing and making it leak, it should be changed more frequently; possibly another type of dressing should be used.

For foul-smelling ulcers, a combination dressing of charcoal and silver can be used as an alternative to prevent bad smells.

Factors that promote healing are moisture, slightly acidic pH, ulcer temperature approx. 32°, oxygen saturation, pain relief and consistent treatment.

To prevent the spread of infection, basic hygiene procedures should be followed by all staff; gloves and plastic aprons must be worn and hand sanitiser used before and after treatment.

The prevention and treatment of pressure ulcers requires structured tuition and training. This should be directed at patients, personnel and those close to patients.

At each unit that cares for and treats patients there must be clear guidelines on how the work is to be done^(2,5,6,15).



Pain

A lot of people with pressure ulcers experience pain. People with deep ulcers in category III and IV report more pain than those with superficial ulcers^(6,20,24).

A study from the United Kingdom reported that the pain experienced by patients in connection with pressure ulcers was described as “endless pain”, and that nerve pain was predominant. The pain preceded the occurrence of pressure ulcers, and patients who were not affected by pressure ulcers experienced no pain in the area exposed to pressure⁽²⁴⁾.

Pain should be assessed initially and continuously thereafter. Precise documentation is required in order to ensure that all patients with painful pressure ulcers get the right treatment⁽²⁾.

Pain is assessed based on location, intensity, type of pain relief and its effect. Is pain caused by anything in particular? When does the pain set in? When is the pain at its worst? Does anything help with the pain? The pain can sometimes be explained as an infected ulcer or osteomyelitis⁽⁵⁾.

Always evaluate how the treatment is proceeding; if there has been no change in 2 weeks, change the treatment strategy⁽⁴⁾.



Pain Scale, VAS (Visual Analogue Scale)

Quality of life

Pressure ulcers can affect a patient both physically and in terms of their psychosocial situation. The pain can severely limit day-to-day activities and result in reduced activity. Many people also become anxious with the worry that the pressure ulcer may deteriorate and lead to cancer, for example.

Reliance on the help of others increases, odour and dressing changes can disrupt patients' social relations, well-being and sleep.



For both those close to patients and staff, the occurrence of pressure ulcers is often charged and associated with guilt^(5,6,24).

Information

It is extremely important that patients and those close to them are provided with information about the mechanics of how pressure ulcers develop, how they are treated and what effect they may have.

All information material must be readily comprehensible and adapted for the target group.

Both patients and those close to them should take part in the provision of care⁽²⁾.

Pressure ulcers in terminal stage illness

Pressure ulcers often develop in thin and emaciated patients in terminal stages of disease. The primary objective in this case is to alleviate pain and discomfort. For these patients, comfort is always the decisive factor in measures and treatment⁽⁵⁾.

A consensus document, SCALE (Skin Changes At Life's End), describes how pressure ulcers at end of life arise suddenly, regardless of any nursing measures that may have been initiated, and that these pressure ulcers often differ in terms of appearance, with irregular patterns⁽²⁶⁾.

Action plan for preventing pressure ulcers



1. **Structured risk assessment as soon as possible after arrival, supplemented by a clinical assessment.**
2. **Perform a skin/ulcer status check as soon as possible after arrival; include an assessment for incontinence and type.**
3. **Categorise any pressure ulcers present.**
4. **Document.**
5. **Draw up a care plan for all patients at risk of developing pressure ulcers.**
6. **Perform and document an MNA. Offer nutritional drinks and extra calories depending on the patient's needs.**
7. **Prescribe a pressure-redistributing/pressure-relieving surface (mattress/chair cushion).**
8. **Additional relief may be required for sensitive heels.**
9. **Regular changes of position must be performed, irrespective of which mattress is used. The frequency is determined by the patient's status, diagnosis and general condition.**
10. **Assess pain, where present.**
11. **Ensure that staff receive regular training in the measures to prevent pressure ulcers, including medical devices.**
12. **Remember whose bed you are preparing! Avoid unnecessary items in the bed.**

Audit your mattresses often.

Worn mattresses create suffering for the user and also increase healthcare costs. Regular auditing of mattresses will improve both user and health economy.

Watch the film about how to audit your mattresses

www.careofsweden.com/documents-videos/



Health Economics – Low cost, high gain

A structured review of records is used to measure the prevalence of injuries in health-care. The Global Trigger Tool (GTT) method involves reviewing patient record documentation from a random sample of completed hospitalisation events from the entire hospital. The review considers whether an injury occurred and, if so, the type, consequences and severity of the injury. Pressure ulcers are included as one of the types of injury, and in 2014 the Swedish Association of Local Authorities and Regions⁽²⁶⁾ considered that 9 out of 10 injuries were avoidable. Extrapolated to national level this means that, of the 15,000 hospitalisation events involving pressure ulcers of category/grades II–IV, a total of 14,000 (90%) were avoidable.

According to SALAR, the period of hospitalisation for patients with healthcare injuries is extended by 6.8 days, and pressure ulcers are one of the healthcare injury groups that extends the period of hospitalisation the most, constituting 20% of the total cost for healthcare injuries⁽²⁶⁾.

A report from Nordic Health Economics⁽²⁹⁾ (2017) in Gothenburg shows that significant savings can be made. If Sweden's County Councils equipped all beds with high-quality preventive mattresses, then this would lead to significant savings.

The report clearly shows that if an investment of 13 million Swedish Kronor over a one year period was made, the total saving would amount to 1,8 billion kronor throughout a 5 year period. Even after the first year the saving would amount to 351 million kronor.

The Swedish healthcare sector's annual budget amounts to approx. SEK 330 billion. Of this, less than 0.1 % is used for purchasing mattresses – equipment that would ensure greater comfort and reduce the number of care injuries.

For better and more efficient management, we suggest that all units produce a plan of action for mattresses that contains an annual inventory and a planned mattress budget (e.g. corresponding to 20 % of the unit's total mattress stock).

A structured and planned preventive working method is always less expensive than treating pressure ulcers.

The patient's experience and discomfort – if they suffer from pressure ulcers – can never be calculated in financial terms, but less suffering, increased quality of life and better comfort are some of the factors intrinsic to the concept of "good care".



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