THE PRINCIPLES & PRACTICES ASSOCIATED WITH CARING FOR THE SKIN OF A SPINAL CORD INJURED PATIENT
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Functions of the skin:

1. **PROTECTION**

The skin forms a protective covering around the body which has the ability to repair itself, should it be damaged.

Following spinal cord injury:-

Wound healing may be impaired due to a lower capillary blood pressure. The small blood vessels in the skin, which have the ability to dilate and constrict, may, below the level of the spinal core injury, lose this function. This mechanism allows maintenance of blood pressure. The loss of this mechanism can result in a worsening of the peripheral circulation.

Extremities. Such as the feet and ankles will also suffer poor venous return, particularly after prolonged periods sitting in a wheelchair, this will again impair circulation and blood supply.

2. **SENSORY INPUT**

The skin contains the end organs of the sensory nerves, which relay sensations of pain, touch and temperature back to the brain.

Following spinal cord injury:-

As a result of spinal cord injury sensory input will be non-existent below the level of a complete break in the spinal cord.

3. **ELIMINATION**

By secreting sweat, the skin acts as an excretory organ, removing waste products such as water and salts.

Following spinal cord injury:-

Production of sweat is under the influence of the Autonomic Nervous System. Depending on the level of the spinal cord lesion, normal sweating patterns may be altered.
4. **TEMPERATURE REGULATION**

Heat is lost from the body chiefly through skin.

Heat will either be radiated to the surrounding air, conducted into or through the clothing or lost by the evaporation of sweat.

Consequently heat loss is dependent on two factors both of which are under the control of the Autonomic Nervous System. The amount of blood circulating in the vessels of the skin, and the amount of sweat formed and the rate of its evaporation.

Conversely in cold weather, the blood vessels of the skin are contracted as a result of the vaso-constrictor nerves and muscles. Consequently blood flow to the extremities is restricted and heat loss from the skin by radiation or conduction is minimised.

Following spinal cord injury:-

**Spinal cord injury has a direct effect on the ability of the capillaries to dilate or constrict and may also affect normal patterns of sweating, thus temperature regulation ceases to be effective below the level of the lesion.**

Consequently Paraplegics and Tetraplegics will find that their bodies, below the level of the spinal cord injury, will adopt the temperature of the environment. They become Hypothermic very quickly and easily and will also overheat in very warm weather.

“Although Urinary Tract Infection and Pulmonary infection are the leading cause of death in patients who have suffered spinal cord injuries, the leading cause of extreme length of hospital stay in patients with cord deficit is unquestionably the pressure sore”.

**CONSTABLE J D, PIERCE D S & NICKEL V H – THE TOTAL CARE OF SPINAL CORD INJURIES” – 1977**

**The Pressure Sore; A Definition**

“A pressure sore is an area of damage to the skin and underlying tissues resulting from unrelieved pressure sufficient to prevent adequate circulation”.

**CONSTABLE J D, PIERCE D S & NICKEL V H – 2THE TOTAL CARE OF SPINAL CORD INJURIES” – 1977**
Causative Factor

Causative factors in the formation of pressure sores are many and complex (see Fig.1), however, in general the three most significant contributory factors are:-

- Pressure
- Friction
- Shearing forces

Prolonged pressure is the most significant factor.

There are additional risk factors for a spinal cord injured patient that increase the likelihood of skin breakdown compared with the general population.

- Due to disruption of innervation, sensation is, in most cases, absent below the level of the lesion. Consequently the normal warning signs that inform a person of the need to change position are absent. Spinal cord injured patients are unaware of the pain associated with local tissue ischaemia.

- Spinal cord injuries below the first lumbar vertebrae result in damage to the lower motor neurones (The neurone extending from the central nervous system to skeletal muscle). This will result in “flaccid” paralysis and an absence of all reflex activity below the level of the lesion, due to the disruption of the reflex arcs. Muscle wastage in these patients is severe.

Many will have a normal physique from the waist upwards and wasted, emaciated lower limbs. Bony prominences become more obvious and the skin and tissue over them more susceptible to damage and breakdown.

- Softening and soreness of the skin may occur as a result of incontinence of the Bladder and Bowel. Another possible cause of this may be excessive sweating, which is experienced by some spinal cord injured patients.

- Post-injury, there is a decrease in vaso-motor control, leading to diminished vascular tone and a decrease in capillary pressure. Therefore the intensity of pressure required to occlude the blood vessels of these patients is even less than that of normal individuals.

- Mild spasticity is beneficial in maintaining good circulation and preventing muscle wasting in paralysed limbs. However, excessive spasticity can create abrasions and shear stress damage to skin and deeper tissues, as limbs are rubbed against bedding, clothing and wheelchair parts.

Spasm may be the cause of trauma as it can, in severe cases, throw a patient from a wheelchair or bed, or cause legs to suddenly straighten, hitting nearby objects such as tables or nurses!
Trauma can be a constant problem for patients trying to achieve independence and lead a full and active life. Unco-operative legs are an extra hazard when performing transfers of just wheeling around in a chair.

- Patients who have had sores in the past are likely to have scar tissue, and the ability of scar tissue to withstand pressure is greatly reduced.

- General ill health may predispose these patients to skin damage, perhaps associated with urinary infection, sweating and pyrexia. Any general illness, which further immobilises the patient, will present further risk.

There are also other factors that may contribute to pressure sore development:

- Beliefs on the part of the patient or carers that pressure sores are an inevitable consequence of disability. They feel that nothing that is done will make any difference and that existence with pressure sores is the norm.

- In the initial stages immediately post-injury patients are totally dependent on Health Care personnel for their care. Rehabilitation aims to make them as independent as possible of carers, however some patients fail to attain this independence. They continue to see the responsibility of sore prevention as someone else’s job.

- The success of a rehabilitation programme depends to a degree on the drive of the patient, how they perceive themselves and the limitations they are prepared to put on their lives post-injury.

If the patient views their body image as poor, their future bleak, and their opportunities as nil, they are unlikely to achieve much. These patients are at risk of pressure sore development.

- Patients who have no one to assist them with their care or to voice an interest in their well being may feel very alone and lacking in self-worth. They become depressed and as a result, negligent in their care.

- Once a pressure sore has developed the patient is caught in a vicious downward spiral. For a patient whose self-image is already poor the insult and disfigurement caused by a pressure sore further damages self image. If the patient has not already developed the belief that skin breakdown is an inevitable part of disability they do so after further admissions.

- If the patient fails to adjust to his or her disability this can predispose to sore formation. Depression, denial and frustration are exhibited during the adjustment period. Frustration can cause hostility, anger and unco-operativeness.
• These patients may get sores to show that they are in charge and don’t have to conform to the rules of others. Denial extends to being inattentive to personal care.

GENERAL ADVICE

All patients are taught to check their skin at least every morning and evening for early signs of skin damage. They are advised that should the skin have any “red marks”, that do not quickly disappear, or any signs of skin “blistering” or “breakdown”, no matter how insignificant, that they relieve all pressure from that area until the problem resolves. Those that are unable to check their skin with the assistance of a mirror will need to direct someone to assist them with this.

Despite the advent of sophisticated, modern generation wound dressings, wheelchair cushions and pressure relieving mattresses, in all but exceptional cases, continued pressure on any damaged area of skin will result in further tissue necrosis and breakdown.

We accept that many people have busy lives, family responsibilities and jobs to hold down, however to neglect a damaged area of skin and to carry on with everyday life could ultimately lead to several weeks or even months of hospitalisation, which is false economy in the long run.

Any marks or breaks of the skin must be thoroughly investigated to ascertain their cause. Clothing with prominent seams, rivets on jeans, coins and other small articles left in pockets etc. can cause unusual and sometimes “baffling” marks to a persons skin.

Furthermore a wound, when healed leaves behind scar tissue, scar tissue is never as robust as healthy skin. The patient will be forever left with a vulnerable area.

Due to the lack of sensory input below the level of the lesion, those with spinal cord injuries are particularly vulnerable to skin damage by burning. Most heat sources are obvious but it is important to look out for those that are not, i.e. Car heaters, stainless steel sinks full of hot water, electric blankets, hot water bottles etc.

Extremities without sensation, that feel cold to the touch, are best kept warm with extra layers of clothing not by proximity to heat sources.
CARING FOR THE SKIN WHEN IT HAS BECOME DAMAGED

Damage to the skin is usually preventable, however there are times when skin damage may occur.

The following information aims to provide suggestions of how to manage skin damage.

Causes of Skin Damage

Listed below are some of the reasons why skin damage may occur:

- Feeling unwell
- Temperature
- Unsafe transfer
- New shoes
- Clothing
- Cushion/mattress that has become worn or damaged
- Toilet/shower/bath seat that has become worn or damaged
- Lying or sitting in the same position without relieving the pressure
- Weight increase or decrease

Degree of Skin Damage

The important thing to do is always act positively at the first sign of any change in skin condition.

Skin damage can vary in severity:

- It can be as simple as a red mark over a bony prominence, an abscess which may appear to develop overnight, or pressure sores which may begin as superficial areas but increase to deep infected sores.

SUGGESTION OF HOW TO MANAGE SKIN DAMAGE

IDENTIFY

1. What has caused the skin damage? What may have made it worse?

   Look at the possible suggestions on the previous page.

   Another tip is to go through the day. Identify what transfers have been done and the surfaces being sat on. Also think back to any change in routine, or health. This is not always an easy process but one that is important to do.
It is important to assess what the sore looks like and note the following:

(i) Where the damage is/area on the body.
(ii) When it was first noticed.
(iii) The cause, if known.
(iv) What the damage looks like:
  - Colour of the skin, or broken area.
  - Approximate depth; if the skin is broken.
  - Is the sore wet or dry?
  - Does the sore have any dead tissue in it? This may be a white creamy colour, or be black and quite hard.
  - Size, perhaps think of the size like a coin or fruit.
  - Temperature of surrounding skin.
  - Smell if any.
(v) Is there an increase in spasm?
(vi) Is the patient experiencing Dysreflexia?

**ACT**

1. Initiate a period of bedrest. The affected area must be pressure free and remain so. This assists uninterrupted circulation to the effected area. It also receives all the nutritious and oxygenated blood to allow the healing process to begin.

   Initiate a turning regime so that the patient lies on unaffected areas only.

2. Contact a professional to for advice about the most suitable way to treat the skin damage, i.e. district nurse, spinal outpatient nurse or general practitioner.

3. (i) If the skin has broken down it may need treating with a dressing material to clean the wound and encourage it to heal.

   (ii) Bedrest is essential, if a lying or sitting area is effected.

   (iii) A leg or heel sore will benefit from bed rest or being elevated to increase circulation to the limb. If elevating leg whilst sitting, be aware of change of pressure to the sacrum etc.

   (iv) It is important to make sure a high protein diet is taken. An open wound will loose nutrients in the fluid it produces. A good diet encourages and aids healing.
**PATIENT ADVICE**

1. If you live alone you may need help with your personal needs. You may need help with shopping and cooking. If you have no family or friends who can help your district nurse and or care manager should be able to advise.

   However, if you really need to get up, try and limit that time as much as possible. Increase frequency of pressure relief.

2. You may need advice re mattressing and cushioning, mattressing whilst on bedrest and to prevent further complications, cushioning as ongoing protection. You may need to replace toilet seats or take a look at shower and or bath seats.

   You may seek advice from Outpatient Therapists on 01296 315829 re seating and posture or pressure study/tissue viability. Your district nurse and Spinal Outpatient Services will be able to advise re mattressing.

Key Words:  Act Positively  
Identify  
Act  
Organise
Treatment/Advice Given:

When to be Reviewed: