

Pressure ulcers: the case for improving prevention and management in Australian health care settings

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Abstract

The causes of pressure ulcer development have been the subject of investigation for centuries. It is commonly accepted that the majority of pressure related tissue injuries (pressure ulcers) which are caused by unrelieved external pressure are preventable. In spite of this knowledge, the prevalence of pressure ulcers worldwide remains unacceptably high. Lack of nursing care, in particular, is still seen as one of the primary causes for their development. Pressure ulcers are increasingly used as an indicator of the quality of care.

Whilst pressure ulcer research in Australia is in its infancy, accumulated data indicate that pressure ulcers and their sequelae are a significant problem, the extent of which is not fully appreciated by government, institutions or clinicians. This failure to acknowledge the problem may be because pressure ulcers are not viewed in the same context as other acute or chronic diseases such as heart disease.

Despite this, clinical practice guidelines for pressure ulcers are gaining prominence in Australia in an endeavour to reduce pressure ulcer prevalence, morbidity, cost and litigation. Institutional risk management strategies for pressure ulcers are believed to contribute to improved patient outcomes. Both of these measures need to be evaluated to ensure that they do meet the needs of the consumer.

This paper briefly highlights the history of pressure ulcers, the extent of the problem in Australia and the need for improvement through education, risk management strategies and adoption of Australian clinical practice guidelines for their prevention.

Primary Intention 2001; 9(3):111-120.

Historical descriptions of pressure ulcers

Pressure ulcers are not a modern phenomenon¹⁻⁸. An Egyptian mummy dating from the Egyptian XXI dynasty shows evidence of large pressure ulcers, on both buttocks and shoulders, that have been covered with gazelle skin^{1,9}.

In 1749, Quesnay divided pressure ulcers into two groups; those caused by pressure and those by other diseases¹⁰. Brown-Sequard's studies of paralysed animals in 1852 showed that skin ulceration was not directly attributable to

neurological damage; skin did not ulcerate if pressure was relieved and that skin pressure and moisture were the main aetiological factors involved¹⁰⁻¹³.

Charcot, in 1879, proposed that nerve injury did release a neurotrophic factor leading to tissue necrosis. This theory prevailed virtually up until the time of World War II^{2,9,11,14} in spite of attempts by people like Marie and Roussy who, in 1914, argued that all debilitated patients, not just paraplegics, developed pressure ulcers. More importantly, they proposed that both prevention and treatment were feasible^{2,10,13}.

In the 1930s, Trumble and Landis, respectively, published their landmark research into the effects of prolonged pressure^{12,15,16} and blood flow and capillary thresholds within blood vessels^{4,5,17,18}. Both Koziak and Husain examined the effects of pressure and time-pressure relationships in the 1950s, confirming the existence of an inverse relationship between the amount of time and the amount of pressure required to

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produce irreversible tissue changes^{2-7, 19-21}. Dinsdale, in 1974, further proposed that friction be examined for its role in pressure ulcer development^{5, 7, 22}. Exton-Smith and Sherwin, in the 1960s, surmised that in the healthy individual the limits of tissue tolerance to pressure were not exceeded. Patients with impaired mobility, however, are highly susceptible to developing these ulcers and require frequent intermittent relief from pressure^{15, 23}.

Nursing research into pressure ulcers commenced in the 1960s^{24, 25} with investigations focussing on the geriatric population with the intent to identify risk factors and develop risk assessment tools^{14, 26-30}. Throughout the 1970s, '80s and '90s, additional areas of investigation have included multiple prevalence and incidence studies³¹⁻⁴², spinal cord injury-induced pressure ulcers^{36, 43-46}, preventative and treatment strategies⁴⁷⁻⁵⁰, cost factors^{1, 51-53}, measurements of pressure ulcer healing⁵⁴⁻⁵⁹, evaluations of support surfaces⁶⁰⁻⁶³, and nursing collaboration in the development and evaluation of clinical practice guidelines for managing pressure ulcers⁶⁴⁻⁶⁹.

Pressure ulcers have been known by a variety of terms such as bedsores, decubitus ulcers, ischaemic ulcers, pressure sores or pressure ulcers. Latterly the term pressure ulcer(s) has been promoted as it is thought to more accurately reflect the aetiology of pressure derived tissue degradation and the characteristics of the resulting lesion^{5-7, 14, 17, 19, 64, 70-73}. The Australian Wound Management Association (AWMA) supports the use of this term when describing alterations in skin and tissue integrity related to the effects of pressure⁷⁴.

Pressure ulcers in Australian health care settings

Prevalence and incidence

In Australia, epidemiological data on pressure ulcers is limited. The information that is available is fragmented and is held in isolation at either individual hospitals or State and Commonwealth Departments of Health [Australian Bureau of Statistics, personal communication, October 1999].

Prevalence refers to the number of patients with a disease or event at a given time and incidence refers to the number of new cases of a disease or event in a population during a specific period of time⁷⁵. Childs and Rimmington, in 1983 at the Caulfield and Alfred Hospitals, identified a point prevalence of 4.5 per cent⁷⁶; one of the first prevalence surveys of pressure ulcers in Australia. Studies undertaken in major Australian teaching and rural hospitals over the last 9 years in Brisbane, Sydney, Melbourne, Launceston and Perth

have identified the prevalence of pressure ulcers as being between 4.5-27 per cent [Grant S, Gold Coast Hospital, personal communication, July 1999]⁷⁷⁻⁸⁵.

Published and unpublished data put the prevalence of pressure ulcers in private hospitals at 2.5-12 per cent [Purdy H, St Andrew's War Memorial Hospital, personal communication, July 1999]^{86, 87}. Two reports exist on the prevalence of pressure ulcers in Australian nursing homes with a range of 3.4-5.4 per cent^{88, 89}. Point prevalence pressure ulcer data in the home care setting is not available⁷⁴. However, retrospective auditing of charts of home care patients in Western Australia has identified a prevalence of 8 per cent in 1996⁹⁰ and 6 per cent in 2000⁹¹. The authors have recently performed prevalence studies in five acute teaching hospitals using the same methodology, and have identified significantly higher prevalence ranges of 13-36 per cent [unpublished data].

The incidence of pressure ulcers in Australian health care facilities is largely unknown. An incidence of 5.4 per cent has been reported from a Melbourne intensive care unit⁹², 11 per cent in a Perth orthopaedic unit⁹³ and 6.5 per cent in a rural base hospital⁹⁴. An extensive audit of surgical cases has also been reported⁹⁴.

No data on the incidence and prevalence of pressure ulcers in either neonates or paediatric patients in Australia has been published that the authors are aware of. The New South Wales Health Department has established a committee to investigate the incidence and prevalence of pressure ulcers and develop policies for the prediction and prevention of pressure ulcers for both paediatric and adult populations [Manning W, Senior Analyst Quality Branch, NSW Health Department, personal communication, November 2001].

Patient demographics

It is beyond the scope of this paper to provide a critical analysis of Australian data in respect to age, gender, risk factors and location and number of ulcers found. No studies have reported statistically significant differences for gender as a risk factor. In respect to age, these studies have identified a trend between pressure ulcer development and people aged over 50 years. The authors have found, with statistical significance, that people over the age of 75 are more likely to develop one or more pressure ulcers [unpublished data].

Several studies have commented on the high number of people with two or more ulcers, with most ulcers being located on the heels, lumbo-sacral region and elbows. These ulcers have

predominantly been classified as Stage 1 or 2 with lesser numbers of Stage 3 and Stage 4 ulcers over recent years.

The number of hospital acquired ulcers forms a high proportion of ulcers found⁷⁶⁻⁸⁷. A number of studies have endeavoured to assess their patient populations' level of risk and associated risk factors using commonly known risk assessment tools or nurse judgement^{50, 77, 78, 85, 88, 93}.

Mortality

Prior to 1979 and the introduction of *International Classification of Diseases-9* (ICD) the Australian Bureau of Statistics (ABS) did not record any data specifically related to pressure ulcers; they were included under the ICD category of chronic ulcer of skin. In 1997/98, the ABS introduced the automated coding system (ACS), which allowed coding and recording of both the underlying cause of death as well as all other contributory causes listed on the death certificate [Australian Bureau of Statistics, personal communication, October 1999].

Pressure ulcers were cited as the underlying cause of Australian deaths in 54 cases (19 males and 35 females; total deaths 129,350) in 1997, and in 47 cases (18 males and 29 females; total deaths 127,202) in 1998. Pressure ulcers were also noted, on death certificates, to be a contributory cause of death in a further 181 cases in 1997 (79 males and 102 females) and 227 cases (104 males and 123 females) in 1998. In these cases, the underlying causes of deaths were predominantly diseases of the nervous, circulatory and respiratory systems and mental disorders. An analysis of Australian deaths in 1997/98 involving pressure ulcers, whether an underlying or contributory cause, by age and sex, is given in Table 1 [Australian Bureau of Statistics, personal communication, October 1999].

Table 1. Number of Australian deaths in 1997/98 involving pressure ulcers.

Age range (years)	Male deaths		Female deaths	
	1997	1998	1997	1998
15-24	1	0	0	0
25-44	2	4	3	2
45-54	3	0	0	0
55-64	6	3	4	1
65-74	13	11	16	10
75-84	42	68	41	65
85+	31	36	73	74
Totals	98	122	137	152

Cost

Porter and Cooter have estimated that a pressure ulcer will affect 60,000 people in Australia each year. They did not estimate the costs that these cases would incur⁹⁵. Data collection tools and databases to capture and record cost factors associated with episodes of pressure ulceration are not coordinated across the Australian health system. At best, they are *ad hoc* within individual institutions if indeed they are present at all [Medical Records Department, Sir Charles Gairdner Hospital, Perth, personal communication, October 1999].

In 1997, Woolridge conservatively estimated that pressure ulcers cost the Australian community \$350 million per annum⁹⁶. It is surmised that this cost includes extended hospital stays, surgical correction, nursing time and material resources.

Australian literature that specifically addresses the issue of cost and pressure ulcers is sparse. Two attempts to quantify hospital costs have been reported. In 1996, Davenport, at Knox Private Hospital, identified that the cost of 20 patients with pressure ulcers at Stage 2 or above, was \$11,172 for a 12 month period. Dressings and nursing time were the only factors considered in this calculation⁸⁶. Young, in 1997, reported that a Stage 5 (Torrance classification) pressure ulcer cost the Tasmanian health system \$61,230⁹⁷. Carville, in 1999, identified that the average cost of healing a pressure ulcer in the community was \$1096; one case cost \$10,388⁹⁸.

Opportunistic costs – those which arise as a result of a person with a pressure ulcer having an extended length of stay, thus preventing the use of a hospital bed for another patient – are unknown. Davenport, however, indicated in her study that there were 293 'step down days' incurred by the 20 patients with pressure ulcers. For those additional 293 days, the institution did not receive health funding to cover these additional patient costs. Consequently 'opportunistic costs' for those 293 days occurred as a result of reduced patient throughput and therefore reduced income for the institution⁸⁶.

Injury, particularly back injuries, to health care workers (from lifting and turning procedures in order to provide pressure relief) is an additional and underestimated factor which is difficult to quantify. In each Australian state, the various Work Safe and Work Cover agencies have different systems for sequestering, recording and tabulating this data [Carravick P, Director Occupational Health and Safety, Sir Charles Gairdner Hospital, Perth, personal communication, October 1999]⁹⁹.

The Victorian Work Cover Authority states that back injuries secondary to the lifting and manual handling of patients/residents are the most significant cause for 1000 new claims for compensation made by nurses each year. The Canberra Hospital's 'No Lifting' system introduced in January 1995 is reported to have reduced "time lost due to injury" from 250 weeks to 30 weeks per year. During this period, the average cost associated with back injury claims fell from \$25,000 to less than \$5,000⁹⁹. The overall costs associated with back injuries inclusive of sick leave, medications, physiotherapy, rehabilitation programmes and redeployment are not known [Carravick P, Director Occupational Health and Safety, Sir Charles Gairdner Hospital, Perth, personal communication, October 1999].

It is difficult to place a dollar value on altered lifestyles, quality of life, changing roles and relationship stress and financial burdens that are incurred by individuals or families when a pressure ulcer develops^{64, 100-102}. Direct and indirect costs associated with treatment, health services, morbidity and mortality, loss of productivity, sickness and carers' benefits as a result of pressure ulceration have not been formally recorded. The effect of multiple pathologies in conjunction with, or leading to, the development of pressure ulcers is also a confounding factor when estimating these costs¹⁰¹. Thus they are an unknown and probably highly underestimated cost to the Australian health system.

Litigious action in Australia between patients and health care facilities over the development of pressure ulcers is increasing. Successful actions in favour of the patient as the plaintiff have already been found, with one patient being awarded over \$630,000¹⁰³.

Management

Pressure ulcers jeopardise the general health of patients and increase their morbidity. In addition, they are frequently associated with connotations of neglect, mis-management, feelings of failure on behalf of the caregivers and tarnished reputations of health care facilities^{6, 8, 24, 104, 105}.

Pressure ulcer development is multifactorial; the primary variables being pressure, shearing forces and friction. People most at risk of developing pressure ulcers are the frail elderly, the immobile, the neurologically impaired, the critically ill and hospitalised patients in general^{7, 24, 32, 51, 73, 104, 106-111}.

As a result of Charcot's theory^{11, 14} and comments accredited to Nightingale^{11, 13} and by Harmer and Henderson¹¹², the care

of pressure ulcers has largely been seen as belonging to the domain of nursing or a reflection of poor nursing care^{6, 8, 9, 24, 51, 104, 112-116}.

Nurses need to dispense with the historical myths and the sense of blame and shame associated with pressure ulcers^{71, 112, 117, 118}. Quality nursing care is recognised as being one pivotal factor to preventing and minimising the effects of altered skin integrity^{1, 49, 72, 88, 119-125}.

A multidisciplinary approach to this problem should be advocated in all clinical settings; the benefits of which are well documented^{66, 70, 106, 126-128}. Members of the medical profession have identified the need to adopt a greater sense of responsibility for the occurrence of pressure ulcers in the acute and chronically ill person, not just those with spinal cord injuries^{108, 113}. Health departments and health institutions need to carefully reassess how best they can meet their obligations towards provision of a duty of care to their patients in respect to preventing pressure ulcers³.

Reduced staffing numbers, decreased nurse/patient ratios, increased patient acuity, lack of pressure redistributing devices and lifting and turning aids have been commonly cited as reasons for the continued high prevalence and incidence of pressure ulcers in Australia and overseas^{9, 40, 51, 66, 70, 78, 107, 129}. Nurses and other health professionals need to be more aware of their responsibilities in this area of patient care^{14, 32} and become more adept at reviewing and adopting research findings that support changes in clinical practice^{38, 107, 130, 131}.

Clinicians' knowledge

It has been demonstrated that many clinicians do not fully understand the aetiology, pathophysiology and management of pressure ulcers¹³¹⁻¹³⁷. The authors, on evaluating clinicians' knowledge of pressure ulcers, have found that junior doctors and nurses have a surprisingly low level of knowledge related to risk factors for pressure ulcers and the management of pressure ulcers.

Doctors and nurses have cited insufficient information on pressure ulcers in their undergraduate programmes and inadequate continuing education. An absence of clinical leadership and instruction at the bedside from their peers results in failure to identify patients at risk and to prevent or to manage patients with pressure ulcers. Clinicians have also demonstrated poor understanding of human and material resources available within their respective facilities.

Documentation

Documenting the events and outcomes of an episode of care is a legal requirement. Records should be comprehensive, accurate and legible. Information recorded should be relevant to the patients' current and future care. Health professionals who fail to record clinical observations, clinical actions and outcomes and patient explanations may be liable for negligent care^{138, 139}.

Pressure ulcer documentation should reflect aspects that relate to the patient, the pressure ulcer and the plan of care. Non-documentation of multiple factors inclusive of lack of nursing assessments/nursing care plans, turning schedules, doctors visits, orders or progress notes; treatment has been cited in overseas cases of successful litigation of malpractice related to pressure ulcers^{140, 141}.

The authors have found that approximately 81 per cent of 453 patients with pressure ulcers in their study had no documentation, in either the medical or nursing record, of the patients' level of risk for developing pressure ulcers, of the treatment and management strategies or of the healing progress of ulcers found. McGowan *et al.*⁷⁸ also found similar deficits. Relatively few health care facilities have protocols for pressure ulcer risk assessment that records a patient's level of risk; this then guides clinicians toward early interventional strategies if required⁷⁴.

Use of support surfaces

The benefits of repositioning the recumbent or seated individual to relieve point pressure, prevent pressure ulceration and aid the healing of established pressure ulcers in conjunction with support surfaces are well documented^{5, 9, 15, 48, 62, 71, 110, 113, 142-151}. The authors found that only 59 per cent of patients with pressure ulcers had a support surface in place; in many instances the type of surface in use was inappropriate or not recorded. Similar discrepancies have been described within other Australian studies^{77, 78, 81, 82, 85, 93}.

Risk management strategies

A continuous quality improvement process for pressure ulcers is recommended. This is because pressure ulcers are seen as a high-volume, high-risk problem^{65, 71, 74}.

The literature offers many examples of how health carers can assess and address this issue within their respective environments. Multidisciplinary working parties with specific outcome criteria are usually established to collect baseline information, undertake analysis and interpretation

of the data, develop and implement action plans and review processes.

Risk management strategies may encompass:

- Conducting retrospective medical record audits to establish a historical perspective if none exists.
- Obtaining patient demographics – age, disease process, ethnicity, length of stay, admission category.
- Listing methods used to identify and quantify patients at risk of developing pressure ulcers.
- Identifying associated risk factors.
- Conducting prevalence and incidence surveys to establish the number of patients with pressure ulcers.
- Adopting a classification system for staging pressure ulcers.
- Compiling an equipment inventory and documenting inappropriate use of equipment.
- Identifying pressure ulcer equipment to be purchased.
- Assessing the knowledge base and skill of clinicians involved in assessment, detection, prevention and management of pressure ulcers.
- Identifying current practices relating to prevention and treatment.
- Identifying the level of staff education provided^{65-67, 71, 74, 117, 152-154}.

Progressive risk management strategies have also included the appointment of tissue viability or wound care specialists and pressure ulcer committees. These key people assist with the identification of the extent of the problem, implementation of ensuing policies and changes in practices, and continuing education programmes^{127, 128, 153-157}.

Clinical practice guidelines

Clinical practice guidelines evolved in the 1980s in an attempt to reduce inappropriate clinical practices, reduce costs and improve patient outcomes through effective and efficient evidence based health care. They summarise for health carers the general principles of care and decision making processes for a specific health problem¹⁵⁸⁻¹⁶¹.

Pressure ulcer guidelines were first developed in the Netherlands in 1985¹⁶², the United States of America in 1989⁶⁵ and 1994^{67, 163} and Europe in 1998¹⁶⁴.

The AWMA formed a Pressure Ulcer Interest Subcommittee in 1996, primarily to develop and maintain clinical practice guidelines for the prediction and prevention of pressure

ulcers. These guidelines are now ready for circulation and adoption into clinical practice. The AWMA actively encourages and promotes the use of risk management strategies and the development and implementation of treatment policies in order to deal with this problem⁷⁴.

Discussion

In Australia there are relatively few reported studies in the literature about pressure ulcers. To date, published studies are mostly limited to the acute care clinical settings in major teaching hospitals [Grant S, Gold Coast Hospital, personal communication, July 1999; Purdy H, St Andrew's War Memorial Hospital, personal communication, July 1999]⁷⁶⁻⁸⁷, nursing homes^{88, 89} and rural settings^{83, 84}.

This low level of data collection on pressure ulcers in Australia contributes significantly to an overall lack of readily accessible information. Comparison of the data from these prevalence surveys is difficult because of the differing methodologies used as well as the differences within the clinical settings themselves. The main differences relate to the level of knowledge and education of surveyors, interrater reliability testing, patient recruitment, thoroughness of physical assessment, data collection tools and the classification system used to stage the ulcer [Grant S, Gold Coast Hospital, personal communication, July 1999; Purdy H, St Andrew's War Memorial Hospital, personal communication, July 1999]^{76-87, 90, 91, 165}.

It could also be proposed that this lack of data exists for a variety of other reasons, mainly:

- Under reporting of the existence of pressure ulcers across all clinical settings.
- Poor documentation by medical and nursing staff of existing pressure ulcers.
- Non standardised reporting mechanisms for recording the incidence and prevalence of pressure ulcers.
- Poor compliance with coding of pressure ulcers on patient discharge summaries.
- Lack of recognition of the value of available incidence and prevalence data at a national level.
- Lack of cross sectional data analysis of data currently collected by State or Commonwealth Departments of Health and the ABS on pressure ulcers [Medical Records Department, Sir Charles Gairdner Hospital, personal communication, October 1999; Carravick P, Director Occupational Health and Safety, Sir Charles Gairdner Hospital, Perth, personal communication, October 1999]^{74, 76}.

At present, pressure ulcers do not receive the same degree of attention as do other significant causes of death such as cancer and cardiac disease [Australian Bureau of Statistics, personal communication, October 1999]⁷⁸. The need to examine and correct the above deficits and collect and establish reliable databases is clear.

Support surfaces are commonly categorised according to the effect on the patient (clinical classification) or the physical characteristics of the surface and its ability to reduce or relieve pressure. The AWMA supports the Cochrane Collaboration's method of categorising devices as either 'constant low pressure' or 'alternating pressure' devices⁷⁴.

Health care facilities need to purchase replacement mattresses or advanced support surfaces relevant to their overall patient population's level of risk. The immobile patient with existing pressure ulcers, for instance, will require a different support surface from someone who is just 'at risk', but has no pressure ulcer¹⁴⁸. It is prudent management to have access to a range of devices from static overlays to specialty beds. Decision-making algorithms are available to assist clinicians to select support surfaces^{67, 71, 166}.

Pressure ulcer prevention policies and guidelines are gaining prominence in the face of rising costs, evidenced base care and litigation^{167, 168}. Health care organisations and clinicians have a responsibility and a role to play in developing pressure ulcer risk management strategies in order to reduce the suffering and demand for resources¹⁶⁹ caused by pressure ulcers. Staff should be informed and educated about any policy or practice changes. Institutional and administrative support of strategies to address the problem of pressure ulceration is critical to successful outcomes^{65, 71, 74, 154-156, 170, 171}.

The effectiveness of evidence based clinical practice guidelines on increasing practitioners' knowledge and changing clinical practices is subject to increasing scrutiny and evaluation^{149, 168, 172, 173}. Results of any audits can be benchmarked between internal units or similar external agencies to establish levels of best practice^{71, 74, 82, 85, 165, 174, 175}.

Retrospective and anecdotal evaluations of the American guidelines have reportedly demonstrated a decrease in the prevalence and incidence of pressure ulcers. Cost savings have also occurred, as well as a reduction in patient morbidity and mortality, pain and suffering^{119, 143, 176, 177}. Conversely, the Netherlands reported poor assimilation of their guidelines 6 and 15 years after their introduction. It is acknowledged that the existence of these guidelines were not widely publicised

162, 178-179. The Joanna Briggs Institute's evaluation of their guidelines in three Australian hospitals did not identify any significant change in prevalence⁸². The European guidelines have yet to be evaluated.

The authors in a multicentre study of 10 Australian hospitals are currently examining whether or not AWMA's guidelines, in combination with an education programme, are effective in reducing the prevalence of pressure ulcers, and secondly, whether they influence the clinicians' knowledge and behaviour in relation to pressure ulcers.

Conclusion

Pressure ulcers are thought to occur at unacceptable levels within Australian health care settings, despite the fact that they are a preventable cause of injury. Allocation of resources to detect, prevent and treat pressure ulcers is, in general, a low priority. Pressure ulcers, however, are increasingly being used as key quality indicators of patient care nationally and internationally. That they have been and remain debilitating, painful and costly encumbrances to patients and the Australian health care system alike, and is an issue that requires urgent redress.

Whilst it is generally acknowledged that our understanding of the epidemiology, aetiology, prevention and treatment of pressure ulcers has increased, the anticipated decrease in the prevalence and incidence of pressure ulcers has not occurred.

The development of the AWMA's *Guidelines for the Prediction and Prevention of Pressure Ulcers*, provides all health care providers at federal, state and institutional level with an opportunity to re-examine their policies and procedures for identifying patients at risk. Clinicians also have a responsibility to be aware of, and familiarise themselves with, these guidelines which are there to promote evidence based care for the prediction and prevention of pressure ulcers.

The anticipated benefits to patients, clinicians and health care facilities in adopting these guidelines are improved patient care outcomes, increased patient satisfaction, reduced costs and length of stay, and improved collaborative practice between health professionals.

References

1. Young JB & Dobranski S. Pressure sores. Epidemiology and current management concepts. *Drugs & Ageing* 1992; **2**(1):42-57.
2. Rodriguez GP & Pase Murphy K. Current trends in pressure ulcer research: critical reviews(tm). *Phys & Rehab Med* 1996; **8**(1&2):1-18.
3. Torrance C & Maylor M. Pressure sore survey. *J Wound Care* 1999; **8**(1pt 1):27-30.
4. Feeder JA. Prevention and Management of Pressure Ulcers. In: McCullough JM, Kloth LC & Feeder JA (Eds). *Wound Healing: Alternatives in Management*. Philadelphia: FA Davis, 1995:186-208.
5. Reuler JB & Cooney GT. The pressure sore: pathophysiology and principles of management. *Ann Int Medicine* 1981; **94**:661-666.
6. Goode PS & Allman RM. The prevention and management of pressure ulcers. *Med Clin Nth Am* 1989; **73**(6):1511-1524.
7. Maklebust JM. Pressure ulcers: aetiology and prevention. *Nur Clin Nth Am* 1987; **22**(2):359-377.
8. Provo B, Piacentine L & Dean-Baar S. Practice versus knowledge when it comes to pressure ulcer prevention. *JWOCN* 1977; **24**:265-269.
9. Torrance C. *Pressure Sores: Aetiology, Treatment and Prevention*. Beckenham: Coom Helm, 1983.
10. Vasconez LO, Schneider WJ & Jurkiewicz MJ. Pressure sores. In: Ravitch M (ed). *Current problems in surgery* 1977; **14**(4):1-62.
11. Bennett G, Moody M & Camping J. *Wound Care for Health Professionals*. London: Chapman Hall, 1995; 68-85.
12. Scales JT. Pathogenesis of Pressure Sores. In: Bader DL (Ed). *Pressure Sores Clinical Practice and Scientific Approach*. London: MacMillan Press Ltd, 1990:15-26.
13. Khoo C & Bailey BN. *Reconstructive Surgery*. In: Bader DL (Ed). *Pressure Sores Clinical Practice and Scientific Approach*. London: MacMillan Press Ltd, 1990.
14. Dealey C. *The Care of Wounds — A Guide for Nurses*. London: Blackwell, 1994.
15. Exton-Smith AM & Sherwin RW. The prevention of pressure sores — significance of spontaneous bodily movements. *The Lancet* 1961; **18**:1124-1126.
16. Trumble HC. The skin tolerance for pressure and pressure sores. *MJA* 1930; **2**:724.
17. Bryant RA, Shannon ML, Pieper B, Braden BJ & Morris DJ. *Pressure Ulcers*. In: Bryant RA. *Acute and Chronic Wounds — Nursing Management*. St Louis: Mosby, 1992:105-163.
18. Landis E. Micro-injection studies of capillary blood pressure in human skin. *Heart* 1929; **15**:209-228.
19. Koziak M, Kubicek WG, Olson M, Danz JN & Kollke FJ. Evaluation of pressure as a factor in the production of ischial ulcers. *Arch Phys Med Rehab* 1958; **39**:623-629.
20. Koziak M. Etiology of decubitus ulcers. *Arch Phys Med Rehabil* 1961; **42**:19-29.
21. Husain T. An experimental study of some pressure effects on tissues with reference to the bedsore problem. *J Pathol Bacteriol* 1953; **66**:347-358.
22. Dinsdale SM. Decubitus ulcers: role of pressure and friction in causation. *Arch Phys Med Rehabil* 1974; **55**:147-152.
23. Exton-Smith AM, Overstall PW, Wedgewood J & Wallace G. Use of the 'airwave system' to prevent pressure sores in hospital. *The Lancet* 1982; **1**:1288-1290.
24. Pang SM & Wong TK. Predicting pressure sore risk with the Norton, Braden and Waterlow Scales in a Hong Kong rehabilitation hospital. *Nurs Res* 1998; **47**(3):147-153.
25. Stotts NA. Predicting pressure ulcer development in surgical patients. *Heart & Lung* 1988; **7**(6 pt 1):641-647.
26. Gosnell DJ. An assessment tool to identify pressure sores. *Nurs Res* 1973; **22**:55.
27. Goldstone LA & Goldstone J. The Norton Score: an early warning of pressure sores. *J Adv Nurs* 1982; **7**:419-426.
28. Waterlow JA. A risk assessment card. *Nurs Times* 1985; **21**(48):49-55.
29. Bergstrom N. A clinical trial of the Braden Scale for predicting pressure sore risk. *Nur Clin Nth Am* 1987; **22**(2):417-428.

30. Waterlow JA. The Norton Score and pressure prevention: Critique 1. *Journal of Wound Care* 1996; **5(2)**:93-96.
31. Gerson LW. The incidence of pressure sores in active treatment hospitals. In: *J Nurs Studies* 1975; **12(4)**:201-204.
32. Gosnell DJ. Assessment and evaluation of pressure sores. *Nur Clin Nth Am* 1987; **22(2)**:399-416.
33. Nyquist R & Hawthorn P. The prevalence pressure sores within an Area Health Authority. *J Adv Nurs* 1987; **12(2)**:183-187.
34. Meehan M. Multi-site pressure ulcer prevalence survey. *Decubitus* 1990; **3(4)**:14-17.
35. Dealey C. The size of the pressure sore problem in a teaching hospital. *J Adv Nur* 1991; **16**:663-670.
36. O'Dea K. Prevalence of pressure damage in hospital patients in the UK. *J Wound Care* 1993; **2(4)**:221-225.
37. Meehan M. National pressure ulcer prevalence survey. *Adv Wound Care* 1994; **7(3)**:27-38.
38. Hallet A. Managing pressure sores in the community. *J Wound Care* 1996; **5(3)**:105-107.
39. Bergstrom N, Braden B, Kemp M, Champagne M & Ruby E. Multi-site study of the incidence of pressure ulcers and the relationship between risk level, demographic characteristics, diagnoses and prescription of preventive interventions. *JAGS* 1996; **44**:22-30.
40. Sacharok C & Drew J. Use of a total quality management model to reduce pressure ulcer prevalence in the acute care setting. *JWOCN* 1998; **25**:88-92.
41. Shue RM & Langemo DK. Pressure ulcer prevalence and incidence and a modification of the Braden Scale for a rehabilitation unit. *JWOCN* 1988; **25**:36-43.
42. Scott EM. Hospital-acquired pressure sores in surgical patients. *J Wound Care* 1998; **7(2)**:76-79.
43. Richardson RR & Meyer PRJ. Prevalence and incidence of pressure sores in acute spinal injuries. *Paraplegia* 1981; **19**:235-247.
44. Gunnewicht BR. Pressure sores in patients with acute spinal injury. *J Wound Care* 1995; **4(10)**:452-452.
45. Gunnewicht BR. Management of pressure sores in a spinal injuries unit. *J Wound Care* 1996; **5(1)**:36-39.
46. Graham A. The development of pressure sores in patients with spinal cord injury. *J Wound Care* 1997; **6(8)**:393-395.
47. Boettger JE. Effects of a pressure reduction mattress and staff education on the incidence of nosocomial pressure ulcers. *JWOCN* 1997; **24**:19-25.
48. Conlin Shaw MM. Pressure ulcers in older persons: a preventive approach. *Wound Repair and Regeneration* 1996; **July-Sept**: 316-320.
49. Pieper B, Sugrue M, Weiland M, Sprague K & Heimann C. Presence of pressure ulcer prevention methods used among patients considered at risk versus those considered not at risk. *JWCON* 1997; **24(4)**:191-199.
50. Hoskins A & Ramstadius B. Risk assessment for pressure sores: a comparison of two tools. *Prim Intent* 1998; **6(4)**:160-166.
51. Hibbs P. The economics of pressure sore prevention. In: Bader DL (ed). *Pressure sores clinical practice and scientific approach*. London: MacMillan Press Ltd, 1990; 40-41.
52. Erwin-Toth P. Cost effective pressure ulcer management in extended care. *Ostomy/Wound Management* 1995; **41(7A Suppl)**:645S-685S.
53. Xakellis GC & Frantz RA. The cost of healing pressure ulcers across multiple health care settings. *Adv Wound Care* 1996; **9(6)**:18-22.
54. Stotts NA *et al.* from the National Pressure Ulcer Advisory Panel. The Pressure Ulcer Scale for Healing. Proceedings 8th Annual Meeting Wound Healing Society, Utah, June 1998:17-20.
55. Bates-Jensen BM, Vredevoe DL & Brecht ML. Validity and reliability of the pressure sore status tool. *Decubitus* 1992; **5(6)**:20-28.
56. Bates-Jensen BM. The pressure sore status tool. *Topics in geriatric rehabilitation* 1994; **9(4)**:17-34.
57. Bates-Jensen BM. Indices for pressure ulcer assessment: the pressure sore status tool. *Adv Wound Care* 1995; **8(4)**:30-33.
58. Ferrell BA *et al.* The Sessing Scale for assessment of pressure ulcer healing. *Adv Wound Care* 1997; **10(5)**:78-80.
59. Ferrell BA. The Sessing Scale. *JAGS* 1995; **43(1)**:37-40.
60. Aronovitch SA. The use of an assessment tool in managing placement on pressure relief surfaces. *Ostomy/Wound Management* 1993; **39(4)**:18-32.
61. Pase M. Pressure relief devices, risk factors and development of pressure ulcer in elderly patients with limited mobility. *Adv Wound Care* 1994; **7**:38-42.
62. Santy J. Hospital mattresses and pressure sore prevention. *J Wound Care* 1995; **4(7)**:329-332.
63. Cuddigan J & Frantz RA. Pressure ulcer research: pressure ulcer treatment. A monograph from the National Pressure Ulcer Advisory Panel. *Adv Wound Care* 1998; **11(6)**:294-300.
64. National Pressure Ulcer Advisory Panel. Pressure ulcers: incidence, economics, risk assessment. Consensus development conference statement. *Decubitus* 1989; **2**:24-28.
65. Bergstrom N, Allman RM, Carlson CE *et al.* Pressure Ulcers in Adults: Prediction and Prevention (Clinical Practice Guideline No 3). AHCPR Publication No. 92-0047. Rockville, MD: Agency for Health Care Policy and Research, Public Health Service, US Department of Health and Human Services, 1992.
66. Moody M, Nicols R, Robertson J & Swain I. Developing a Pressure Sore Prevention and Management Policy. In: Harding KC, Leaper DL & Turner TD (Eds). *Proceedings 1st European Wound Management Association*. London: Macmillan Magazines, 1992:157-158.
67. Bergstrom N, Allman R, Alvarez O *et al.* Treatment of Pressure Ulcers (Clinical Practice Guidelines No 15). AHCPR No. 95-0652. Rockville, MD: Agency for Health Care Policy and Research, Public Health Service, US Department of Health and Human Services, 1994.
68. Joanna Briggs Institute for Evidence Based Nursing. Pressure Sores Part 1: Prevention of Pressure Related Damage. *Best Practice* 1(1):1-6, 1997(a).
69. Joanna Briggs Institute for Evidence Based Nursing. Pressure Sores Part 2: Management of Pressure Related Damage. *Best Practice* 1(2):1-6, 1997(b).
70. Anderson RM. An Investigation into Causation, Prevalence and Management of Pressure Ulcers in Hospital and Community Patients. In: Harding KG, Leaper DJ & Turner TD (Eds). *Proceedings of the 1st European Conference on Advances in Wound Management*. London: Macmillan Magazines, 1992:35-41.
71. Makelbust J & Sieggreen M (Eds). *Pressure Ulcers – Guidelines for Prevention and Nursing Management* (2nd ed). Pennsylvania: Springhouse, 1996.
72. Alterescue V & Alterescue KB. Pressure ulcers: assessment and treatment. *Ortho Nurs* 1992; **11(2)**:37-49.
73. Krasner D. Pressure Ulcers an Overview. In: Krasner D (Ed). *Chronic Wound Care: A Clinical Source Book for Health Professionals*. Philadelphia: King of Prussia Health Management Publications Inc., 1990:74-77.
74. Australian Wound Management Association. *Clinical Practice Guidelines for the Prediction and Prevention of Pressure Ulcers*; 2001: Draft 8. In Press.
75. Polit DF & Hungler BP. *Nursing Research: Principles and Methods* (4th ed). Philadelphia: JB Lippincott Co, 1991:653-57.
76. Childs L & Rimmington PM. Decubitus ulcers: a survey picture at two hospitals. *ANJ* 1983; **13(1)**:35, 52.
77. Martin RD & Keenan AM. The incidence and management of pressure ulcers in a metropolitan teaching hospital. *Prim Intent* 1994; **(2)**:31-34

78. McGowan S, Hensley L & Maddocks J. Monitoring the occurrence of pressure ulcers in a teaching hospital: a quality improvement project. *Prim Intent* 1996; **4(1)**:9-16.
79. Wright R & Tiziani A. Pressure ulcer point prevalence study. *Prim Intent* 1996; **4(1)**:18-23.
80. Magazinovic N. Monitoring pressure sores – a hospital based audit. Proceedings: Australian Wound Management Associations Conference *Breaking Down the Barriers*; Feb 21-23; Sydney, 1996.
81. Morey P & Porock D. A quality improvement survey of pressure ulcers at a tertiary teaching hospital. *Prim Intent* 1997; **5(2)**:18-25.
82. Pearson A, Weichula R, Mitchell A & Hodgkinson B. Promoting best practice in the treatment and prevention of pressure ulcers. Evaluation Cycle Report N1. Joanna Briggs Institute for Evidence Based Nursing and Midwifery, 2000 In press (National Library of Australia Cataloguing-in-publication data ISBN number: 0 9577796 4 x).
83. Pearson A, Francis K, Hodgkinson B & Curry G. Prevalence and treatment of pressure ulcers in Northern New South Wales. *Aust J Rural Health* 2000; **8**:103-110.
84. Charlier C. Prevalence, incidence and risk: a study of pressure ulcers at a rural base hospital. *Prim Intent* 2001; **9(1)**:12-21.
85. Young C & Stoker F. A four year review of pressure ulcers prevalence. *Prim Intent* 2000; **8(1)**:6-12.
86. Davenport J. Let's take the pressure off. *J of Stomaltherapy Aust* 1999; **17(2)**:5-9.
87. Eves S. Prevalence of pressure ulcers in private hospital. *Prim Intent* 2000; **8(1)**:14-21.
88. Madsen W & Leonard M. Monitoring pressure ulcers in nursing homes. *J Quality Clin Prac* 1997; **17**:209-213.
89. Rice J. Where are the pressure ulcers? Poster presentation: Australian Wound Management Associations Conference *Breaking Down the Barriers*; Feb 21-23; Sydney, 1996.
90. Carville K & Lewin G. Caring in the community: a wound prevalence survey. *Prim Intent* 1998; **6(2)**:54-62.
91. Carville K. Wound Prevalence Survey: Department of Veterans Affairs Client Report. Silver Chain Nursing Association 2000.
92. Tobias T & Breakwell C. Predictors of pressure sore development in an intensive care unit. 20th Australian and New Zealand Scientific Meeting on Intensive Care CACCN & ANZICS, Brisbane, 1995.
93. Young J, Morey P, Browne R & Nilolette S. A study on the incidence of pressure ulcers in the acute orthopaedic setting. *Prim Intent* 2000; **8(4)**:142-147.
94. Webster C. A pressure care survey in the operating theatres. *Aus Clin Rev* 1993; **13**:29-37.
95. Porter A & Cooter R. Surgical management of pressure ulcers. *Prim Intent* 1999; **7(4)**:151-155.
96. Woolridge M. Address at the Launch of the Australian Medical Sheepskin, St Vincent's Hospital, Melbourne, July 2nd, 1997.
97. Young C. What cost a pressure ulcer? *Prim Intent* 1997; **5(4)**:24-31.
98. Carville K. The cost of wound management in the community report. Silver Chain Nursing Association 1999. In press.
99. Dower T. Lighten the load. *Collegian* 1999; **6(3)**:Lifescape Supplement:1S-4S.
100. Franks PJ. Health Economics: The Cost to Nations. In: Morison MJ (Ed). *The Prevention and Treatment of Pressure Ulcers*. London: Mosby, 2001:47-54.
101. Franks PJ & Collier ME. Quality of Life: The Cost to the Individual. In: Morison MJ (Ed). *The Prevention and Treatment of Pressure Ulcers*. London: Mosby, 2001:37-45.
102. Baharestani MM. The lived experience of wives caring for their frail home-bound, elderly husbands with pressure ulcers. *Adv Wound Care* 1994; **7(3)**:40-52.
103. Dean A. Patient's hospital care inferior. In: *Sydney Morning Herald*, August 25th 1994.
104. Dealey C. Monitoring the pressure sore problem in a teaching hospital. *J Adv Nur* 1994; **20**:652-659.
105. Morison MJ. Introduction: Issues and Paradoxes. In: Morison MJ (Ed). *The Prevention and Treatment of Pressure Ulcers*. London: Mosby, 2001:1-5.
106. Colburn L. Early Intervention for the Prevention of Pressure Ulcers. In: Krasner D (Ed). *Chronic Wound Care: A Clinical Source book for Health Professionals*. Philadelphia: King of Prussia Health Management Publications Inc., 1990:78-88.
107. Livesley B. Pressure Sores: Clinical Aspects of their Cost, Causation and Prevention. In: Bader DL (Ed). *Pressure Sores Clinical Practice and Scientific Approach*. London: MacMillan Press Ltd, 1990:27-34.
108. Pase MN & Hoffman R. Selection and use of pressure ulcer risk assessment tools and treatment protocols in extended care facilities in the southwest. *JWOCN* 1998; **25**:44-50.
109. Hitch S. NHS Executive Nursing Directorate – strategy for major clinical guidelines – prevention and management of pressure sores, a literature review. *J Tissue Viability* 1995; **5(1)**:3-24.
110. Longe RL. Current concepts in clinical therapeutics: pressure sores. *Clin Pharm* 1986; **5**:669-681.
111. Morison MJ. *A Colour Guide to the Nursing Management of Wounds*. London: Mosby, 1992.
112. Cooper D. Pressure ulcers: unpublished research 1976-1986. Process to outcome. *NCNA* 1987; **22(2)**:475-492.
113. Editorial: preventing pressure sores. *The Lancet* 1990; **2**:1311-1312.
114. Moore D. The buck stops with you. *Nurs Times* 1987; **83(39)**:54-55.
115. Anthony D & Dealey C. The pressure sore debate. *Nurs Times* 1989; **85(26)**:74-75.
116. North West Thames Regional Advisory Committee. Guidelines for preventing pressure sores. *Nurs Standard* 1989; **4(10)**:26-29.
117. Shannon ML. Five famous fallacies about pressure sores. *Nurse* 1984; **84(14)**:34.
118. Meehan M. Beyond the pressure ulcer blame game: reflections on the future. *Ostomy Wound Management* 2000; **46(5)**:46-52.
119. Doughty D. Management of pressure sores. *JET* 1988; **15(1)**:39-44.
120. Colburn L. Preventing pressure ulcers: how to recognise and care for patients at risk. *Nursing* **90**:60-63.
121. Day A & Leonard F. Seeking quality care for patients with pressure ulcers. *Decubitus* 1993; **6(1)**:32-43.
122. Flanagan M. Wound Care Education Leaflet 1995; Vol 3: No 4. In: Flanagan M & Marks-Maran D (Eds). *Wound Management*. London: Churchill Livingstone, 1997.
123. Porock D & Morey P. Quality data for quality projects: ensuring reliability and validity in pressure ulcer surveillance. *Prim Intent* 1997; **5(1)**:16-19.
124. Ek AC. Pressure Sores as an Indicator of Quality of Care. In: Harding KG, Leaper DJ & Turner TD (Eds). *Proceedings of the 4th European Conference on Advances in Wound Management* London: Macmillan Magazines, 1994:102-103.
125. Makelbust JA. Pressure ulcer staging systems. *Adv Wound Care* 1995; **8(4)**:28-11,28-13.
126. Barker Z. Pressure Sore Prevention – Making a Strategy Work: A Multidisciplinary, Holistic Approach. In: Harding KG, Leaper DJ & Turner TD (Eds). *Proceedings of the 1st European Conference on Advances in Wound Management*. London: Macmillan Magazines, 1992:68-169.
127. Alexander C & Marsh L. Creating the optimum environment for pressure area care. *BJN* 1992; **1(15)**:751-757.

128. Morison MJ, Harris J & Corlett J. Planning the Care of a Patient with a Pressure Ulcer. In: Morison MJ (Ed). *The Prevention and Treatment of Pressure Ulcers*. London: Mosby, 2001:17-130.
129. Moody BL, Fanate JE, Thompson M, Vaillancourt D, Symonds G & Bonasoro C. Impact of staff education on pressure development in elderly hospitalised patients. *Arch Intern Med* 1988; **148**:Oct, 2241-2243.
130. Adams Mondoux LC. Preface: pressure ulcers. *NCNA* 1987; **22**(2):357-358.
131. Gould D. Pressure sore prevention and treatment: an example of nurses' failure to implement research findings. *J Adv Nurs* 1986; **11**:389-394.
132. Mockridge J & Anthony D. Nurses' knowledge about pressure sore treatment and healing. *Nurs Standard. Supplement Tissue Viability* 1999; **13**(21):S68-S72.
133. Pieper B & Mott M. Nurses' knowledge of pressure ulcer prevention, staging and description. *Adv Wound Care* 1995; **8**(3):34-48.
134. Kulkarni J & Philbin M. Pressure sore awareness survey in a university teaching hospital. *J Tissue Viability* 1993; **3**(3):77-79.
135. Maylor ME. Knowledge base and use in the management of pressure sores. *J Wound Care* 1997; **6**(5):244-247.
136. Russell L. Knowledge and practice in pressure area care. *Prof Nurs* 1996; **11**(5):301-306.
137. Hayes PA *et al.* Effect of a teaching plan on nursing staffs knowledge of pressure ulcer risk, assessment and treatment. *J Nurs Staff Develop* 1994; **10**(4):207-213.
138. Nurses Board Western Australia. *Nurses Code of Practice* 1995.
139. Editor. *Nurses Board Western Australia Newsletter* 1998:5.
140. Taylor JS. Malpractice implications of pressure ulcers. *Adv Wound Care* 1994, **7**(5):43-49.
141. Tingle J. Some legal issues in wound management. *Nurs Standard; Supplement Tissue Viability* 1992; **6**(34):S4-S6.
142. Berecek K. Etiology of decubitus ulcers. *NCNA* 1975; **10**(1):157-170.
143. Nuffield Institute for Health. The prevention and treatment of pressure sores: how effective are pressure-relieving interventions and risk assessment for the prevention and treatment of pressure sores? *Effective Healthcare* 1995; **2**(1):2-16.
144. Miller E & Sach ML. *About Bedsores: What You Need to Know to Help You Prevent and Treat Them*. London: Blackwell Scientific Publications, 1974.
145. Berecek K. Treatment of decubitus ulcers. *NCNA* 1975; **10**(1):171-210.
146. Collier M. Pressure-reducing mattresses. *J Wound Care* 1996; **5**(5):207-211.
147. Allman RM, Laparade LA, Noel LB, Walker JM, Moorer CA, Dear MR & Smith CR. Pressure sores among hospitalised patients. *Annals Intern Med* 1986; **105**:337-342.
148. Bates-Jensen BM. Pressure Ulcers: Pathophysiology and Prevention. In: Sussman C & Bates-Jensen BM (Eds). *Wound Care: A Collaborative Practice Manual for Physical Therapists and Nurses*. Maryland: Aspen Publishers, 1998:235.
149. Colwell JC. Selecting Support Surfaces. In: Krasner D & Kane D (Eds). *Chronic Wound Care: A Clinical Source Book for Healthcare Professionals* (2nd ed). Wayne, PA: Health Management Publications, 1997:276-283.
150. Krouskop TA, Garber SL & Noble P. Pressure Management and the Recumbent Person. In: Bader DL (Ed). *Pressure sores clinical practice and scientific approach*. London: MacMillan Press Ltd, 1990:235-248.
151. Krouskop TA & Garber SL. The role of technology in the prevention of pressure sores. *Ostomy/Wound Management* 1987; **Fall**:44-54.
152. Bethell E. The development of a strategy for the prevention and management of pressure sores. *J Wound Care* 1994; **3**(7):342-343.
153. Young C. Planning for success. *Prim Intent* 1999; **7**(1):16-20.
154. Murray L & Prentice J. Nursing and medical collaboration in wound management: the way ahead? *Prim Intent* 1997; **5**(4):15-22.
155. Shipperly T. Guidelines for pressure sore prevention and management. *J Wound Care* 1998; **7**(6): 309-311.
156. Butler N & Marcer L. From Principles to Practice: The Implications of a Pressure Sore Prevention Policy. In: Harding KG, Leaper DJ & Turner TD (Eds). *Proceedings of the 2nd European Conference on Advances in Wound Management*. London: Macmillan Magazines, 1993:50-51.
157. Sorensen JL, Jorgensen B & Gottrup F. Wound Management: Surgical Intervention. In: Morison MJ (Ed). *The Prevention and Treatment of Pressure Ulcers*. Mosby: London, 2001:117-130.
158. Roberts KA. Best practices in the development of clinical practice guidelines. *J Qual Healthcare* 1999; **20**(6):16-20.
159. Beliakov G, Warren J & Noone J. Use of fuzzy logic in best practice guidelines. *Infomatics in Healthcare - Australia* 1999; **8**(1):2-8.
160. Grilli R, Magrini N, Penna A, Mura G & Liberati A. Practice guidelines developed by speciality societies: the need for a critical appraisal. *The Lancet* 2000; **355**:103-06.
161. Weingarten S. Translating practice guidelines into patient care. *Chest* 2000; **118**(2):4S-7S.
162. Clarke M. Developing guidelines for pressure ulcer prevention and management. *J Wound Care* 1999; **8**(7):357-359.
163. Rodeheaver GT. The US model for national standards of care. *J Wound Care* 1995; **4**(5):238-239.
164. European Pressure Ulcer Advisory Panel (EPUAP). *Pressure ulcer guidelines* 1998. London.
165. Whittington K, Patrick M & Roberts JL. A national study of pressure ulcer prevalence and incidence in acute care hospitals. *JWCON* 2000; **27**:209-15.
166. Thomas C. Speciality beds: decision making made easy. *Ostomy/Wound Management* 1989; **Summer**:51-59.
167. Goebel RH & Goebel MR. Clinical practice guidelines for pressure ulcer prevention can prevent malpractice lawsuits in older patients. *JWCON* 1999; **26**(4):175-184.
168. Bowers CW. Development and implementation of evidence-based guidelines: a multi-site demonstration project. *JWCON* 1998; **25**(4):187-193.
169. Duffield R. Pressure ulcer: a personal perspective. *Prim Intent* 1999; **7**(2):70-76.
170. Curry SJ. Organisational interventions to encourage guideline implementation. *Chest* 2000; **118**:40S-46S.
171. Gerrish K, Clayton J, Nolan M, Parker K & Morgan L. Promoting evidence-based practice: managing change in the assessment of pressure damage risk. *J Nurs Man* 1999; **7**:355-362.
172. Ockene JK & Zapka JG. Provider education to promote implementation of clinical practice guidelines. *Chest* 2000; **118**:33S-39S.
173. Boynton PR. Quality Assurance and Audit. In: Morison MJ (Ed). *The Prevention and Treatment of Pressure Ulcers*. Mosby: London, 2001:231-246.
174. Sunhealth Alliance. *Benchmarking Discovering the Best for Healthcare: Best Practice in the Prevention and Treatment of Pressure Ulcers*. Charlotte, NC, June 1995.
175. James H. Evaluating the Success of a Pressure Sore Prevention Policy. In: Harding KG, Leaper DJ & Turner TD (Eds). *Proceedings of the 3rd European Conference on Advances in Wound Management*. London: Macmillan Magazines, 1994:130-131.
176. Xakellis GC, Frantz RA, Lewis A & Harvey P. Cost effectiveness of an intensive pressure ulcer prevention protocol in long-term care. *Adv Wound Care* 1998; **11**(1):22-29.
177. Regan MB, Beyers PH & Mayrovitz HN. Efficacy of a comprehensive pressure ulcer prevalence program in an extended care facility. *Adv Wound Care* 1995; **8**(3):51-55.
178. Maylor M & Torrance C. Pressure sore survey part 2: nurses' knowledge. *J Wound Care* 1999; **8**(2):49-105.
179. Clark M. Pressure Ulcer Prevention. In: Morison MJ (Ed). *The Prevention and Treatment of Pressure Ulcers*. Mosby: London, 2001:75-98. ■