

PRODUCT FOCUS

Karomed armchairs and cushions in the prevention of pressure ulcers

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A pressure ulcer may be described as tissue necrosis caused by occlusion of the local blood supply which occurs at any part of the body where external pressure acts upon a bony prominence (Birchall, 1993). Pressure ulcers are associated with lying or sitting in the same position for long periods of time with inadequate provision of pressure-relieving or pressure-reducing support surfaces (Hibbs, 1988).

Despite pressure ulcer incidence being frequently attributed to seating (Lowry, 1989), there is a disproportionately low quantity of published literature on pressure ulcer aetiology which refers to seating as a major causative factor. Dealey et al (1991) found that suitable pressure-relieving/reducing seating surfaces are essential to the maintenance of skin integrity in the at-risk patient and that pressure ulcers can be reduced by the provision of this equipment.

ARMCHAIRS WITH INTEGRAL PRESSURE-REDUCING CUSHIONS

Current clinical practice suggests that early mobilization of patients can reduce the incidence of secondary pathology such as chest infections (Gebhardt and Bliss, 1994); however, as a consequence, some patients may be sat out of bed too early. If the patient is immobile, he/she may well be placed at risk from developing pressure ulcers (Barbanel et al, 1977) and this has necessitated the requirement for pressure-reducing seating to complement pressure-reducing mattresses (Young, 1997).

The provision of poor seating with inappropriate pressure-relieving equipment potentially places patients at a higher risk than if they were in bed with appropriate mattress provision (Gebhardt, 1987). Furthermore, allowing an acutely ill patient to sit for long periods of time in an armchair with few positional or pressure-reducing properties may often result in tissue damage, which is caused by the interaction of pressure, friction and shear forces (Jay, 1995).

Abstract

The clinician providing seating for patients who are unwell, who have poor functional ability or who are at risk of pressure sores, is faced with an increasing choice of products. Making the decision as to which product and associated features to choose can be a difficult task. This article describes the importance of suitable seating provision in patients who are at risk and outlines the Karomed range of armchairs.

Different sitting requirements exist for different types of patients. In general, any person forced to sit for long periods will require a chair with a pressure-reducing cushion, preferably one that is integral to the chair. The conditions associated with the need for armchair provision are shown in *Table 1*. Elderly people are known to be particularly at risk from pressure ulcer development as they suffer from multiple pathologies in addition to sitting for long periods.

Until recently, standard practice has been to provide adequate pressure relief within the armchair by adding either a pressure-relieving cushion or pillows. Unfortunately, this can alter the overall dimensions of the chair (Banks and Bridel, 1995) and in some instances increase the risk of the patient developing pressure ulcers (Collins, 2000).

However, in the last few years manufacturers have begun to respond to the need for armchairs with appropriate positional and pressure-reducing equipment by producing

Table 1. Conditions associated with the need for armchairs

People who are acutely ill (especially if they are sedated in any way)
People who are unable to alter their position independently within the chair
People with neurological deficit, as this may result in increased muscle tone leading to spasm
People with poor or altered skin sensation

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Karomed chairs all incorporate a positive lumbar support which promotes appropriate spinal extension. Alternatively, an inflatable adjustable lumbar support can be fitted when a variable degree of support is required. Extended easy-grip arms (which can also be padded) make it easy to rise from the chair.

armchairs which offer integral pressure-reducing cushions.

THE KAROMED RANGE OF ARMCHAIRS

Karomed has a range of chair types and sizes which are suitable for many different patient groups. The Winchester (*Figure 1*) and Lymington Fireside armchairs are both designed with a base which supports a separate pressure-reducing cushion. The chair frames are constructed from solid beech and the base is designed utilizing serpentine springs in a multiple 'S' shape placed flat across the chair. The springs are then covered in fibre upholstery.

While this method of upholstery is more costly than flat webbing, flat rubber or tension springing, unlike these methods it will not deteriorate, sag, or allow the user to sit on the bar of the chair frame. The chair base gives a firm, flat support to the cushion, which encourages the user to sit correctly with the buttocks towards the back of the chair and the thighs well supported.

Karomed chairs all incorporate a positive lumbar support which promotes appropriate spinal extension. Alternatively, an inflatable adjustable lumbar support can be fitted when a variable degree of support is required. Extended easy-grip arms (which can also be padded) make it easy to rise from the chair. The availability of side-wings increases comfort in users who may sleep for short periods in the armchair.



Figure 1. The Karomed Winchester Fireside armchair.

While the Winchester and Lymington Fireside armchairs are all similar in their design, each design caters for users with different physical dimensions. The Winchester Fireside armchair is designed to accommodate an average-sized adult while the Lymington Fireside armchair is designed to accommodate a smaller-framed user. However, both are available in different heights.

Both chairs are available with specialist features. The 'lateral loader' chairs incorporate armrests which fold down out of the way for use in the sideways transfer of the patient or when extra room is required during transfer. Both models of chair are available as 'wheelie chairs'. These chairs have a strengthened frame and incorporate castors with integral brakes. Footplates are also an option for when patients are being transported over greater distances. Housekeeper wheels can be added to any of the static chairs, which make them easy to transport when empty, from one ward to another.

The Winchester and Lymington Fireside armchairs offer flexibility in choice of pressure redistribution as there are four cushions which respond to different pressure ulcer risk categories. The Transcare cushion is designed for those who are at risk of pressure sore development; the Transflex is for those patients who are at low to medium risk; and the Transfoam cushion is for those users who are at medium to high risk.

However, most of the chairs purchased for hospital and residential settings incorporate the Transflo cushion. The Transflo cushion is designed for high- to very high-risk users and incorporates two fluid-filled sacs surrounded by heavy duty foam. The fluid is able to move between the two compartments, enabling the cushion to reprofile and match the body's shape automatically, distributing pressure over the widest surface area possible. This design encourages the patient to sit in a neutral pelvic tilt, with the majority of weight being taken by the buttocks and thighs. Clinical trials indicate that using a combination of the Transflo cushion and the Winchester Fireside armchair offers advanced pressure distribution and significantly reduces the incidence of pressure sores in a high-risk client group (Collins, 1999).

All of the cushions can be encapsulated in a waterproof infection control 'barrier' cover, which utilizes vapour permeable materials in its construction and which can be easily washed.

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In addition to the Winchester and Lymington Fireside armchairs, Karomed also manufactures riser/recliner armchairs with both single and dual motor actions. Retainer armchairs are also available for higher dependency requirements such as those occasionally experienced by carers of the confused patient.

FORMAL EVALUATIONS OF KAROMED ARMCHAIRS AND CUSHIONS

A number of evaluations have been carried out on the Karomed range of chairs and cushions in order to ascertain their suitability for use where patients are known to be at risk from developing pressure ulcers. Evaluations include bacteriology sampling, interface pressure evaluations (Rithalia, 1991), a comparative evaluation (Medical Devices Agency (MDA), 1998) and clinical controlled trials (Dealey et al, 1991; Collins, 1999).

Bacteriology tests were carried out on the barrier cushions at the Infection Advisory Unit, Burnley Healthcare Trust (Blackburn and Farrell, 1997). The tests investigated both the antibacterial qualities of the cushion, and the compatibility of cushion upholstery to hospital detergents and disinfectants. Bacteriology sampling took place at three stages: sampling of the cushion foam before the outer coating was bonded on to it; sampling of the cushion surface and outer covering after 3 months of use; sampling of cross-sections of the foam following 6 months of use. The conclusions indicated that the covers and valves of the barrier cushion were effective at preventing absorption of fluids and offered prohibition of bacterial growth. These tests also demonstrated that neither hospital detergent nor chlorine altered the integrity of the covers.

An MDA comparative evaluation compared several armchairs with integral pressure-reducing cushions against a standard hospital armchair (MDA, 1998). The results of this evaluation concluded that the Winchester Fireside armchair, used with the integral Transflo cushion, was able to offer much improved interface pressure readings (66.4 mmHg) when compared to the standard armchair (92.7 mmHg). The results of this evaluation support the findings of Rithalia (1991) who conducted an evaluation of interface pressures on the Transflo cushions and found that mean peak pressures were 49.8 mmHg on a vinyl covered cushion and 57 mmHg on a Draylon covered cushion.

Collins (1999) conducted a clinical controlled trial on the Winchester Fireside armchair with integral Transflo cushions in order to investigate their ability to reduce the incidence of pressure ulcer development in the elderly, acutely ill patient. Collins found that the Winchester Fireside armchair used with the integral Transflo cushion significantly increased the prevention of hospital-acquired pressure sores in a high-risk patient group when compared with a standard hospital armchair.

CONCLUSIONS

As the understanding of the clinical importance of suitable armchair design allied with integral pressure-reducing cushions increases, clinicians are more frequently searching for well designed, affordable armchairs which have undergone rigorous clinical evaluation. The range of Karomed armchairs and optional features continues to develop in response to the needs of the user. This is essential in an economic climate where the balance of quality and value for money determine purchase choice. **BJN**

KEY POINTS

- Poor seating can significantly contribute to pressure sore development.
- Both the dimensions of the armchair and the seat surface must be considered during the assessment.
- Suitable provision of an armchair with a pressure-reducing cushion will reduce pressure sore incidence.
- Armchairs with pressure-reducing and positioning qualities are increasingly available.

Banks S, Bridel J (1995) A descriptive evaluation of pressure-reducing cushions. *Br J Nurs* 4(13): 736-40

Barbanel JC, Jordan MM, Clark MO (1977) Incidence of pressure sores in the Greater Glasgow Health Board Area. *Lancet* 2: 548-50

Birchall L (1993) Making sense of pressure sore prediction calculators. *Nurs Times* 89(18): 34-7

Blackburn B, Farrell S (1997) *Report on Bacteriological Sampling on the Karomed Barrier Cushion Transflo Seating System*. Infection Advisory Unit, Burnley Health Care NHS Trust

Collins F (1999) The contribution made by an armchair with integral pressure-reducing cushion in the prevention of pressure sore incidence in the elderly, acutely ill patient. *J Tissue Viabil* 9(4): 133-7

Collins F (2000) Selecting the most appropriate armchair for patients. *J Wound Care* 9(2): 73-6

Dealey C, Earwaker T, Eden L (1991) Are your patients sitting comfortably? *J Tissue Viabil* 1(2): 36-9

Gebhardt K (1987) Pressure points. *Nurs Times* 15(83): 28

Gebhardt K, Bliss MR (1994) Preventing pressure sores in orthopaedic patients — is prolonged chair nursing detrimental? *J Tissue Viabil* 4(2): 51-4

Hibbs PJ (1988) Action against pressure sores. *Nurs Times* 84(13): 68-73

MDA (1998) *Armchairs with Special Features to Reduce Interface Pressure, Alternating Pressure Cushions (Mains Powered), and Supplementary Cushions. A Comparative Evaluation Special*. MDA, Surbiton, Surrey

Jay R (1995) Pressure and shear: their effects on support choice. *J Ostomy/Wound Management* 41: 36-45

Lowry M (1989) Are you sitting comfortably? Good seating requirements in a patient care setting. *Prof Nurse* December: 162-4

Rithalia SVS (1991) *Performance of High Seat Chair Cushions — Part 1*. Department of Orthopaedic Mechanics, University of Salford

Young T (1997) The Flo-tech range of pressure-reducing cushions. *Br J Nurs* 6(8): 455-9