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Promoting Evidence-Based Nursing Practice:
Pressure ulcer prevention and management: *Choosing a pressure redistributing device*

Introduction

Pressure ulcers can occur in any setting, including hospitals, residential care facilities and the home. Living with a pressure ulcer is often a distressing experience for the person concerned. Not withstanding the pain experienced by the client, the financial cost to the clients and their families is significant. In the health system, the average cost associated with managing one pressure ulcer has been estimated to be $61,000 (Murray 2001). Prevention of pressure ulcers has been the aim of nursing care provision for the last 100 years, however, more recently prevention and management of pressure ulcers is best managed using an interdisciplinary approach. Strategies to prevent or manage pressure ulcers are aimed at improving the skin's ability to tolerate pressure, removing the pressure or reducing the pressure (JBI 1997). This paper will discuss the place of redistribution devices in prevention and management pressure related tissue damage.

Risk assessment

Prior to choosing a device a risk assessment is undertaken in consultation with the client. A formal risk assessment tool can be valuable in assisting the health care professional to determine a client's potential for pressure damage (Maklebust & Sieggreen 1996). Risk assessment tools are comprised of a number of extrinsic and intrinsic factors which are known to increase a person's susceptibility to pressure damage. These factors are graded according to severity on a numerical scale (Banks 1998). The score provides an indication of the degree of risk of pressure related tissue damage. Clients are assessed individually. The ability of each client's skin to tolerate pressure will vary. Risk will also vary over time as a client's condition changes. It is vital that the information obtained from a risk assessment is utilised to formulate an evidence based management plan. Identifying clients at risk of developing a pressure ulcer before tissue damage actually occurs is the goal of a risk assessment and management program (Calianno 2000). The degree of risk guides the nurse in choosing an appropriate pressure redistributing device.

Redistribution devices

There are many devices which can be used redistribute the body's weight in order to decrease pressure. Pressure redistributing devices can be broadly categorised as providing:

- Pressure reduction: These devices *reduce* the peak interface pressure between the body and the surface.
- Pressure relief: These devices *remove* pressure from the body or part of the body (Rithalia & Kenney).

Lack of evidence

There are many practices which are based on misconceptions and outdated practices. The following practices are still used in some settings. However, there is little evidence to support their use.

Sheepskins: These are a comfort device, not a pressure reducing device (Russell 2000). If sheepskins are used, natural fleece should be chosen (Collier 2000).

Ring cushions: These are not effective as pressure relief devices (JBI 1997). In some instances the cushion can actually cause pressure related tissue damage.

Gel booties: Provide little pressure relief (AWMA 2001).

Fluid filled gloves and bags: There is little evidence to support the use of these devices (Collier, 2000).

Massage: Massaging of bony prominences should be avoided and might even cause tissue damage (AWMA 2001).

Pressure redistributing devices eliminate the need to reposition clients: A device can reduce the frequency of repositioning. However, even when a pressure redistributing device is in use, clients still need to reposition themselves or be repositioned. The frequency of repositioning should be based on skin assessment (AWMA 2001). When a client has a pressure ulcer repositioning must continue to avoid further skin breakdown.

Evidenced based practice

Useful strategies that can assist to reduce shear and friction include:

Protective dressings: Thin hydrocolloids or transparent films can reduce friction (AWMA 2001).

Keep the bed head at the lowest elevation: Keeping the head of the bed at no more than 30^{o} reduces shear which results from sliding down the bed (AWMA 2001). Providing counter traction by slightly elevating the foot of the bed can also help prevent slipping down the bed.

Choosing a device

Devices vary considerably in their features, cost, reliability and effectiveness at redistributing pressure. An individual assessment in consultation with the client will assist in choosing the correct device. Whilst features of the device are important, comfort should be considered when choosing a device, as this can have a significant influence on acceptability to the client (Kenney & Rithalia 1999). Devices can be classified as, comfort aids; static overlays; static replacement mattresses; dynamic overlays; dynamic replacement mattresses, and specialty beds (Shipperley 2000, Carville 2001).

Comfort aids

These devices aid comfort but do little to redistribute pressure. These should only be used for clients who are at low risk of developing a pressure ulcer. Comfort aids are not suitable for clients with an existing pressure ulcer. Comfort aids such as sheepskins or underpads will also reduce the effectiveness of another device (eg dynamic overlay mattress) if placed between the mattress and the client (AWMA 2001).

Static overlays

These devices are usually air, foam or fibre filled. They are placed on top of an existing mattress. They do not have a pump and do not require electricity. Static overlays are indicated for clients at low to moderate risk of pressure related tissue damage (AWMA 2001). The effectiveness of these devices is dependent on their ability to deform and mould to the clients body shape, thereby transmitting high pressure to areas of low

pressure (Maklebust & Sieggreen 1996). A thick foam overlay (10cm) will provide better pressure redistribution than a thin foam overlay (5cm) (AWMA 2001). Support provided by foam overlays can reduce over time (Rithalia & Kenney 2000). Air filled devices must be checked to ensure they are inflated correctly.

Static replacement mattresses

These devices are similar to static overlays, except that they replace the existing mattress. A foam replacement mattress will provide greater pressure redistribution than a foam overlay (AWMA 2001). Static replacement mattresses can also be comprised of a combination of foam with gel or air inserts, or be water filled devices.

Dynamic overlays

These devices are usually air filled and are run by an electric pump (Carville 2001). Dynamic overlays are placed over an existing mattress. They are comprised of distinct cells which inflate and deflate cyclically. This results in periodic relief of pressure from localised areas of the body (AWMA 2001). The degree of pressure relief obtained is dependent on the thickness and configuration of the cells, the type and amount of covering material placed over the mattress, cycle time and air pressure within the mattress (Kenney & Rithalia 1999). A dynamic overlay with thick, cylindrical cells will provide greater pressure relief than a device with small 'bubble' cells (AWMA 2001). A dynamic overlay with cell diameters of 10cm or more can provide a significant reduction in pressure and is suitable for clients at moderate to high risk of pressure ulceration (AWMA 2001). A dynamic device is recommended for clients with existing pressure ulcers (Martin 2000).

Bottoming out

A mattress or chair cushion should not 'bottom out' (Murray 2001). This occurs when the client's body weight causes the bony prominence to sink to the bottom of the device (Kenney & Rithalia 1999). Many devices have a specified maximum body weight. The health care professional needs to be aware of this when assessing or recommending pressure redistributing devices. When using a pressure redistributing device (particularly a mattress overlay), sit the client up and assess under their bottom to ensure they do not 'bottom out'. A mattress may seem suitable when the client is lying down, but not be suitable when they are sitting.

Dynamic replacement mattresses

These devices work on the same principle as dynamic overlays. However they replace the existing mattress. They are comprised of large, cylindrical air filled cells driven by an electric pump. The cells inflate and deflate according to a pre-determined cycle to temporarily relieve pressure from localised areas of the body. Dynamic replacement mattresses are indicated for clients at high to very high risk of pressure ulceration (AWMA 2001). Whilst many devices inflate and deflate according to factory-set pressures, some advanced devices contain pressure sensors which vary the degree of inflation according to the client's weight, shape and position (Kenney & Rithalia 1999).

Specialty beds

These devices include:

Low air loss devices: These have a powerful fan that provides continuous air flow over the entire mattress surface (AWMA 2001). Rithalia & Kenney (2000) state that "low air loss is often used to describe any powered static air product". A true low air loss bed can produce very low tissue interface pressures and they are useful for persons at very high risk (AWMA 2001).

Air fluidised beds: These beds are comprised of a fabric 'bladder' sitting within a bath-shaped bed (Carville 2001). The bladder is filled with silicone beads or sand-like grains. Warmed air is pumped through the beads at high flow creating a 'dry floatation' system (AWMA 2001). This type of bed can achieve very low tissue interface pressures. However, as the client's body is two thirds submerged in the bed, it can make nursing tasks difficult (AWMA 2001).

Conclusion

Assessment of pressure ulcer risk forms part of a comprehensive assessment undertaken *with* the client. It is vital to include the client and their significant others in the prevention and management of pressure ulcers. Provision of contemporary information and individual assessment allows the client to participate in their care and make informed choices. Aside from the client's own preferences, choosing a device is based on clinical assessment, practical considerations and availability / financial factors (Clark & Fletcher 1999). The best client outcomes will be achieved when management is individually planned and contemporary, best practice interventions are implemented.

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