



Choosing pressure relief equipment

DLF Factsheet

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Disabled Living Foundation
380-384 Harrow Road London W9 2HU

Tel: (020) 7289 6111
Fax: (020) 7266 2922
Textphone: (020) 7432 8009
Helpline: 0845 130 9177 10am – 4pm
Textphone: (020) 7432 8009
Email: advice@dlf.org.uk
Website: www.dlf.org.uk
Reg. Charity No: 290069
VAT Reg. No: 226 9253 54

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INTRODUCTION

Pressure ulcers are areas of damage to the skin and underlying tissue, usually occurring over bony prominences. They are caused by:

- pressure: occurs when skin and tissue are directly compressed between bone and a support surface such as a bed or wheelchair. Blood is unable to circulate causing a decrease of oxygen and nutrients to the underlying cells;
- shear: occurs when skin and tissue are pulled in different directions, for example when a person slips down a bed or is repositioned using a dragging motion;
- * friction: occurs when the skin rubs against a surface, for example the heels rubbing against a sheet.

The greatest areas at risk are those where there are weight bearing bones near the surface of the skin, for example under the bones in the buttocks – the ischial tuberosities. The shoulders, hips and heels are also at increased risk. (NB inclusion of skeletal diagram – if not available delete sentence referring to it)

Both people at risk and their carers need to be aware of the importance of pressure ulcer prevention. Pressure ulcers can be painful, difficult to treat and even life threatening in extreme cases.

A prevention programme may include: regular skin assessment; use of manual

handling aids and techniques; regular repositioning; continence management and the use of pressure distributing equipment.

For further information on prevention and treatment guidelines, refer to the Royal College of Nursing's Pressure ulcer risk assessment and prevention or the European Pressure Ulcer Advisory Panel. The Medicines and Healthcare Products Regulatory Agency has completed assessments regarding many types of pressure relief equipment (see useful contacts).

For up-to-date product and supplier information, please contact our equipment helpline, open Monday to Friday from 10am to 4pm, tel: 0845 130 9177 (calls charged at local rate), or if you use textphone: 020 7432 8009 (standard rate).

Alternatively, you can write to our letter enquiry service or contact us via email: advice@dlf.org.uk . To help us give you a concise and informative reply, please provide us with as much detail as possible including information on the difficulties you are having and any solutions you have considered, including equipment ideas.

RISK FACTORS

Several factors may increase a person's risk of developing pressure ulcers:

Decreased mobility

People with decreased mobility may have difficulty relieving pressure when sitting or

lying. They may be unable to reposition themselves in a chair or a bed, and may slip down in a chair, for example, producing a shearing effect. When carers assist people to reposition or transfer from a chair or bed, inappropriate manual handling techniques may also cause shearing or friction.

Neurological impairment or sensory impairment

People with neurological impairment or decreased sensation may not feel the uncomfortable sensation of pressure building up and therefore not reposition themselves to relieve pressure. These people may not even feel when a pressure ulcer has developed.

Incontinence

The inability to control the bladder and/or bowel increases dampness in the buttock and thigh area, making the skin more prone to damage. Urine and faeces also contain substances that can increase the chance of skin breakdown. Advice can be sought from a continence nurse or from the Continence Foundation.

Temperature and humidity

Increased heat and humidity increase sweating which can add to the risk of skin breakdown. Skin cell function is also impaired if the skin becomes too warm or too cold, increasing the skin's susceptibility to damage.

Decreased nutrition and circulation

People with low body fat may have decreased subcutaneous fat and muscle bulk, providing little padding over bony prominences. People with high body fat have increased padding over bony prominences, but this tissue is poorly vascularised and may be more prone to shear forces. Good nutrition is also required to repair tissue and prevent ulcer occurrence. Good hydration is required to maintain the resistance and elasticity of the tissues.

WHO IS AT RISK?

In general, people who spend most of the day lying or sitting and are unable to reposition themselves effectively are at risk of developing pressure ulcers.

A number of risk assessment scales are designed to assist health professionals to identify a person at risk of developing pressure ulcers, including the Norton Scale and the Waterlow Scale.

When a pressure ulcer has developed, the ulcer is usually graded in the following way:

Grade 1 – reddened skin which persists for more than 30 minutes after pressure has been relieved;

Grade 2 – superficial skin damage. May present as a blister or as an abrasion;

Grade 3 – full thickness skin loss not extending to bone or muscle. This grade of pressure ulcer is not usually painful;

Grade 4 – full thickness skin loss with extensive tissue damage through to muscle and bone.

REDUCING THE RISK OF PRESSURE ULCERS

Good pressure care needs to be practised across all activities of daily living: in the wheelchair, in bed, in the bath and on the toilet or commode. Correct pressure care equipment is an important component of any prevention programme, but should not be seen as a complete solution.

A prevention programme for people at risk of pressure ulcers may include the following:

Correct positioning in bed or chair

People at risk of developing pressure ulcers should be repositioned throughout the day. When lying in bed, a 30 degree tilt will minimise pressure on bony prominences. Using a knee break and removing any slings or slide sheets will also protect from shear and friction.

When sitting in a chair, the chair needs to support the full length of the user's thighs and keep the hips, knees and ankles at right angles. Armrests are required for user repositioning and transfers.

Changing position or lifting the body

Pressure should be relieved from any part of the body at regular intervals –

especially over bony prominences. Areas at risk include - when lying on the back: shoulder blades, elbows, back of the head, buttocks and heels; when lying on the side: shoulder, ear, hips, thighs and ankles; when sitting in a chair: buttocks, elbows and heels.

Removing pressure completely allows time for the blood to flow normally to that area so that skin cell oxygen levels can be restored. If a person cannot change positions independently he/she will need to be repositioned or moved by a carer. It is important to use correct manual handling techniques when repositioning. The intervals at which repositioning should occur depends on the person's level of risk. A turning chart or clock may assist carers to establish an effective turning regime.

Regular inspection of the skin

An initial inspection of a new patient or client should occur immediately on admission to hospital or when a new care team is in place. A standardised assessment such as the Waterlow scale should be used for this initial assessment.

The skin should then be inspected frequently – depending on the person's level of risk. Areas of risk should be inspected for:

- persistent redness which does not disappear after removal of pressure;
- discoloration or a change in texture of the skin;
- warmth or swelling over a bony prominence;

- breaks, blisters or abrasions to the skin.

If a person is examining him or herself, a long handled mirror may be used.

Wearing suitable clothing and using suitable bedding

Sitting or lying on thick clothing seams, such as those in jeans, should be avoided as this can contribute to pressure ulcers.

Bedding should be free from wrinkles, and a bed cradle may be used to decrease the pressure of bedding through the heels. Plastic or rubber backed bedding may cause an increase in moisture. Ideally, sheets and cushion covers should be two-way stretch and vapour permeable.

Taking care when lifting and transferring

To reduce the effect of friction and shear on the skin, appropriate manual handling techniques and equipment need to be used. Slide sheets and hoists can be useful to reduce shear when transferring or repositioning although they should not be left underneath the user.

Using barrier creams

Some creams and oils may be recommended as a preventative measure, or to aid in healing of an existing sore. It is important to seek medical advice prior to use. When

washing and drying, the skin should be treated with care, especially in at risk areas. Talcum powder should not be used as this can dry out the skin and may cake and increase friction.

Using pressure relief equipment

Pressure relief equipment may include cushions, mattresses, bed cradles and joint protectors. Some products may have a pressure relief rating to assist health professionals to choose the correct pressure relieving products for their client. These ratings have been provided by the product's suppliers, and are designed to provide a guide as to the pressure relieving qualities of that product. The ratings are intended as a guide only, and consultation with your health professional and the product supplier before purchasing any equipment is strongly advised.

SUPPLY AND PROVISION OF PRESSURE RELIEF EQUIPMENT

PERMANENT LOAN

Health and local authority provision

Wheelchair cushions

The provision of wheelchair cushions is carried out by, or through, the wheelchair service. This is part of the health authority and organised on a district-wide basis. Often based at the local district hospital, such services are able to provide a wide range of wheelchairs and cushions. A pressure relief cushion needs to be prescribed at the same

time as the wheelchair to ensure that it does not affect the functional ability of the user. If the cushion is too high, it may prevent users from reaching the propelling wheels or make it difficult for them to get their legs under standard height tables.

Referral

Referral to the wheelchair service can be made by a range of professionals including therapists, nurses and doctors.

Range of equipment available

Standard off-the-shelf cushions and individualised made-to-measure cushions are available. Assessment and authorisation for these cushions needs to be carried out by various health professionals including an occupational therapist and physiotherapist.

Home nursing equipment

Home nursing equipment such as pressure relief mattresses and armchair cushions may be supplied by a community nurse. He/she can usually be contacted through the local health authority. Manual handling training and equipment such as hoists can usually be provided by an occupational therapist in the community.

Referral

Referrals to community nurses and occupational therapists can be made by a range of health professionals including doctors, other nurses and therapists.

Range of equipment available

A range of pressure relieving mattresses, cushions and beds may be available as well as manual handling equipment such as hoists and slide sheets.

Employment service

Employment equipment and adaptations are defined as any equipment, which is primarily for the purpose of meeting an employment need. This could include wheelchairs and cushions, ramps, short rise lifts, and stairlifts.

Employment equipment and adaptations are provided through:

The Disability Services Teams (DSTs) part of Job CentrePlus (previously the Employment Service) in England, Wales and Scotland;

Disability Employment Advisers (DEAs) who work from local job centres and who, as well as providing a wide range of advice and help to people who have particular difficulties in finding or keeping work because of a disability, can also advise on how to obtain equipment

Referral to these services is open - either by the user, the employer, or by a healthcare professional.

PURCHASE OF EQUIPMENT

Private purchase

Private purchase might be preferred either because a person wishes to buy privately, or because the statutory services are unable to provide the item required.

Funding from charitable sources

A directory entitled A guide to grants for individuals in need published by the Directory for Social Change contains the most complete list of the charities and organisations that will give grants and funding.

SELECTING APPROPRIATE EQUIPMENT

Before you purchase a product, it may be helpful to try it out. There are over 40 Disabled Living Centres around the country which have a wide range of equipment on display. All can give advice and information on wheelchairs and related equipment. For details of your nearest centre, contact Disabled Living Centres Council (see useful addresses). Advice should always be sought from a healthcare professional before buying.

PROPERTIES AND FEATURES OF PRESSURE RELIEF MATTRESSES AND CUSHIONS

Pressure relief products distribute pressure in a variety of ways, including conformity moisture absorption and reduction of shear. Pressure relief equipment may possess the following qualities:

CONFORMITY

Products made of water, air, gel and memory foam move and conform to the shape and movement of the body. However, these products decrease the ability to relieve pressure by leaning to one side as the surface will move with the user.

STABILITY

The user who finds it difficult to maintain sitting balance may find that cushions that conform quickly to the body and move do not feel particularly safe. They can also make transferring on and off the surface more difficult. If the user needs to push down on a transfer surface to gain leverage, the contents will move as soon as the body weight is lifted and the support will disappear.

BOTTOMING-OUT

If a mattress or cushion is too soft or thin, it may become compressed, allowing the skin to come into contact with the surface beneath, thus removing any pressure

relieving qualities. This is called bottoming out. Turning cushions and mattresses may help to prevent this.

SHEAR FORCES

Some mattresses and cushions are designed to reduce shear forces as much as possible. Mattresses and cushions which have individual balloon or egg-box-shaped surfaces, or foam mattresses and cushions which have a cross cut surface are able to move with the body so that the pull on the outer layer of skin is decreased. Also, cushions which are ramped and slope backwards decrease the likelihood of users sliding forward in the chair thereby minimising shear.

HEAT

As heat increases so does the risk of developing sores. Users who tend to get hot and sweaty may prefer to use a cushion that keeps the surface temperature of the skin cool. Water and gel help to conduct heat away from the area. Gel may be too cold for some people. Too much cold may cause the metabolism of the cells forming the skin cells to slow down so that they absorb much needed oxygen more slowly.

Standard foam mattresses and cushions and bead-filled mattresses and cushions should be avoided by people who get too hot, as they retain heat and do not let air circulate. Conversely, this type of mattress or cushion may be suitable for

people who feel the cold and need their mattress cushion to act as insulation.

MOISTURE ABSORPTION

The amount of moisture produced may relate to the amount of heat produced and so may be influenced by the factors mentioned above. Moisture absorption also tends to be influenced by the material from which the mattress or cushion cover is made. Covers made of cotton and towelling are absorbent. Vapour permeable materials, for example platilon allow the air and water vapour to circulate so that sweating is minimised. However, they are also water resistant so that, if large amounts of fluid are spilt on it, the cushion underneath stays dry. Natural sheepskins are able to hold a high level of water vapour without feeling wet and will therefore reduce the effect of sweating. Man-made materials, such as nylon and vinyl, are not absorbent and, because they do not allow the air to circulate, may cause excess sweating.

FIRE RETARDANCY

Pressure relief cushions and mattresses are tested to criteria set by the Medical Devices Agency (MDA). Also consider standards set by the British Standards Institute (BSI) on fire retardancy; these are very important, especially for users who smoke and/or those who are unable to get themselves out of bed or a wheelchair in an emergency.

WATERPROOFING

A user with continence problems should seek help from a continence adviser as to how these can be managed or prevented. Occasional accidents may be unavoidable - So, if the mattress or cushion is likely to be damaged if it gets wet, adequate waterproofing should be provided. A material such as plitilon may be used as it is both waterproof and water permeable, i.e. moist air can circulate through it.

CLEANING

Check whether the mattress, cushion and/or the cover are washable and if they can be disinfected if necessary. A plitilon cover can be wiped clean, thus avoiding the need to launder the contents.

MAINTENANCE

The adjustment of some mattresses and cushions requires a certain amount of dexterity initially so that the correct amount of pressure relief is provided. The means of adjustment may make it necessary for someone other than the user to check and make the adjustments. Some mattresses and cushions have power packs that could go wrong; others may need mending after a puncture or a split. In the case of a wheelchair cushion, check whether the user can carry out these checks and/or

repairs, or has a carer who could help. If there is no one available to help, it may be better to choose a cushion that does not need setting up and maintaining in this way.

WEIGHT

The portability of the cushion will be important for those users who frequently need to lift it in and out of their wheelchair or car. Some cushion materials, like gel or water, are heavy and are not easy to lift even when there are handles on the cushion.

COST

Mattresses and cushions vary widely in price. However, expensive ones may be cost effective in the long run and better for the wellbeing of the person if they prevent sores from forming and the user from being admitted to hospital for treatment.

TYPES OF MATERIALS USED IN MATTRESSES, OVERLAYS AND CUSHIONS

AIR ALTERNATING CUSHIONS/MATTRESSES/ OVERLAYS

These are made of rows of air cells which inflate and deflate alternately or sequentially for a pre-set time period. This ensures that the pressure on any given point is changing

continually, so that the pressure is completely removed from that point for a short period of time. Consequently, pressure is then increased over the other areas. Care must be taken to ensure that the user can tolerate these pressures.

The sequence of inflation and deflation is controlled by a pump which is usually mains powered. The interval of inflation and deflation can also be controlled on some models.

As with the static air cushions, they are unlikely to provide a stable base, and users may therefore need to consider their method of transfer.

STATIC AIR CUSHIONS/MATTRESSES/ OVERLAYS

The pressure relieving properties of these cushions and overlays relies on the fact that they are air filled.

Regular maintenance is required to ensure the correct degree of inflation is maintained. It is essential to check the instructions as it is sometimes easy to over or under inflate.

Air is channelled within these cushions via air-filled balloons or pathways. The balloon type increases the surface area over which the pressure is distributed. The pathways help the air to circulate and to disperse the heat and moisture.

It should be remembered that air is unlikely to form a stable base and users may therefore need to consider their method of transfer.

FOAM CUSHIONS/ MATTRESSES/OVERLAYS

Single or varied density

The pressure relieving qualities of foam depend on its resilience. Foam cushions come in a variety of thicknesses, sizes and densities. Sometimes a cushion will be made up of a variety of different foam densities. The variations make allowances for differences in the weight of a user. Foam deteriorates if exposed to heat or ultra violet light and should be replaced every six to nine months. To prolong the life expectancy and pressure relieving properties of a foam mattress/cushion it should be turned regularly, on a weekly basis. A high density foam base can make the cushion last longer. Foam cushions tend to be lightweight and need no adjustments or maintenance; some can be cut and sculpted to order.

CROSS CUT/CONTOURED/ CONVOLUTED

Cross cut, contoured and convoluted foam allows greater conformity and can reduce friction and shear by allowing the surface to move with the user. They also provide greater ventilation for the skin than other

foams, as flat surfaced foam can act as an insulator and increase skin temperature.

Memory foam

Heat sensitive or conforming foam with slow memory release models the shape of the body better than standard foam. The slower conforming properties of this material may enhance stability.

GEL CUSHIONS /MATTRESSES/OVERLAYS

Gel cushions work on the principle that the weight of the user is distributed over the liquid or solid gel. The gel is able to conform to the body shape, so that the pressure is distributed over the whole area.

Gel is able to conduct heat away from the user so that the cushion is cool to sit on. Liquid gel cushions will leak when punctured and gel cushions can be very heavy unless they are combined with another, lighter material.

Care needs to be taken in relation to transfers since gel alone is unlikely to form a stable seating base. Users may therefore need to consider their method of transfer.

WATERCUSHIONS/ MATTRESSES/OVERLAYS

Water cushions can be less stable than gel (although more stable than air) and

so do not provide much postural support. They are heavy to move and, if punctured, the rapid loss of contents may cause a problem. They are not stable, especially when the user is transferring, unless the flow of water can be reduced by enclosing it in multiple compartments.

COMBINATION FILLING CUSHIONS/ MATTRESSES/OVERLAYS

Cushions/mattresses/overlays that contain a combination of pressure relieving materials are usually arranged to provide a degree of stability to the seating base. The combination of different materials may have the advantage of being lighter than one material on its own.

These cushions must be positioned correctly to achieve optimum pressure relief. A cover with a positioning guide, for example “this way up” or “this end to the back” may help.

Air and liquid

Air and liquid cushions have a compartment for air surrounded by small water-filled cells. When inflated, the support comes from the air compartments. The water provides a cool surface to sit on.

Gel cushions with a foam base

These cushions have a foam base with a gel pad on top. The foam allows for a greater degree of stability than gel alone. Also, given that the amount of gel in the cushion is small, they tend to be significantly lighter than gel alone.

Water and foam

Water and foam cushions are made of open foam filled with water. The foam not only helps to add stability but also helps the cushion to conform to the body shape. They are cold to sit on and can therefore reduce skin temperature. However, remember that the foam will still deteriorate so that these cushions have quite a short life span.

Cushions with aperture

These cushions may be made of water, gel, memory foam or any combination of the above. They are designed to provide relief on a commode, WC or bath hoist seat.

ADVICE FOR PEOPLE WHO NEED PRESSURE RELIEF WHILST SITTING IN AN ARMCHAIR

CHAIRS WITH INTEGRAL PRESSURE RELIEF CUSHIONS

The integral pressure relief cushioning on these chairs is either on the seat base only or on the seat base and backrest. This is an alternative to adding pressure relief cushions to an existing armchair. Adding extra cushions changes the seat height and reduces the height of the armrests or reduces the depth of the chair. The position of the user is not compromised in a chair with integral pressure relief and there is less

risk that the cushion will be the incorrect size, wrongly positioned or will slip.

USING PRESSURE RELIEF CUSHIONS IN ARMCHAIRS

Most pressure relief cushions are designed to work best when placed on a firm, level wheelchair seat.

When placed on a soft chair cushion they will lose some of their pressure relieving properties, as a person changes position in relation to the backrests and armrest height. Altering the surface of the armchair may also affect the ability of a user to get in and out of the chair.

TYPES OF BEDS WITH PRESSURE RELIEVING FEATURES

LATERAL TILTING BEDS AND DEVICES

Lateral tilting beds

These beds turn the user from side to side, eliminating the need for turning by carers. They provide pressure relief and assist in postural drainage, that is, drainage of fluid from the lungs. Turning can be programmed or transfer facilitated.

Lateral tilting turning units

These units can be used on top of a domestic bed. A longitudinally sectioned mattress is alternately inflated and deflated,

which has the effect of tilting the person from side to side.

The units can be controlled by the person or the carer using a handset or can be set to automatically turn at pre-programmed intervals.

LOW AIR LOSS BEDS AND MATTRESSES

These beds and mattresses have air sacs that support the user on a cushion of air. They work by increasing the surface area in contact with the skin, therefore reducing the pressure at a particular point. Air is gradually lost and continually replaced in response to the weight distribution and movement of the user.

They can be used with or without a cover/sheet; however plastic and rubber backed sheets should not be used as they prevent air flow.

Some of these beds are not solid enough for emergency resuscitation to be effective (CPR), so they may be supplied with emergency valves to deflate the mattress rapidly in an emergency.

FLUIDISATION BEDS

These beds are used mostly in hospital or care home settings rather than in the home. They are bath shaped. The

pressure relief they provide is the result of pumping a large volume of air through a mass of particles, for example silicone beads, to make the particles behave as a fluid. When the air pump is stopped the beads become solid and support the user for nursing purposes. A hoist may be needed for transfers on/off these beds.

WATER BEDS

These beds are mostly for hospital or care home settings rather than domestic use. They have a fluid interior which may have a foam perimeter helping to provide stability. The fluid is cold to lie one; they can therefore reduce skin temperature. However, the fluid makes the beds very heavy and care must be taken as to where they are sited. Since, it is difficult to transfer safely from a moving base, using a hoist is recommended.

JOINT PROTECTORS

Some people need to use joint protectors for comfort, protection and pressure relief.

These may come in the form of a pad which is tied around the elbow or heel or in the form of a bootie which encloses the toes. However, ensure that the fastenings do not exert pressure. They come in a variety of pressure relieving materials. The following types are available:

- fleece joint protectors;
- fleece bootie joint protectors;
- polyester fibre joint protectors;

- air filled or fluid filled joint protectors;
- foam joint protectors;
- pads for walking equipment and prostheses, for example to line the socket of a prosthetic limb to protect the skin.

ASSIST UK
 Redbank House
 4 St Chads Street
 Cheetham
 Manchester M8 8QA
 Tel: 0870 770 2866
 Fax: 0870 770 2867
 Textphone: 0870 770 5813
 Email: general.info@assist-uk.org
 Website: www.assist-uk.org

USEFUL ORGANISATIONS

British Standards Institution
 BSI House
 389 Chiswick High Road
 London
 W4 4AL
 Tel: 020 8996 9001
 Fax: 020 8996 7001
 Email: info@bsi.global.com
 Website: www.bsi-global.com

Medical and Healthcare Products
 Regulatory Agency
 Market Towers
 1 Nine Elms Lane
 London
 SW8 5NQ
 Tel: 020 7084 3143
 Fax: 020 7084 3209
 Textphone: 020 7084 3356
 Email: DTS@mhra.gsi.gov.uk
 Website: www.medical-devices.gov.uk

Continence Foundation
 307 Hatton Square
 16 Baldwin Gardens
 London EC1N 7RJ
 Tel: 020 7404 6875
 Fax: 020 7404 6875
 Textphone: 020 7831 9831
 Helpline: 0845 345 0165 9.30am-
 13.00pm
 Email: continence-help@dial.pipex.com
 Website: www.continence-foundation.org.uk

National Bed Federation
 Victoria House
 Victoria Street
 Taunton
 Somerset
 TA1 3FA
 Tel: 01823 368088
 Fax: 01823 350526
 Email info@bedfed.org.uk
 Website: www.bedfed.org.uk

Royal College of Nursing
 20 Cavendish Square
 London
 W1G 0RN

Tel: 020 7409 3333
Fax: 020 7647 3435
Website: www.rcn.org.uk

Tissue Viability Society
Glanville Centre
Salisbury District Hospital
Salisbury
Wiltshire
SP2 8BJ
Tel: 01722 429 057
Fax: 01722 425 263
Email: tv@dial.pipex.com
Website: www.tvs.org.uk

European Pressure Ulcer Advisory Panel
Wound Healing Institute
Dept of Dermatology
Churchill Hospital
Old Road
Headington
Oxford
OX3 7LJ
Tel: 01865 228264
Fax: 01865 228233
Email:
europeanpressureulceradvisepanel@compuserve.com

