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National best practice and evidence based guidelines for **wound management**

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Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

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Foreword

The development of HSE national guidelines for wound management are designed to support the standardisation of care and encourage best clinical practice. These guidelines constitute a general guide to be followed, subject to the medical practioners judgement in each individual case.

These guidelines are based upon up to date scientific evidence and expert opinion and will serve to support consistency of treatment and contribute to improved patient outcomes.

It is estimated that 1.5% of the population are affected by a wound at any one point in time. Wounds have a major personal, social, and economic impact. Wounds not only impact on the individual and their quality of life, they also have a significant impact on our health service and our society as a whole. Studies in the UK indicate that up to 4% of total health care expenditure is spent on the provision of wound management while in Ireland it is estimated that two thirds of community nursing time is spent on the provision of wound management.

As part of the HSE efforts to improve healthcare, it is hoped that these national guidelines will assist all clinicians in the decision making process and help to standardise the management of wounds at primary, secondary and tertiary levels. The availability of national guidelines will also provide guidance to policy makers.

Healthcare is an ever changing science and advances and new developments in wound care will continue to take place. Thus, revision of these guidelines will be necessary as new knowledge is gained.

The HSE wish to sincerely express their gratitude to those who reviewed the guidelines and in particular to the guidelines development group as this work, for some members, was performed on an honorary basis and in addition to their usual work commitments.

Dr Barry White
National Director Clinical and Quality Care.

Executive Summary

Approximately 1.5% of the population will have a wound of some type at any one point in time. Fortunately, many of these are minor or acute and will heal without incident. The remaining wounds, the majority of which are chronic ulcers are a significant source of patient morbidity and in some cases mortality. Chronic wounds affect the individual's quality of life and reduce their ability to optimise their contribution to society. The management of wounds is also very costly to the health service with the largest portion of that cost being nursing time. The protracted course of treatment, potential for infection, together with the knowledge and skills required for optimal management supports the need for national guidelines to promote evidence based practice.

The approach to optimal wound management centers on a comprehensive assessment of the patient and the wound. This should be completed by a person trained in such assessment. The aetiology of the wound should be determined with referral to appropriate members of the multi-disciplinary team when further investigation or intervention is required. All aspects of care from initial presentation through to treatment and evaluation should be documented. Following assessment, treatment goals should be agreed with the patient and a time frame for their achievement set. Underlying factors which could influence the potential for wound healing should be addressed. As wound healing is a complex multi-factorial process, the input of several members of the multi-disciplinary team may be required to achieve the objectives. Evaluation is an on-going process. Each clinician involved in the provision of care must work within their Scope of Practice and is accountable for their practice.

When cleansing the wound, potable tap water is suited for chronic wounds and in adults with lacerations. An aseptic technique is required when the individual is immuno-compromised and/or the wound enters a sterile body cavity. All dressings used in wound management should be used in accordance with manufacturer's instructions and the integrity of such products must be ensured through proper storage and use. The choice of dressing is influenced by the type of wound, the amount of exudate, location of wound, skin condition, presence or absence of infection, condition of the wound bed, the characteristics of dressings available and treatment goals. Surgical wound dressings should be left dry and untouched for a minimum of 48 hours post-operatively to allow for re-establishment of the natural bacteria-proof barrier, unless otherwise clinically indicated.

Patients presenting with lower limb ulceration should have assessment and investigation undertaken by health care professionals trained in leg ulcer management. All such patients should be screened for evidence of arterial disease by measurement of ABPI by a person trained in such measurement. ABPI should be conducted when: an ulcer is deteriorating, is not fully healed by 12 weeks, is recurrent, prior to commencing compression therapy, when there is sudden increase in wound size, sudden increase in wound pain, change in colour and/or temperature of the foot or as part of on-going assessment. Graduated compression therapy with adequate padding, capable of sustaining compression for at least one week should be the first line of treatment for uncomplicated venous leg ulcers. This should be applied by a practitioner trained in its application.

Removal of devitalised tissue will promote wound healing. However, in arterial ulcers with dry gangrene or eschar, debridement should not be performed until arterial flow has been established. Routine use of antibiotics is unnecessary unless there are signs of infection.

The management of diabetic foot disease centres on identification of the 'at risk' limb and prevention of onset and management of the ulcerated limb. All people with diabetes should be examined at least once a year for potential foot problems. Patients with demonstrated risk factors should be examined more often – every 1-6 months. In a high risk patient, callus and nail and skin pathology should be treated regularly, preferably by a trained foot care specialist. Patients and their family or carer, if they wish, should be educated on the importance of foot care and regular foot inspection. Infection in a diabetic foot presents a direct threat to the affected limb and should be treated promptly and actively. Patients with an ulcer deeper than subcutaneous tissues should be treated intensively and depending on local resources and infrastructure, hospitalisation must be considered. Ill fitting shoes are a frequent cause of ulceration and therefore shoes should be examined meticulously in all patients.

Each health care setting should have a pressure ulcer prevention policy in place. This should include recommendations for the structured approach to risk assessment relevant to the health care setting, the timing of risk assessment and reassessment, clear recommendations for documentation of risk assessment and communication to the wider healthcare team.

To assist in documentation of care and evaluation of practice using clinical audit, these guidelines provide a comprehensive glossary of terms, examples of documentation and assessment tools and an audit form for use by clinicians in their own working environment.

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European Pressure Ulcer Advisory Panel

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epuap

WOUND MANAGEMENT ASSOCIATION OF IRELAND

NATIONAL PRESSURE ULCER ADVISORY PANEL

Office of the
Nursing Services Director

INTERNATIONAL WORKING GROUP ON THE DIABETIC FOOT

SCPI
THE SOCIETY OF
CHIROPODISTS & PODIATRISTS
OF IRELAND

ENDORSED BY EWMA
EWMA
EUROPEAN WOUND MANAGEMENT ASSOCIATION

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SECTION 1:

Background and Justification for Guidelines

Section 1: Background and Justification for Guidelines

Introduction

Owing to the diversity of wound aetiologies and their associated co-morbidities, a range of health care professionals across all health settings, each with a varied knowledge base related to wound healing deliver wound care. In order to standardise care and encourage optimal practice in wound management, with the goal of improving patient outcomes, there is a need to develop national guidelines for their management. The background and justification for these guidelines will provide the health professional with the rationale for their development together with information relating to prevalence, potential patient outcomes, and resource issues for the health service.

A wound is defined as a break in the continuity of the skin (Schultz et al. 2003). It may arise from an underlying altered physiological state or be primary in origin. As the largest organ in the body, damage to the skin and alteration in its functions can have catastrophic consequence for the individual. Reassuringly, the vast majority of insults to the integrity of the skin heal uneventfully. However, whether it is due to the nature of the injury, or the health of the individual, some wounds have a delayed and protracted course of healing (Falanga 2001).

Wounds can be broadly classified as acute or chronic. Acute wounds usually heal in an ordered, timely fashion, and are typically seen as post-operative wounds, minor lacerations, abrasions, minor burns and scalds and some trauma wounds (Falanga 2002, Schultz et al. 2003). Conversely, chronic wounds do not follow this ordered sequence of events and are characterised by delayed healing, cellular senescence, and recurrent infections (Schultz et al. 2003). Chronic wounds in particular are common across all health care settings and there is growing evidence that the burden of chronic wounds in Ireland is already high and likely to increase (O'Brien et al. 2000, McDermott-Scales et al. 2009).

Prevalence

Although it is often assumed that skin breakdown is confined to the frail older person, the problem of prevalence is seen at both ends of the age spectrum (Voegeli 2007). Critically ill neonates are prone to skin damage due to intrinsic factors such as having a thinner immature skin (Chung et al. 2002). Older persons have a thinner epidermis with a flattened interface between the epidermis and dermis, making it less resistant to shearing forces (Chung et al. 2002). However, the prevalence of chronic wounds is strongly related to increasing age and forecast trends in Ireland indicate that the number of people with chronic wounds is likely to increase substantially in the future (Callam et al. 1985, Jeffcoate and Harding 2003, Moffatt et al. 2004, Vanderwee et al. 2007). The number of persons aged 65 years and above is expected to increase from 430,000 today (2008) to 811,000 by 2025 (CSO 2002). By that time those aged 65 years and above will account for 16.7% of the total population compared with 11.3 % today (CSO 2002).

It is estimated that 1 - 1.5% of the population are affected by a wound at any point in time (Gottrup 2004). While there are no Irish figures directly related to all wounds, Hospital In-Patient Enquiry (HIPE) data for 2003 show that of all diagnosis on discharge from acute hospitals, disorders of the skin and subcutaneous tissue accounted for 48,466 cases with cellulitis and abscess accounting for 7,806 of these (ESRI 2007). Wound debridement, wound infection or burns accounted for 7,342 cases and 2,375 cases of skin grafts were registered. There were 313 burns cases referred to the National paediatric burns service in Our Lady's Hospital, Crumlin in 2006. Of these 75% were in children under 5 years. In 2003, HIPE

ranked operations of the skin and subcutaneous tissue 11th out of the top 20 principal procedures for all in-patients representing 13,247 cases. Open wounds represented 9,097 of all discharges by principle diagnosis from acute hospitals in 2003. The average length-of-stay for all patients with an open wound was 2.4 days, but this increased to 5.5 days in those over 65 years of age (ESRI 2007).

For day procedures, operations on the skin and subcutaneous tissue were ranked third highest accounting for 33,569 procedures and 9.8% of day-care patients (ESRI 2007). Cellulitis and abscess accounted for 7,806 of all diagnoses and open wounds accounted for 14,119. Neither Out Patient Department nor Emergency department attendances are recorded on HIPE. As many persons with wounds attend these departments, the numbers stated are potentially an under representation of the impact of wounds in acute services.

Few Irish researchers have quantified the prevalence of wounds in the non-acute setting. A prevalence of 4% was identified in one study on the active caseload of community nurses (McDermott-Scales et al. 2009). This is in contrast to a Canadian study in which 50% of patients on the active caseload of community nurses working in a community area had a wound (Hurd et al. 2008). Differences in sampling methods may account for the wide variation in these figures. Of note in the latter study was that non-healing surgical wounds accounted for 31-38% of all wounds being managed (Hurd et al. 2008). Point prevalence of 0.37% with a mean of 1.44 wounds per patient has been reported in health districts covering both acute and community care (Hurd et al. 2008).

A recent pan-European review of prevalence of wounds has estimated that 3.7 per 1000 population have at least one wound under treatment (Posnett et al. 2009). Researchers have reported that for patients with advanced illness 53% of those with cancer and 80% of patients with non-cancer related advanced illness had a wound, with an average of 2 wounds per patient (Maida et al. 2008).

Chronic wounds are associated with at least one co-morbidity (Olin et al. 1999, Oien et al. 2000). These co-morbidities are frequently hypertension, diabetes, cardio-vascular disease, and neurological disorders. The risk factors for chronic illnesses are well recognised and include; hypertension, obesity, poor nutrition, tobacco, alcohol and high cholesterol (DoHC 2007a, DoHC 2007b). Recent Irish researchers have clearly demonstrated that the prevalence of such risk factors shows no signs of abating (Whelton et al. 2007, Morgan et al. 2008). This clearly demonstrates that the prevalence of wounds with associated co-morbidities will be evident into the future.

While these guidelines can apply to all wounds, particular emphasis in this document is on categories of wounds most commonly encountered in routine clinical practice and which provide many challenges to practitioners. These include venous ulceration, arterial ulceration, diabetic foot ulceration and pressure ulceration.

Leg ulceration

Leg ulcer is defined as a breakdown of the epidermal and dermal tissue below the knee on the leg or foot, due to any cause, which fails to heal (Moffatt and Harper 1997). Leg ulceration has multiple causes, the most common being venous disease accounting for 37% - 81% of all cases depending on the methods used for diagnosis (Briggs and Closs 2003). Other causes include rheumatoid arthritis, diabetes, arterial disease, trauma and malignancy. Importantly, patients can have leg ulcers with a single aetiology or with multiple causes (Briggs and Closs 2003).

Irish studies have reported a leg ulceration prevalence of 0.12% in the adult population increasing to 1.03% in those over 70 years of age (O'Brien et al. 2000). These results are supported by some international research as the prevalence of patients with open leg ulcers receiving treatment from health professionals ranged from 0.11% -3.6% (Graham et al. 2003). However, the range in prevalence rates might have been due to the variety of methodologies and in particular the inclusion criteria used (O'Brien et al. 2000, Briggs and Closs 2003, Graham et al. 2003, Moffatt et al. 2004). Age specific prevalence rates are comparable between the sexes but women predominate in the older age group with higher standardised prevalence rates (Callam et al. 1985, Graham et al. 2003).

True prevalence is arguably higher as people of working age are under represented in the published studies, because they are more likely to be self-caring (Nelzen et al. 1996). Of note it was reported in many studies that while prevalence increases with age, the age of onset was below 65 years for approximately half of the populations under consideration (Moffatt et al. 1992, Moffatt et al. 2004).

Based on reported prevalence rates to date and the current Irish population of 4,000,000 it can be estimated that 4,800 persons in Ireland may suffer from active open ulceration at any one point in time. The true prevalence rates are even higher if one is cognisant of the proposal that only 20-25% of venous ulcers are open at any point in time (Nelzen et al. 1996). Thus it is likely that 24,000 persons in Ireland are affected by leg ulceration. It is estimated that 490,000 to 1.3 million EU citizens have an open lower-limb ulcer at any one time (Posnett et al. 2009).

The chronicity of lower limb ulceration is manifested by the high recurrence rates, protracted courses of treatment with a mean of only 50% of those in receipt of compression therapy for venous ulceration healing after 12 weeks of therapy (Moffatt and Dorman 1995, Peters 1998, Gethin and Cowman 2009). Duration of ulceration is a cause for concern with studies frequently reporting open ulceration for more than one year while there are reports of ulceration spanning 60 years (Clarke-Moloney et al. 2006, Gethin and Cowman 2009, McDermott-Scales et al. 2009).

There is evidence of a change in trend in ulcer aetiology and that prevalence of more chronic mixed aetiology ulcers and arterial ulcers is increasing (Moffatt et al. 2004). Increased life expectancy and increased prevalence of arterial disease in the population may account for these results (Moffatt et al. 2004).

Diabetic Foot Ulceration

While information on specific wound types cannot be extrapolated from the HIPE system, diabetes accounted for 36,642 of all listed total discharges by principal diagnosis in 2003 (ESRI 2007). It is estimated that one in every seven persons with diabetes will develop a foot ulcer (Boulton et al. 2005, IWGDF 2007); therefore, potentially 5234 cases of diabetic foot ulceration were treated in Irish hospitals in 2003.

The number of adults diagnosed with diabetes in Ireland has been estimated at 141,063 in 2006 (Balanda et al. 2005). Prevalence rates among children were estimated at 0.2% or 2,229 persons (Balanda et al. 2005). Additionally, it is estimated that for every person with diabetes there is another as yet undiagnosed (Balanda et al. 2005, Boulton et al. 2005, IWGDF 2007).

Foot ulceration is a frequent complication of diabetes and based on international research prevalence data (Wraight et al. 2004, IWGDF 2007)it can be estimated that there are 20,470 – 41, 020 cases of diabetic foot ulceration in Ireland. Persons with diabetes are fifteen times more likely to have an amputation than those without and 85% of all such amputations are preceeded by ulceration (Boulton et al. 2005, IWGDF 2007). It has been reported that once an individual has undergone an amputation there is a 50% risk of an amputation of the remaining limb within 5 years (Boulton et al. 2005, IWGDF 2007). Many individuals still do not receive optimal preventative care and the number of patients with diabetes who required admission for treatment of acute foot pathology remains high (Wraight et al. 2004).

Pressure ulcers

A pressure ulcer is defined as an area of localised damage to the skin and underlying tissue caused by pressure or shear or a combination of these (EPUAP 2002). Depth of ulceration is documented using a classification system, Category 1 through to Category 4. Category 1 represents superficial skin damage without a break in the continuity of the skin, commonly referred to as non-blanchable erythema. Category 4 indicates extensive destruction, tissue necrosis or damage to muscle, bone or supporting structures with or without full thickness skin loss (EPUAP 2002). The prevalence of these wounds in the Irish acute setting is consistent with international studies ranging from 12-38% (Moore and Pitman 2000, Gethin et al. 2005, Gallagher et al. 2008). A trans-European survey identified that one in every 5 hospitalised patients had a pressure ulcer, while 50% of patients were at risk (EPUAP 2002). Similar to other studies, the higher prevalence in Irish studies was recorded in spinal injury units and intensive care units (Sheerin et al. 2005, deLaat et al. 2006).

Pressure ulcer prevalence and incidence among hip fracture patients in five European countries reported that 10% had a pressure ulcer on arrival to the hospital while 22% had one on discharge (Lindholm et al. 2008). The majority were category one with no category four ulcers (Lindholm et al. 2008). In Ireland, fractured neck of femur is one of the most common reasons for hospital admission in the elderly with 3,585 such patients over 65 years of age admitted to Irish hospitals in 2002 (ESRI 2007). Worldwide, elderly people represent the fastest growing age-group and the yearly number of fractures is likely to rise substantially with continued ageing of the population (Sambrook and Cooper 2006). Therefore, there is a potential for increase in the incidence of pressure ulceration in this group.

Prevalence in the non-acute sector is harder to quantify due to the diversity of care settings. However, researchers have reported that pressure ulcers were the wound most frequently encountered by community nurses with prevalence rates of 4 % (McDermott-Scales et al. 2009). Prevalence rates increased significantly with the age of the individual, as 75% of pressure ulcers occurred in those over 60 years of age (McDermott-Scales et al. 2009).

Impact of wounds

The impact of wounds, and in particular chronic wounds, on patient health and well being, and the substantial burden wound care places on health care staff, organisations and resources provides an opportunity to improve prevention and management strategies (Posnett et al. 2009). Wounds do not have a one-dimensional impact but rather can impact under three domains; that is, to the individual, the health service and to society.

On the individual

Quality of life studies have clearly demonstrated that persons with wounds have lower quality-of-life scores than their age and sex-matched counterparts (Price and Harding 1996, Price and Harding 1997, Rich and McLachlan 2003). Wounds cause pain, suffering, sepsis, infection, nausea, fatigue, depression, psychological disturbances, loss of function, loss of mobility and personal financial cost (Price and Harding 1996, Price and Harding 1997, Rich and McLachlan 2003). In some cases wounds may lead to amputation and even death. For many patients wounds are a significant and preventable barrier to the successful recovery or management of, a wide range of medical conditions (RCN 2006). These range from, routine surgical interventions to chronic conditions such as diabetes. Pain is frequently associated with wounds, with some patients describing it as horrible or excruciating and it may be associated with the wound aetiology, dressing change or infection (Price and Harding 1997, Rich and McLachlan 2003).

On the health service (the financial impact)

Wound care is very labour intensive and up to 66% of community nursing time is spent on the provision of wound care with patients receiving an average of 2.4 dressing changes per week (Clarke-Moloney et al. 2006, O'Keeffe 2006, Clarke-Moloney et al. 2008). In the United Kingdom it was reported that up to 4% of total health care expenditure is spent on the provision of wound care (Bennett et al. 2004, Gottrup 2004, Drew et al. 2007, Posnett and Franks 2007, Hurd et al 2008. Developments such as the establishment of leg ulcer clinics has resulted in improved outcomes for patients with lower limb ulceration and in particular venous ulcers (Clarke-Moloney et al. 2008). Nurse led leg ulcer clinics have improved the management of venous ulcers with more assessments taking place in the community versus the hospital setting (Clarke-Moloney et al. 2008). A reduction in dressing change frequency, particularly in the home, is significant given the high percentage of nursing visits that involve wound care and the travel time required (Clarke-Moloney et al. 2008, Hurd et al. 2008).

The appointment of tissue viability Clinical Nurse Specialists has raised the profile of wound management with 14 such posts in Ireland (www.ncnm.ie). However, to date only two of these are in primary care with the majority in acute care setting.

Recent Irish researchers have reported that the cost of treating one patient with 3 grade 4 pressure ulcers in 2003 was €119,000 for a period of 129 days (Gethin et al. 2005). Researchers itemised all costs of care and the patient was discharged with a healed wound. This was a positive outcome in a relatively short period, but such is not always the case. Indeed, such costs are potentially much higher today due to inflationary price increases. It is easy to focus on dressings and other materials as being the major cost factor in wound care. However, this component accounts for only 10-15% of costs with nursing time and hospitalisation being the main drivers of cost (Carr et al. 1999, Posnett and Franks 2007). A recent UK audit covering a population of 590,000 persons revealed that 3% of total local health budget, 151,000 nursing hours and the equivalent of 52-87 acute bed beds were spent annually specifically on wound care (Hurd et al. 2008).

The implications for health care in Ireland are particularly significant whether individuals are cared for in the primary or secondary care setting. Community care providers are attempting to deliver services to an ageing population facing a growing prevalence of chronic disease and disability. Most community care organisations in Ireland face challenges as acute care facilities attempt to reduce the length-of -stays in hospital and are relying more heavily on community services. Overall community care services must cater for patients who are older, with more serious and complex health issues and therefore at greater risk of wounds.

On Society

The loss to society due to individuals being unable to engage in their normal activities is hard to quantify. Loss of time from work for the individual and their carer can have financial implications. Feelings of social isolation, anxiety and depression have potential to reduce the contribution the individual makes to society, whether is at a local or national level. It has been reported that problematic wounds frequently result in a loss of productivity; extended hospital stays and increased expenditure (Zhan and Miller, 2003; Tennevall et al., 2005).

The need for guidelines

Clinical practice guidelines have been broadly defined as *"providing guidance in decision making at each level of interaction; between health professional and consumer, between purchaser and provider, and between 'funder' and 'purchaser'.* **(http://www.nzgg.org.nz)**. There are five different types of guidelines but those related to best practice are defined as *'systematically developed statements to assist practitioner and consumer decisions about appropriate health or disability care for specific circumstances, taking into account evidence for effectiveness and competing claims, and form a fundamental basis for planning'* (NZGG 2001). The HSE hopes that these National wound management guidelines will assist professionals in the decision making process as they are based on the most current and best available evidence and aim to bring consistency to the provision of wound care in Ireland.

The provision of wound care falls within the remit of a wide range of disciplines. The knowledge, skills, and understanding of each of these disciplines can vary, and may depend on the type and frequency of the wound aetiology encountered and the level of expertise available. There is a growing body of evidence that a structured, organised and planned approach to wound management whether for specific wound aetiologies or for wounds in general improves patient outcomes and is cost effective for the health service.

It is anticipated that these guidelines will promote and enhance evidence based practice in wound care in Ireland. In addition, the provision of an audit tool should help to provide evidence to support the use of the guidelines as services and professionals can assess wound care management practices and patient outcomes against defined standards of care.

Limitations of these guidelines

These guidelines have been developed following systematic search of the literature together with a review of current published guidelines using the AGREE guidelines review tool. They represent best practice as it relates to current knowledge. It is anticipated that as new information becomes available that some aspects of these guidelines will no longer be valid and will require updating.

Some specific wound aetiologies such as burns and malignant wounds are frequently managed in specialist centres and thus are not included here.

1.1 Scope and Purpose of the Guidelines

These guidelines have been developed by the Health Service Executive (HSE) in collaboration with academic institutions and professional organisations involved in wound management in Ireland. The aim of these guidelines is to progress towards achieving the HSE's commitment to delivering better services for the individual through the provision of evidenced based practice (HSE 2007). The guidelines are applicable to all professionals involved in wound management.

1.2 Guideline Development Team

Table 1: Guideline Development Team (alphabetical order)

Ms. Eithne Cusack (Co-chairperson)	Director, Nursing & Midwifery Planning & Development, HSE
Dr. Davida DelaHarpe (Co-chair)	Assistant National Director, Population Health, HSE
Dr. Georgina Gethin (lead researcher)	Lecturer /Research co-ordinator, Research Centre, Faculty of Nursing and Midwifery, RCSI (WMAOI)
TEAM MEMBERS	
Ms. Maura Belton	Assistant Direct of Public Health Nursing representing Dublin Mid Leinster PCCC
Ms. Caroline Connolly	Irish Nursing Homes Association (replaced by Sinead Fitzpatrick)
Ms. Brigid Considine	Asst Director of Public Health Nursing representing Dublin North East PCCC
Ms. Gerardine Craig	CNS Tissue Viability, Drogheda representing Tissue Viability Nurses Association of Ireland
Ms. Sinead Fitzpatrick	Representing Nursing Homes Association
Ms. Ann Higgins	Director of Infection Control, Mater Private Hospital, Dublin. Representing Infection Control Nurses Association
Ms. Brenda Kelly	National Hospitals Office, HSE
Ms. Pat McCluskey	CNS wound care, CUH: representing WMAOI
Ms. Raphael McMullen	Nursing Practice Development Co-ordinator representing Irish Nursing & Midwifery Practice Development Assoc. and DATH's
Ms. Patricia McQuillan	Professional Development Co-ordinator for PNs representing Irish Practice Nurses Ass.
Dr. Zena Moore	Lecturer RCSI
Ms. Alice O'Connor	CNS St Johns Hospital, Limerick representing NHO HSE West
Ms. Mary Parker	PHN, representing PCCC HSE West
Ms. Martina Rafter	CNS Tissue Viability Waterford Regional Hospital representing NHO HSE South
Ms. Helen Strapp	CNS Tissue Viability AMNCH representing Dublin Academic Teaching Hospitals (DATH's)
Ms. Catherine Tunney	Public Health Nurse representing Institute of Community Health Nursing
Ms. Eileen Walsh	Public Health Nurse: representing HSE Southern area/ Cork & Kerry

1.3 Terms of Reference

- To ensure/facilitate the development of National Wound Management Guidelines which represent up to date best practice.
- To agree an approach to this work and secure funding as required.
- To provide guidance on a standardised approach to wound management across all care settings in the interest of best practice and quality patient care.
- To establish and support a guideline development team that is representative geographically and across care settings.
- To develop content and format of Wound Management Guidelines.
- To liaise and work with approved research support.
- To recommend a process for dissemination, implementation and evaluation of these Guidelines.
- To support the dissemination of these Guidelines.

1.4 Layout of Document

This document has been divided into four sections:

Section One deals with the administrative and corporate issues related to their development and intended use.

Section Two outlines the search strategies which lead to the guidelines and the levels of evidence associated with guideline statements. This section also presents a decision framework to guide the clinician in the necessary steps to optimise best practice in wound management.

Section Three is dedicated to the clinical aspects of wound management. This section contains 5 parts;

- general principles in **wound** management;
- **venous ulceration;**
- **arterial ulceration;**
- **diabetic foot;**
- **pressure ulceration.**

Section Four contains audit tool, references, bibliography details, and appendices relevant to the document.

A **glossary of terms** used throughout the document is provided for the reader.

A **Quick Reference Guide** is provided at the end of this document.

The term 'clinician' is used throughout to denote any professional involved in wound management.

SECTION 2:

Methodology

Section 2: Methodology

2.1 Guideline Development Process.

Following recommendations to the HSE from individual hospitals, tissue viability nurses, and wound management organisations in Ireland, a guideline development group was formed by the HSE to oversee the development of guidelines for wound management in Ireland. This group invited representatives from professional bodies, academic institutions, and representatives of National Hospitals Office, Population Health, Primary Community and Continuing Care (PCCC), voluntary hospitals, private healthcare providers and wound management organisations to participate in the process.

From its inception, it was agreed that the proposed guidelines would be multi-disciplinary in nature and applicable to all professionals involved in the management of wounds. Following a literature search to guide the process of guideline development the framework as set out by the New Zealand Guideline Group (www.nzgg.org) was deemed the most appropriate to meet the objectives of this document. (NZGG 2001).

The guidelines are divided into sections which include general principles of wound management, management of chronic wounds including venous ulcers, arterial ulcers, diabetic foot ulcers and pressure ulcers. The search strategy is set out in this section. When guidelines were sourced that met the search criteria, they were appraised by the group using the Appraisal of Guidelines for Research and Evaluation tool (AGREE) (**www.agreecollaboration.org**) (NZGG 2001). This tool assesses both the quality of the reporting and the quality of some aspects of recommendations. It provides an assessment of the likelihood that the guidelines will achieve their intended outcome.

Once guidelines were identified and appraised, having achieved a standard suited for implementation in the Irish setting, they were adapted for use here. The process involved printing in draft format, review by the guideline development group, redrafting, review by professionals outside of the group, editing, and finally endorsement by national and international professional groups and organisations.

Search strategy

The New Zealand Guideline Group recommends a specific process for guideline development (NZGG 2001). The process recommends identifying the need for guidelines and then conducting an extensive search of relevant databases for any pre-existing guidelines.

All existing guidelines related to wound management published in the years 2001-2007 were identified. This search was restricted to the English language and to guidelines which were compiled by multi-disciplinary or uni-disciplinary groups which were independent of any 'for-profit' organisations. During the course of the guideline development process other guidelines became available and these were later evaluated.

Previous guidelines both local and national, the Cochrane database of systematic reviews, PubMed, Clinical Evidence, TRIP, National Guidelines Clearing House, NICE, RCN, CREST, MEDLINE, EMBASE, CINAHL were also searched. In addition international wound management organisations for current guidelines including those in European, Australia, New Zealand, Canada, and USA were aslo contacted.

2.2 Outline of the grading method used

The grading systems related to strength of evidence and levels of recommendation are presented in Tables 1 and 2 below.

Table 1 : Level of Evidence

Level	Definition
Level 1	The evidence consists of results from studies of strong design for answering the question addressed
Level 2	Either based on a single acceptable study, or a weak or inconsistent finding in multiple, acceptable studies
Level 3	Limited scientific evidence that does not meet all the criteria of acceptable studies or absence of directly applicable studies of good quality. This includes published or unpublished, expert opinion

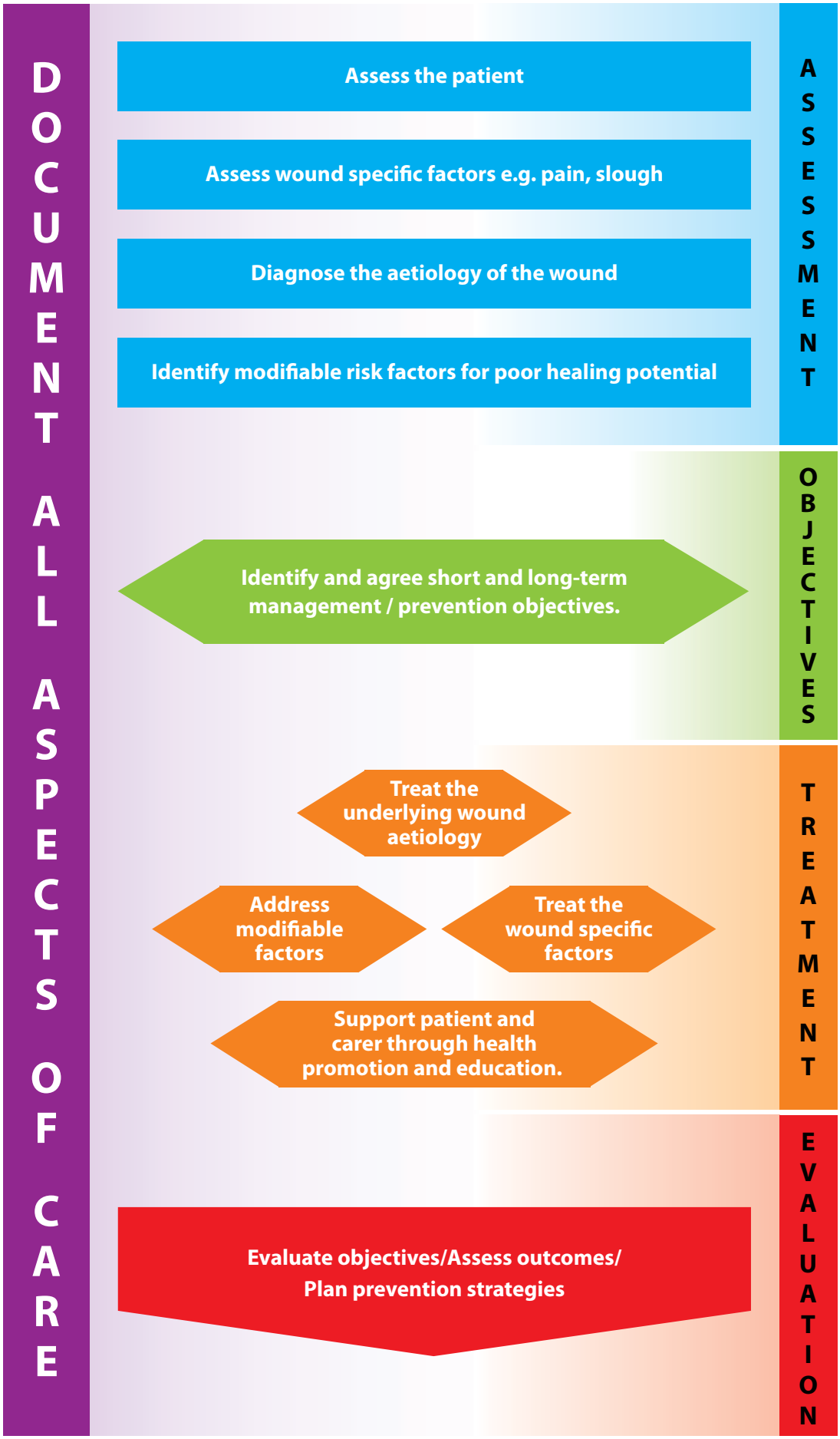
Table 2: Level of Recommendation

Level	Definition
Level A	Strongly recommended/likely to be of benefit
Level B	Recommended
Level C	Recommended but not essential
Level D	NOT recommended

2.3 Decision Framework in wound management

This framework was developed by the guideline development group and forms the basis for the structure and layout of the guidelines.

Figure 1: Decision Framework



SECTION 3:

Clinical Guidelines

Section 3: Clinical Guidelines

3.1 Corporate and individual responsibilities and accountability

Corporate Responsibilities

- A collaborative and interdisciplinary approach to wound management is recognised as the optimal approach in the prevention and management of wounds.
- Clinical practice in wound management should comply with, and respect; legislation, codes of practice, scope of practice, clinical practice guidelines, and organisational policies.
- Compliance with the above ensures the safety and facilitates the wound healing potential of the individual.

Individual Responsibilities

- The clinician will ensure optimal wound healing is facilitated by an ongoing process of clinical decision making in order to determine the risk of wounding, the wound aetiology, and wound healing responses.
- The clinician will acknowledge the need for a partnership in practice between interdisciplinary team members in all aspects of the wound management process.
- Documentation in the individuals' notes must facilitate communication and continuity of care between interdisciplinary team members and fulfil legal requirements. The clinician must ensure that all relevant documentation is maintained.
- The clinician is accountable for his/her clinical practice.
- The clinician will endeavour to implement wound management practices based on valid research findings or best practice.
- The clinician must execute his/her responsibilities according to their scope of practice.

3.2 Principles of Wound Management

Assessment

- The individual will be informed of the need and options for comprehensive and multidisciplinary assessment.
- The individual will receive a comprehensive assessment that reflects the intrinsic and extrinsic factors which have the potential to impact on wound healing or potential wounding.
- The individual should be provided with information relating to proposed assessment and planned care options in a manner that is considerate of their age and cognitive status and which will facilitate their understanding and informed consent to assessment and planned care.
- Patient assessment should include at a minimum:
  - Past medical history
  - Current and past drug therapies
  - Identification of factors which have the potential to increase the risk of wounding; increase the risk of non-healing or delayed healing; promote wound healing. This may include for example pressure ulcer risk assessment (see examples of risk assessment tools in appendix) and nutrition screening tool (see examples of validated nutrition screening tools in appendix).
- Wound bed assessment should include at a minimum:
  - Type of wound and aetiology of wounding
  - Location of wound
  - Size of wound
  - Condition of the wound bed.
  - Description of exudate
  - Presence of infection, pain, malodour or foreign body.
  - State of surrounding skin and alterations in sensation.
  - Ongoing assessment should be performed and provide evidence of wound healing or deterioration in wound healing.
  - The timing of on-going assessment should be based on the wound type and patient factors.
  - On-going assessment should include assessment of nutritional status through the use of a nutritional screening tool (see appendix).
  - The individual and their carer, if they permit, will be informed of the outcomes of the assessment and will be supported in the decision making for potential management options.

Objectives of wound management

- The wound should be allowed to heal in a moist environment, unless the clinical goal is to maintain eschar in a dry and non-infected condition.

Treatment and Management

- The patient should be actively involved and supported in setting treatment goals.
- Treatment and management regimes should address the issues raised in the assessment process e.g. poor mobility, poor nutrition status, pressure re-distributing devices.
- Routine use of antibiotics is unnecessary unless there are signs of infection. *(level 2)*.
- All wounds are potentially painful. An approach to pain management should address the cause of pain and implementation of local, regional or systemic patient factors to control it. *(Level 3)*

Wound Cleansing

The primary objective of wound cleansing is to remove foreign materials and reduce the bioburden, in the hope of treating or preventing wound infection, preparing the wound for grafting and reducing exudate and odour.

Aseptic Technique

- An aseptic wound technique should be used when:
  - The individual is immuno-compromised,
  - The wound enters a sterile body cavity (i.e nephrostomy or central venous line),
- Irrigation with single use sachets or pods of normal saline stored at room temperature is the method of choice for wounds when aseptic technique is considered appropriate.

Clean wound management technique

- A clean wound management technique i.e. washing or showering of wounds, may be implemented when the criterion for aseptic technique is not demonstrated or when policies and procedures dictate.
- Wounds should not be cleansed with products that potentially leaves fibres in the wound e.g. cotton wool or cotton wool containing products.

Cleansing Solutions

- For adults with lacerations, potable tap water is effective *(level 1)*.
- Potable tap water is suitable for adults with chronic wounds *(Level 2)*.
- When using a clean wound management technique, potable tap water or normal saline may be used for irrigation.
- For patients with chronic wounds such as venous leg ulcers, immersion of the limb in a bucket lined with disposable plastic bag and filled with potable tap water or showering is acceptable.

Pressure for wound cleansing

- Cleansing solutions must be delivered with sufficient volume and force to loosen and wash away microorganisms and debris but caution must be exercised as excessive force may drive loosened material into viable tissue.

Wound Dressings

- The integrity of wound management products and devices must be ensured through proper storage and use.
- Products and devices must be used in accordance with licensing acts and/or regulatory bodies and manufacturers guidelines
- The choice of dressing will be influenced by type of wound, amount of exudate, location of the wound, skin condition of the patient, presence/absence of infection, condition of wound bed, characteristics of dressings available and treatment goals.
- Surgical wound dressings should be left dry and untouched for a minimum of 48 hrs post-op to allow for re-establishment of the natural bacteria-proof barrier, unless otherwise clinically indicated.

Documentation / Education

- Documentation in the individuals' notes must facilitate communication and continuity of care between interdisciplinary team members and fulfil legal requirements.
- The clinician should provide relevant information to individuals for the prevention of wounding and promotion of healing.
- The clinician should maximise opportunities for teaching and learning for the individual and /or their carer.

Evaluation

- On-going evaluation of wound healing should be performed through comprehensive wound assessment and documentation of findings.
- Patients should be referred to members of the multi-disciplinary team or for more detailed diagnostic assessment based on the findings of the initial assessment process or following evaluation of response to current management strategies.

Wound healing is a dynamic process, and it is anticipated that wound management practices will change, as new scientific evidence becomes available.

3.3 Guidelines for the management of venous leg ulceration- key Points (Level of evidence)

Assessment

- Patients presenting with leg ulceration should have assessment and investigation undertaken by a health care professional trained in leg ulcer management. *(Level 3)*.
- All patients presenting with either a new or recurrent ulceration should have a complete clinical history and physical examination which includes the factors outlined in Table 3 conducted and assessment should be on-going thereafter. *(Level 3)*.
- The assessor should be aware that leg ulcers may be due completely or in part to arterial disease, Type 1 or Type 2 diabetes, Rheumatoid arthritis, malignancy or other conditions. Practitioners should record any unusual presentation of the ulcer and if there is any doubt or concern about the aetiology the patient should be referred for specialist medical assessment. *(level 3)*.
- All patients presenting with leg ulceration should be screened for evidence of arterial disease by measurement of Ankle Bracial Pressure Index (ABPI). This should be conducted by a person trained in such measurement. *(level 1)*.
- ABPI should be conducted when: an ulcer is deteriorating, is not fully healed by 12 weeks, is recurrent, prior to recommencing compression therapy, when there is a sudden increase in wound size, sudden increase in wound pain, change in colour and /or temperature of the foot, as part of ongoing assessment (three monthly). *(Level 2)*.
- Factors associated with failure of wound to heal within 24 weeks as outlined in Table 4 should be recorded at baseline. *(Level 2)*.
- Condition of the limb and peri-wound area as outlined in Table 5 will aid in differential diagnosis and provides information for evaluating treatment outcomes and should be recorded at baseline and weekly thereafter. *(Level 3)*.
- Routine bacteriological swabbing is unnecessary unless there is evidence of infection. *(Level 2)*.
- Formal assessment of ulcer size should be recorded at baseline and at least monthly thereafter. *(Level 3)*.

Objectives

- Discuss and agree a treatment plan with the patient and/or carer if they wish. This should include management of co-morbidities and factors which may delay healing.
- Identify short and long term treatment goals and provide a time frame to review these goals.

Treatment

- Graduated multi-layer high compression systems (including short stretch regimes), with adequate padding, capable of sustaining compression for at least one week should be the first line of treatment for uncomplicated venous leg ulcers (APBI ≥ 0.8) in all settings. *(Level 1)*.
- The most important aspect of treatment for uncomplicated venous ulcers is the application of high compression. The compression therapy should be applied by a practitioner trained in its application. *(Level 1)*.
- Irrigation of the ulcer when necessary, with warmed potable tap water or saline is usually sufficient. Strict asepsis is unnecessary. *(Level 2)*.

- Removal of devitalised tissue can aid wound healing. The method chosen is dependent on patient and wound treatment goals and will be influenced by the resources, skills and knowledge of the clinician, and condition of the wound bed. *(Level 2)*.
- Pentoxifylline may be a cost-effective adjunvct to compression bandaging for treating venous ulcers, and may be considered for prescription in appropriate clinical circumstances. *(Level 1)*.
- Dressings for uncomplicated venous ulcers should be simple, low adherent, cost-effective, able to maintain a moist wound environment and acceptable to the patient. *(Level 1)*.
- Cellulitis surrounding the venous ulcer should be treated with systemic antibiotics. *(Level 2)*.
- Minimize the tissue level of bacteria, preferably to $\leq 10^5$ CFU/g of tissue, with no beta haemolytic streptococci in the venous ulcer before attempting surgical closure by skin graft, skin equivalent, pedicled or free flap. *(Level 2)*.
- Routine use of antibiotics is unnecessary unless there are signs of infection. *(level 2)*.
- All wounds are potentially painful. An approach to pain management should address the cause of pain and implementation of local, regional or systemic patient factors to control it. *(Level 3)*
- Less extensive surgery on the venous system such as superficial venous ablation, endovenous laser ablation, or valvuloplasty, especially when combined with compression therapy, can be useful in decreasing the recurrence of venous ulcer. *(Level 1)*.

Documentation

- All aspects of care, including assessment, treatment plan, implementation and evaluation should be documented clearly, comprehensively and meet legal requirements and local policies and/or guidelines.
  - *An example of a documentation format is attached as a wound assessment inventory in appendices. This may be copied and used in your clinical practice.*

Evaluation

- Regular monitoring of pain associated with venous ulceration is recommended. *(Level 2)*.
- Use of compression stocking reduces venous ulcer recurrence rates and is cost-effective. Patients should be encouraged to wear the highest level of compression they will tolerate, unless contraindicated *(Level 1)*.
- Venous ulcers that have been open continuously without signs of healing for 3 months or that do not demonstrate any response to treatment after 6 weeks should be reassessed and a biopsy for histological diagnosis considered. *(Level 3)*.

Table 3: Patient factors to be recorded at baseline

Record the following at initial assessment:
Family history of leg ulceration, venous or non-venous.
Varicose veins (record whether or not treated, type of treatment and year)
History of DVT in the affected leg. State whether proven, not proven or suspected.
History of phlebitis in the affected leg (diagnosed by a clinician).
History of surgery/fractures to the leg
History of episodes of chest pain, haemoptosis, or pulmonary embolus.
History of heart disease, stroke, transient ischaemia attach, diabetes mellitus, peripheral vascular disease/intermittent claudication, cigarette smoking (current or past), rheumatoid arthritis.
Nutrition status.

Table 4: Wound factors to be recorded at baseline

Baseline wound factors to be recorded:
Year of first ulcer
Site of ulcer and any previous episodes
Number of previous episodes of ulceration
Time to healing in previous episodes of ulceration
Time free of ulcers
Past treatment methods – both successful and unsuccessful
Previous operations on venous system
Previous and current use of compression

Table 5: Limb and peri-wound assessment

Condition of peri-wound skin – factors to consider:
Oedema – note if bilateral or unilateral
Eczema
Ankle flare
Lipodermatosclerosis
Varicose veins
Hyperpigmentation
Atrophie blanche
Depth of ulcer (note if shallow or 'punch out' in appearance).
Note whether feet are cold, pale or blue
Is skin shiny and taut
Assess for blackened or gangrenous toes.

3.4 Guidelines for management of arterial ulcers – Key Points (level of evidence)

Assessment

- All patients with lower extremity ulcers should be assessed by a person trained in leg ulcer assessment *(level 1)*.
- Patients presenting with rest pain or gangrene should be promptly referred to a vascular specialist *(level 1)*.
- An arterial ulcer is a component of a pool of diseases. It is paramount to evaluate the patient as a whole, identifying and addressing the causes of tissue damage. This includes observation and assessment of systemic diseases and medications, nutrition, tissue perfusion and oxygenation *(level 2)*.
- Patients presenting with risk factors for atherosclerosis (smoking, diabetes, hypertension, hypercholesterolemia, advanced age, obesity, hypothyroidism) and who have ulcers, are more likely to have arterial disease ulcers and should be carefully and broadly evaluated *(level 1)*.
- In arterial ulcers, evaluate for contributing factors other than atherosclerosis that involve the arterial system (microvascular vs. macrovascular) such as thromboangiitis, vasculitis, Raynauds, pyoderma gangrenosum, thalassemia, or sickle cell disease *(level 1)*.

Objectives

- Discuss the outcome of assessment with the patient. Identify and agree short and long term treatment objectives.
- Refer as appropriate to members of the multi-disciplinary team for assessments and appropriate interventions.
- Identify a time frame to review the objectives.

Treatment

- In the presence of an arterial ulceration, adjuvant therapies may improve healing of the ulcer but do not correct the underlying vascular disease. They cannot replace revascularisation. Revascularisation is not always successful and durable. Thus adjuvant therapy may improve the outcome if combined with revascularisation *(level 2)*.
- In general, removal of all necrotic or devitalised tissue by sharp, enzymatic, mechanical, biological, or autolytic debridement leads to a more normal wound –healing process (level 2). **In arterial ulcers with dry gangrene or eschar, however, debridement should not be used until arterial inflow has been established** *(level 3)*.
- Routine use of antibiotics is unnecessary unless there are signs of infection. *(level 2)*
- Wound healing potential is enhanced and infection potential is reduced in a wound environment that is adequately oxygenated *(level 1)*.
- Compression therapy may be beneficial in ulcers of mixed aetiology but should only be undertaken with close supervision by an individual trained in management of patients with arterial leg ulcers. *(level 3)*.

- In arterial ulcers with sufficient arterial inflow to support healing, use a dressing that will maintain a moist wound-healing environment *(level 2)*. Dry gangrene or eschar is best left dry until revascularisation is successful *(level 2)*.
- Select a dressing that is cost effective and appropriate to the ulcer aetiology. *(level 2)*.
- Arterial ulcers are painful, and an approach to control pain in patients with arterial ulceration should address the cause and use local, regional, or/and systemic measures. *(level 3)*.

Documentation

- All aspects of care, including assessment, treatment plan, implementation and evaluation should be documented clearly, comprehensively and meet legal requirements and local policies and/or guidelines.

Evaluation

- Evaluate and re-assess treatment objectives at the agreed time frame according to the initial assessment. Patient re-assessment and new treatment objectives may need to be set and agreed with the patient following evaluation.
- Exercise to increase blood flow has been demonstrated to be helpful in long-term maintenance and arterial ulcer prevention *(level 1)*.
- Risk factor reduction is the most significant issue to be addressed. It includes cigarette smoking cessation, control of diabetes mellitus, control of elevated homocysteine levels, control of hyperlipidaemia and hypertension. *(level 1)*.

3.5 Guidelines for the prevention and management of Diabetic foot ulceration

Introduction

The basic principles of prevention and management of diabetic foot ulceration described here are based on the **International Consensus and Practical Guidelines on the management and prevention of the Diabetic Foot** (IWGDF 2007). They are aimed at health care workers involved in the care of people with diabetes. It should be noted that the full set of guidelines are available through the International Working Group on Diabetic Foot (www.iwgdf.org).

This section is divided into two distinct parts:

Part A deals with the non-ulcerated limb
Part B deals with the ulcerated limb

This consensus identifies **5 key elements** which underpin foot management:

Table 6: Key elements in DF management

1	Regular inspection and examination of the at-risk foot
2	Identification of the at-risk foot
3	Education of patient, family and healthcare providers
4	Appropriate footwear
5	Treatment of non-ulcerative pathology

Part A: the non-ulcerated limb

Assessment

All people with diabetes should be examined at least once a year for potential foot problems. Patients with demonstrated risk factor(s) should be examined more often – every 1 -6 months (see tables 7,8,9). The patient's feet should be examined with the patient lying down and standing up, and their shoes and socks should be inspected.

History and Examination should include items in table 7:

Table 7: History and Examination

History	Previous ulcer/amputation, previous foot education, social isolation, poor access to healthcare, bare-foot walking
Neuropathy	Symptoms, such as tingling or pain in the lower limb, especially at night
Vascular status	Claudication, rest pain, pedal pulses
Skin	Colour, temperature, oedema
Bone/Joint	Deformities (eg claw toes, hammer toes) or bony prominences
Footwear / socks	Assessment of both inside and outside

Sensory loss. Sensory loss due to diabetic polyneuropathy can be assessed using the techniques set out in table 8:

Table 8: Assessing neuropathy

Pressure perception	Semmes-Weinstein monofilaments. The risk of future ulceration can be determined with a 10g monofilament
Vibration perception	128 Hz tuning fork (hallux)
Discrimination	Pin prick (dorsum of foot, without penetrating the skin
Tactile sensation	Cotton wool (dorsum of foot)
Reflexes	Achilles tendon reflexes

Objectives

- Identify the at-risk foot
- Following examination of the foot, each patient can be assigned to a risk category, which should guide subsequent management. Table 9 identifies the progression of risk categories.

Table 9: Progression of risk categories:

Sensory neuropathy and/or foot deformities or bony prominences and/or signs of peripheral ischaemia and /or previous ulcer or amputation
Sensory neuropathy
Non-sensory neuropathy

Treatment

In a high-risk patient, callus, and nail and skin pathology should be treated regularly, preferably by a trained foot care specialist.

Evaluation and education for patients, family and healthcare providers

Education, presented in a structured and organised manner, plays an important role in the prevention of foot problems. Healthcare professionals involved in the management of diabetic foot disease should receive periodic education to improve care for high-risk individuals.

Items which should be addressed when instructing the high-risk patient are set out in table 10:

Table 10: Patient Education

Inspect feet daily, including areas between the toes
Emphasise the need for another person with appropriate skills to inspect feet, should the individual with diabetes be unable to do so.
Regular washing of feet with careful drying, especially between the toes is recommended.
Water temperature – always below 37^0 for washing.
Using a heater or hot-water bottle to warm feet is not recommended.
Avoidance of barefoot walking indoor or outdoor and of wearing shoes without socks should be promoted
Chemical agents or plasters to remove corn and calluses- should not be used.
Recommend daily inspection and palpation of the inside of the shoes.
Tight shoes or shoes with rough edges and uneven seams should not be worn.
Lubricating oils or creams for dry skin may be used - but not between the toes.
Socks should be changed daily.
Wearing of stocking with seams inside our or preferably without any seams is most appropriate.
Tight or knee-high socks should be avoided.
Nails should be cut straight across
Corns and calluses – should be cut by a healthcare provider trained in such procedures
Promote patient awareness of the need to ensure that feet are examined regularly by a healthcare provider.
Recommend that the healthcare provider should be notified at once if a blister, cut, scratch or sore has developed.

Appropriate footwear

Inappropriate footwear is a major cause of ulceration. Specific guidelines on foot wear and off-loading are available in the international consensus document. The main points are:

- Appropriate footwear should be used both indoors and outdoors, and should be adapted to the altered biomechanics and deformities- essential for prevention.
- Patients without loss of protective sensation can select off-the-shelf foot wear.
- In patients with neuropathy and/or ischaemia, extra care must be taken when fitting footwear – particularly when foot deformities are also present.
- The inside of the shoe should be 1-2cm longer than the foot itself. The internal width should be equal to the width of the foot at the site of the metatarsal phalangeal joints, and height should allow enough room for the toes.

Part B: Active ulceration

Assessment

There are four core principles which guide management of active ulceration:

1. Treatment of any associated infections
2. Revascularisation if possible and feasible
3. Off-loading in order to minimise trauma to the ulcer site
4. Management of the wound and wound bed in order to promote healing.

Principles of wound and wound bed management are:

- Regular inspection
- Cleansing
- Removal of surface debris
- Protection of the regenerating tissue from the environment.
- The risk of osteomyeltitis should be determined. After initial debridement, if it is possible to touch bone with a sterile probe, it is likely that the underlying bone is infected.
- Comprehensive assessment of the patient including the wound bed should be conducted by persons trained in such assessment. It is recognised that such assessment will require knowledge and skills of more than one professional discipline.
- Most ulcers can be classified as neuropathic, ischaemic or neuro-ischaemic. This will guide further therapy. Assessment of the vascular tree is essential in the management of a foot ulcer.

Objectives

- Discuss the outcome of assessment with the patient, identify, and agree short and long term treatment objectives.
- Identify a time frame to review the objectives.

Treatment

- The wound should be cleansed regularly with clean water or saline.
- Exudate should be controlled in order to maintain a moist wound environment.
- In addition to regular debridement with a scalpel, other agents may be used in an attempt to clean the wound bed. The best evidence supports the use of hydrogels although contraindication should be considered, such as infection, excessive exudate, or critical limb ischaemia but other debriding agents may also be effective.
- Plantar neuropathic ulcers which do not heal readily with appropriate off-loading can be considered (provided the arterial blood supply is adequate) for management by excision of the whole ulcer bed and (if indicated to reduce abnormal pressure loading) of underlying bone.
- Neuropathic ulcers should be debrided as soon as possible by a person trained in debridement. This debridement should not be performed in ischaemic or neuro-ischaemic ulcers without signs of infection.
- **Infection in a diabetic foot presents a direct threat to the affected limb and should be treated promptly and actively.** Signs and/or symptoms of infection, such as fever, pain or increased white cell count, increased ESR is often absent.
- Patients with an ulcer deeper than subcutaneous tissues should be treated intensively and depending on local resources and infrastructure, hospitalisation must be considered.

Evaluation

- If one or more pedal pulses are absent or if an ulcer does not improve despite optimal treatment, more extensive vascular evaluation should be performed. As a first step, the ABPI can be measured. ABPI may be falsely elevated due to calcification of the arteries. Preferably other tests such as measurement of the toes pressure or transcutaneous pressure of oxygen should be used.
- Ill fitting shoes are a frequent cause of ulceration and therefore shoes should be examined meticulously in all patients.

Documentation

All aspects of care, including assessment, treatment plan, implementation and evaluation should be documented clearly, comprehensively and meet legal requirements and local policies and/or guidelines.

3.6 Guidelines for the prevention of pressure ulcers

Introduction

The guidelines for prevention of pressure ulceration are adapted from the joint NPUAP/EPUAP guidelines published in 2009 and are reproduced with kind permission of EPUAP. European Pressure Ulcer Advisory Panel and National Pressure Ulcer Advisory Panel. Prevention and treatment of pressure ulcers: quick reference guide for clinicians. Washington DC: National Pressure Ulcer Advisory Panel; 2009.

We are providing a summary of these guidelines in the form of a quick reference guide and the complete set of guidelines are available at **www.epuap.org**. The format of this section is adapted from that of NPUAP/EPUAP and differs slightly from previous sections.

A Recommendation supported by direct scientific evidence from properly designed & implemented controlled trials on PU in humans providing statistical results that consistently support the guideline statement. (Level I studies)

B Recommendation supported by direct scientific evidence from properly designed & implemented clinical series on PU in humans providing statistical results that consistently support the recommendation. (Level II, III, IV, V studies)

C The recommendation is supported by expert opinion or indirect evidence (e.g. studies in animal models & other types of chronic wounds).

3.6.1 Risk Assessment

Examples of risk assessment tools are available in appendices.

- Establish a risk assessment policy in all health care settings. (Strength of Evidence = C.)
- Educate healthcare professionals on how to achieve an accurate and reliable risk assessment. (Strength of Evidence = B.)
- Document all risk assessments. (Strength of Evidence = C.)

Risk Assessment Practice

- Use a structured approach to risk assessment to identify individuals at risk of pressure ulcer development. (Strength of Evidence = C.)

A structured approach may be achieved through the use of a risk assessment scale in conjunction with a comprehensive skin assessment and clinical judgment. Evidence suggests that their introduction in conjunction with the establishment of skin care teams, education programs and care protocols can reduce the incidence of pressure ulcers.

- Use a structured approach to risk assessment which includes assessment of activity and mobility. (Strength of evidence = C.)
  - Consider individuals who are bedfast and/or chairfast to be at risk of pressure ulcer development.
- Use a structured approach to risk assessment which includes a comprehensive skin assessment including alterations to intact skin. (Strength of evidence = C.)
  - Consider individuals with alterations to intact skin to be at risk of pressure ulcer development.

- Alteration in skin condition includes dry skin, erythema and other alterations. The presence of non-blanching erythema also increases the risk of further pressure ulcer development.
- Use a structured approach to risk assessment which is refined by using clinical judgment informed by knowledge of key risk factors. (Strength of Evidence = C.)
- Consider the impact of the following risk factors on an individual's risk of pressure ulcer development.

a) Nutritional indicators

Nutritional indicators include haemoglobin, anaemia, and serum albumin, measures of nutritional intake, and weight.

b) Factors affecting perfusion and oxygenation

c) Skin moisture

d) Increased age

- Consider the potential impact of the following risk factors on an individual's risk of pressure ulcer development.

a) Friction and shear (Subscale Braden Scale)

b) Sensory perception (Subscale Braden Scale)

c) General health status

d) Body temperature

- Conduct a structured risk assessment on admission, and repeat as regularly and as frequently as required by patient acuity. Reassessment should also be undertaken if there is any change in patient condition. (Strength of Evidence = C.)

- Develop and implement a prevention plan when individuals have been identified as being at risk of pressure ulcer development. (Strength of Evidence = C.)

  - Risk factors identified in a risk assessment should lead to an individualized plan of care to minimize the impact or risk factors.

3.6.2 Skin Assessment

- Ensure that a complete skin assessment is included in the risk assessment screening policy in place in all health care settings. (Strength of Evidence = C.)

- Educate the professional on how to undertake a comprehensive skin assessment that includes the techniques in identifying blanching response, localized heat, oedema and induration (hardness). (Strength of Evidence = B.)

  These additional assessment techniques can be used for all individuals. However, there is evidence that Category I pressure ulcers are under-detected in individuals with darkly pigmented skin because areas of redness are not as easily seen.

- Inspect skin regularly for signs of redness in individuals identified as being at risk of pressure ulceration. The frequency of inspection may need to be increased in response to any deterioration in overall condition. (Strength of Evidence = B.)

- Skin inspection should include assessment for localized heat, oedema or induration (hardness), especially in individuals with darkly pigmented skin. (Strength of Evidence = C.)

  Localized heat, oedema and induration have all been identified as warning signs for pressure ulcer development. As it is not always possible to see signs of redness on darkly pigmented skin these additional signs should be used for assessment.

- Ask individuals to identify any areas of discomfort or pain that could be attributed to pressure damage. (Strength of Evidence = C.)

  In several studies there is also some indication that pain over the site was a precursor to tissue breakdown.

- Observe the skin for pressure damage due to medical devices. (Strength of Evidence =C.)

- Document all skin assessments including details of any pain possibly related to pressure damage. (Strength of Evidence = C.)

Skin Care

- Do not turn the individual onto a body surface that is still reddened from a previous episode of pressure loading whenever possible. (Strength of Evidence =C.)
- Do not use massage for pressure ulcer prevention (Strength of Evidence = B.)
- Do not vigorously rub skin at risk for pressure ulceration. (Strength of Evidence = C.)

  As well as being painful, rubbing the skin can also cause mild tissue destruction or provoke an inflammatory reaction, particularly in the frail elderly.
- Use skin emollients to hydrate dry skin in order to reduce risk of skin damage. (Strength of Evidence = B.)
- Protect the skin from exposure to excessive moisture with a barrier product in order to reduce the risk of pressure damage. (Strength of Evidence = C.)

3.6.3 Nutrition For Pressure Ulcer Prevention

GENERAL RECOMMENDATIONS

- Screen and assess nutritional status for every individual at risk of pressure ulcers in each health care setting (see examples in appendices).

- Refer individuals with nutritional risk and pressure ulcer risk to a registered dietician and also, if needed to a multidisciplinary nutritional team including a registered dietician, a nurse specialized in nutrition, physician, speech & language therapist, occupational therapist and/or dentist.

3.7 Repositioning for the Prevention of Pressure Ulcers

- Repositioning should be undertaken to reduce the duration and magnitude of pressure over vulnerable areas of the body. (Strength of Evidence = A.)

- The use of repositioning as a prevention strategy must take into consideration the condition of the patient and the support surface in use. (Strength of Evidence = C.)

Repositioning Frequency

- Repositioning frequency will be influenced by the individual (Strength of Evidence = C.) and the support surface in use (Strength of Evidence = A.).

  - Repositioning frequency will be determined by the individual's tissue tolerance, their level of activity and mobility, their general medical condition, the overall treatment objectives and an assessment of the individual's skin condition. (Strength of Evidence = C.)

  - Assess the individual's skin and general comfort. If the individual is not responding as expected to the repositioning regime, reconsider the frequency and method of repositioning. (Strength of Evidence = C.)

- Repositioning frequency will be influenced by the support surface used. (Strength of Evidence = A.)

Repositioning Technique

- Repositioning will maintain the individual's comfort, dignity and functional ability. (Strength of Evidence = C)

- Reposition the individual in such a way that pressure is relieved or redistributed. (Strength of Evidence = C.)

  - Avoid subjecting the skin to pressure and shear forces. (Strength of Evidence = C.)

  - Use transfer aids to reduce friction and shear. Lift, don't drag the individual while repositioning. (Strength of Evidence = C.)

  - Avoid positioning the individual directly onto medical devices, such as tubes or drainage systems. (Strength of Evidence = C.)

  - Avoid positioning the individual on bony prominences with existing non-blanchable erythema. (Strength of Evidence = C.)

  - Repositioning should be undertaken using the 30 degree semi Fowler position or the prone position and the 30 degree-tilted side lying position (alternately right side, back, left side) if the individual can tolerate this position and the medical condition allows. Avoid postures that increase pressure, such as the Fowler's over 30 degree or the 90 degree side lying position, or the semi-recumbent position. (Strength of Evidence = C.)

  - If sitting in bed is necessary, avoid head of bed elevation and a slouched position that places pressure and shear on the sacrum and coccyx. (Strength of Evidence = C.)

Repositioning the seated individual

- Position the individual so as to maintain their full range of activities. (Strength of Evidence = C.)
  - Select a posture that is acceptable for the individual and minimizes the pressures and shear exerted on the skin and soft tissues. (Strength of Evidence = C.)
  - Place the feet of the individual on a foot stool or foot rest when the feet do not reach the floor. (Strength of Evidence = C.)
- Limit the time an individual spends seated in a chair without pressure relief. (Strength of Evidence = B)

Repositioning Documentation

- Record repositioning regimes, specifying the frequency, position adopted and the evaluation of the outcome of the repositioning regime. (Strength of Evidence = C)

Repositioning Education and Training

- Education in the role of repositioning in pressure ulcer prevention should be offered to all persons involved in the care of individuals at risk of pressure ulcer development, including the individual and significant others (where possible). (Strength of Evidence = C)
- Training in the correct methods of repositioning and use of equipment should be offered to all persons involved in the care of individuals at risk of pressure ulcer development, including the individual and significant others (where possible and appropriate). (Strength of Evidence = C.)

3.8 Support Surfaces

General Statements

- Prevention in individuals at risk should be provided on a continuous basis during the time that they are at risk. (Strength of Evidence = C.)

- Do not base the selection of a support surface solely on the perceived level of risk or the Category/ Stage of pressure ulcer. (Strength of Evidence = C.)

  - Selection of an appropriate support surface should also take into consideration factors such as the individual's level of mobility within the bed, comfort, need for microclimate control and the place and circumstances of care provision.

- Choose a support surface compatible with the care setting. (Strength of Evidence = C.)

- Examine the appropriateness and functionality of the support surfaces on every encounter. (Strength of Evidence = C.)

- Verify that the support surface is within its functional life span, through the specific manufacturer's recommended test method (or other industry recognized test method) before use of the support surface. (Strength of Evidence = C.)

Mattress and Bed Use in Pressure Ulcer Prevention

- At a minimum a higher specification foam mattresses rather than standard hospital foam mattresses should be used for all individuals assessed as at risk for pressure ulcer development. (Strength of Evidence = A.)
- There is no evidence of the superiority of one high specification foam mattress over alternative high specification foam mattresses. (Strength of Evidence = A.)

- Use an active support surface (overlay or mattress) for patients at higher risk of pressure ulcer development which is appropriate with the clinical assessment of the risk status of the patient.

- Overlay or mattress replacement alternating pressure active support surfaces have a similar efficacy in terms of pressure ulcer incidence. (Strength of Evidence =A.)

- Continue to turn and reposition where possible all individuals at risk of pressure ulcers. (Strength of Evidence = C.)

The use of support surfaces to prevent heel pressure ulcers

- Ensure that heels are free of the surface of the bed. (Strength of Evidence = C.)

- Heel protection devices should elevate the heel completely (off load) in such a way as to distribute the weight of the leg along the calf without putting pressure on the Achilles tendon. The knee should be in slight flexion. (Strength of Evidence = C.)

  Hyperextension of the knee may cause obstruction of the popliteal vein and this could predispose to deep vein thrombosis.

- Use a pillow under the calves to elevate the heels (floating heels). (Strength of Evidence = B.)

- Inspect the skin of the heels regularly. (Strength of Evidence = C.)

Use of support surfaces to prevent pressure ulcers while seated

- Use a pressure-redistributing seat cushion for individuals sitting in a chair whose mobility is reduced and who are thus at risk of pressure ulcer development. (Strength of Evidence = B.)

- Limit the time an individual spends seated in a chair without pressure relief (Strength of Evidence = B.)

- Give special attention to individuals with spinal cord injury. (Strength of Evidence = C.)

The use of other support surfaces in pressure ulcer prevention

- Avoid use of synthetic sheepskin; cut-out, ring or doughnut type devices; and water-filled gloves. (Strength of Evidence = C.)

- Natural sheepskin might assist the prevention of pressure ulcers. (Strength of Evidence = B.)

Special Population: Operating Room Patients

- Refine risk assessment of individuals undergoing surgery by examining other factors which are likely to occur and will increase risk of pressure ulcer development including:

a) Length of the operation

b) Increased hypotensive episodes intra-operatively

c) Low core temperature during surgery

d) Reduced mobility on day 1 post-operatively

- Use a pressure-redistributing mattress on the operating table for all individuals identified as being at risk of pressure ulcer development. (Strength of Evidence = B).

- Position the patient in such a way as to reduce the risk of pressure ulcer development during surgery. (Strength of Evidence = C.)

- Elevate the heel completely (off load) in such a way as to distribute the weight of the leg along the calf without putting all the pressure on the Achilles tendon. The knee should be in slight flexion. (Strength of Evidence = C.)

- Elevate the individual's heels during surgery to reduce the risk of pressure ulcer occurrence on the heel. (Strength of Evidence = C.)

- Pay attention to pressure redistribution prior to and after surgery. (Strength of Evidence = C.)

  - Place individuals on a pressure-redistributing mattress both prior to and after surgery. (Strength of Evidence = C.)

  - Position the individual in a different posture preoperatively and postoperatively to the posture during surgery. (Strength of Evidence = C.)

SECTION 4:

References and Appendices

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Appendices

1. Glossary of Terms
2. Assessment Tools.
3. Braden Pressure Ulcer Risk Assessment Tool.
4. Waterlow Pressure Ulcer Risk Assessment Tool.
5. MUST – Nutritional screening tool.
6. Screening assessment sheet for clinical examination of diabetic foot.
7. Audit Tool

Appendix 1: Glossary of Terms

- **Abrasion:** Produced by a rough surface striking the body tangentially removing part of the outer layer of skin.
- **Abscess:** A collection of purulent material.
- **Aerobes:** Organisms requiring oxygen for survival.
- **Aetiology:** Cause.
- **Amputation:** Resection of a terminal part of a limb.
- **Anaerobes:** Organisms that do not require oxygen for survival.
- **Angiogenesis:** This occurs during the proliferative phase of healing when new blood vessels infiltrate the wound and endothelial budding forms capillaries.
- **Angiography:** method to visualise blood vessels.
- **Angioplasty:** Re- establishment of an arterial lumen by percutaneous transluminal instrumentation/technique.
- **Ankle Brachial Pressure Index (ABPI):** The ratio of ankle to brachial systolic blood pressure and assesses lower extremity arterial perfusion. Measurement can be performed with a hand-held Doppler ultrasound.
- **Ankle-flare:** The presence of small thread like venules particularly in the medial aspect of the ankle signifying valve incompetence of the perforator veins.
- **Antibiotic:** A chemical substance produced by a micro-organism which has the capacity to dilute solutions, to inhibit selectively the growth (static) of micro-organisms or to kill (cidal) them.
- **Apoptosis:** Programmed self destruction of cells or cell death which is part of the normal process of growth control.
- **Arthritis:** Inflammation of a joint.
- **Asepsis:** Without pathogens, infections, or toxins.
- **Aseptic Technique:** Absence of micro-organisms in the surgical environment to reduce the risk of infection.
- **Athletes foot:** Fungal infection between the toes.
- **Atrophie Blanche:** A smooth ivory white plaque of sclerosis stippled with telangiectasis and surrounded by hyper-pigmentation occurring on the lower limb.
- **Autolysis:** Natural, spontaneous process of devitalised tissue being separated from viable tissue. Together with proteolytic enzymes, macrophage activity is thought to be responsible for autolysis.
- **Biosurgery:** Removal of slough or debridement of necrotic tissue by larval (maggot) therapy.
- **Blanchable erythema:** Reddened areas on the skin that temporarily turn white or pale when pressure is applied with a fingertip. It is usually due to a normal reactive hyperaemia.
- **Bottoming out:** Expression used to describe inadequate support from a mattress or seat cushion as determined by a hand check. If, when a fist is pressed into the surface of a mattress or seat cushion the supporting base can be felt the item is said to have 'bottomed out' and is no longer able to provide pressure relief.
- **Bridging:** Epithelial tissue forms a bridge from one side of wound to the other with a cavity underneath. Usually seen in an infected cavity wound.

- **Bulla/Bullae:** Another term for blisters. Circumscribed, elevated, palpable mass >0.5 cm, containing serous fluid.
- **Burger's test:** In the presence of critical arterial disease where the A.B.P.I is < 0.5 or the perfusion pressure of the lower limb is severely impaired, Burger's test can be demonstrated. The patient lies supine and the limb is elevated to about 45 degrees for a period of not less than 2 minutes. The foot may go pale with no demonstrable capillary return and the presence of venous guttering in the foot can be seen. To complete a positive test the patient then sits with the leg dependent over the edge of the bed and after a further 1-2 minutes an intense dusky red hyperaemic response is seen.
- **Callus:** A build up of keratinised skin. This is a reaction to persistent pressure.
- **Cellulitis:** A spreading non-suppurative infection of the soft tissue. Inflammation and infection of the skin and subcutaneous tissue most commonly due to streptococci or staphylococci.
- **Charcot-foot:** Non-infectious destruction of bone and joint associated with neuropathy, neuro-osteoarthropathy.
- **Chronic Venous Disease (CVD):** Defined as ambulatory venous hypertension with an abnormally high pressure in the superficial lower leg veins, generated by standing or walking. The fundamental mechanism is damage to vein valves rendering them incompetent particularly the perforator veins. Clinical signs of C.V.D. include oedema, pigmentation, eczema, lipodermatosclerosis, atrophie blanche and ulceration.
- **Chronic Wound:** A wound that has failed to proceed through an orderly and timely reparative process to produce anatomic and functional integrity or that has proceeded through the repair process without establishing a sustained anatomic and functional result.
- **Claudication:** Severe pain in the legs associated with spasm of the arteries.
- **Clean technique:** Modified aseptic technique performed by one person where sterile gloves are not required and potable tap water or shower can be used for cleansing.
- **Co morbidity:** The presence of co-existing or additional disease with reference to either an initial diagnosis or to the index condition that is the subject of study. Co-morbidity may affect the ability of affected individuals to function and their survival. It may be used as a prognostic indicator for length of hospital stay, cost factors and outcome or survival.
- **Colonisation:** Micro-organisms present in or on a host, without host interference or interaction and without eliciting symptoms in the host.
- **Contact Dermatitis:** Is an exogenous eczema caused by external factors that have either irritated the skin or caused an allergic reaction. The eczema normally occurs in areas of direct contact but if sufficiently severe the eczema may become generalised. Researchers have observed that patients with eczema around their leg ulcers have more allergies than those without.
- **Contamination:** Presence of micro-organisms but without multiplication.
- **Contraction:** A function of the healing process in granulating wounds whereby the edges of the wound are drawn towards each other in wounds healing by secondary intention.
- **Contusion:** Rupture of small blood vessels sustained from a blow with a blunt instrument and causing localised bleeding into the tissue.
- **Critical colonisation:** Delayed healing with malodour, raised levels of exudate and slough present in the wound but without clinical infection and surrounding cellulites.
- **Cytokine:** A chemical messenger. See also growth factors.
- **Cytotoxic:** Chemical that is directly toxic to cells preventing their reproduction or growth.

- **Debridement:** The removal of devitalised or contaminated tissue.
- **Deep infection:** Evidence of abscess, septic arthritis, osteomyelitis or septic tenosnovitis.
- **Dehiscence:** The breaking down of surgically closed wound.
- **Demarcation:** When devitalised tissue begins to separate from the viable wound tissue and the wound bed becomes apparent.
- **Dermatitis:** Inflammation of the skin, either due to direct contact with an irritating substance, or to an allergic reaction.
- **Devitalised:** Tissue that is no longer viable.
- **Diabetic foot:** Infection, ulceration and/or destruction of deep tissue associated with neurological abnormalities and various degrees of peripheral vascular disease in the lower limb in a person with diabetes.
- **Diabetic neuropathy:** Presence of symptoms and/or signs of peripheral nerve dysfunction in people with diabetes after exclusion of other causes.
- **DoHC:** Department of Health and Children.
- **Doppler:** A machine that can detect the movement of blood cells within the blood vessel and measure blood flow. Used to measure the ABPI.
- **Epithelium or Epithelial tissue:** The tissue that migrates across the wound in the final stage of wound healing. These epidermal cells are pink/white in colour at the wound edges or in islands over granulation tissue.
- **EPUAP:** European Pressure Ulcer Advisory Panel.
- **Erythema:** A redness of the skin caused by congestion of capillaries due to injury, infection, inflammation or hyperaemia.
- **Eschar:** Hard necrotic tissue. It often appears black and leathery.
- **Excoriation:** Stripping of the skin.
- **Exudate:** Serous fluid which has passed through the walls of a damaged or overextended vein. Contains growth factors in the acute wound and may contain bacteria, dead white cells, and chronic inflammatory cytokines if the wound is chronic.
- **Fissures:** Cracks, splits and small cuts.
- **Fistula:** An abnormal passage that has formed between two organs e.g. bowel and skin. Fistulas may be congenital or caused by injury, infection or the spread of malignant disease.
- **Foot deformity:** Structural deformities in the foot such as presence of hammertoes, claw- toes, hallux valgus, prominent metatarsal heads, status after neuro-osteoarthropathy, amputation or other foot surgery.
- **Foot lesion:** Blister, erosion, minor cut or ulcer on the foot.
- **Formulary:** A wound dressing formulary consists of an agreed, regularly revised, limited list of dressings by a group of practitioners.
- **Friable:** Easily damaged- wound bleeds easily when touched.
- **Fulminant:** Fast spread of a disease.
- **Gaiter Area:** the area of the lower limb in which most venous ulcers occur. Extends from the lower third of the lower limb to the ankle.
- **Gangrene:** Death of tissue generally associated with loss of vascular supply and followed by bacterial invasion and putrefaction.

- **Granulation:** During the proliferative phase of healing, this is the bright red tissue formed from new capillary loops which are red/deep pink and moist. They have a granular appearance.
- **Growth Factors:** Peptides which are a sub-set of cytokines vital for cell proliferation.
- **Haematoma:** A bruise or collection of blood in tissues.
- **Haemostasis:** The arrest of bleeding either by the physiological properties of vasoconstriction, coagulation or by surgical means.
- **Hallux Valgus:** Deformity of the big toe.
- **HSE:** Health Service Executive
- **Hydrophobic:** Water repellent.
- **Hydrophyllic:** Can readily absorb water.
- **Hyperaemia:** The presence of excess blood in the vessels supplying part of the body.
- **Hyperglycaemia:** Elevated serum glucose levels.
- **Hypergranulation:** Overgranulation- excessive laying down of new blood vessels creating a bulge of highly vascular tissue which bleeds easily. The tissue forms beyond the level of the surface level of the wound and prevents epithelialisation from occurring.
- **Hyperkeratosis:** thickening of the epidermis.
- **Hypertension:** High blood pressure.
- **Hypertrophic scar:** Develops soon after injury as a result of a wounding from for example, vaccination, acne or surgery. More common in large scars such as burns and unlike keloid these scars do not invade the skin beyond the wound margins.
- **Hypoglycaemia:** Low serum glucose levels.
- **Induration:** Hard (indurated) pigmented skin (lipodermatosclerosis) may be suggestive of venous disease.
- **Infection:** Condition in which the host interacts physiologically and immunologically with a micro-organism. Clinical evidence of redness, heat and pain are prominent. See also surgical site infection.
- **Inflammation:** Defensive reaction to tissue injury; involves increased blood flow and capillary permeability and facilitates physiologic cleanup of the wound; accompanied by increased heat, redness, swelling and pain in the affected area.
- **Insulation:** Maintenance of wound temperature close to body temperature.
- **Intermittent Claudication:** Pain experienced in the calf, thigh, or buttock muscles after walking for a distance and which disappears following a few minutes rest. By implication arterial disease should be suspected and investigated.
- **Intertriginous:** An area where apposing skin surfaces are in prolonged contact such as in the groin or axilla and under the breasts; friction and moisture entrapment are common complications.
- **Intertrigo:** A mild inflammatory process that occurs on apposing skin surfaces because of friction and moisture; characterised by erythema, superficial linear erosions at the base of the skin fold, or circular erosion between the buttocks.
- **Ischaemia:** Deficiency of blood caused by functional constriction or obstruction of a blood vessel.
- **Keloid:** A thick proturberance of scar tissue. This out-growth of excessive collagen continues to grow for a considerable time, in some cases years and can invade the healthy peri-wound skin.

- **Ketoacidosis:** A subsequent build up of acids (keto bodies) in the blood, resulting in a condition of acidosis and associated with hyperglycaemia.
- **Laceration:** Produced when a blunt object strikes the skin with sufficient force to stretch and tear it. A crushing injury ensues and the margins of the wound may be ragged, abraded and bruised.
- **Lesion:** A broad term referring to abnormalities in tissues, may be visible as tissue injury, sores or ulcers.
- **Maceration:** A softening or sogginess of the tissue owing to retention of excessive moisture. Usually presents as moist red/white and wrinkled.
- **Macrophage:** Blood cells which destroy bacteria and devitalised tissue and produce a variety of growth factors.
- **Methicillin-Resistant Staphylococcus aureus (MRSA):** Staphylococcus aureus bacterium that is not succeptible to extended-penicillin antibiotic formulas, such as Methicillin, oxacillin or nafcillin.
- **MMP Matrix metalloproteinase:** enzymatic compound capable of connective tissue degradation; classified as collagenases, gelatinases and stromelysins.
- **MVTR:** Moisture vapour transmission rate; measured in units of weight of moisture vapour per area of material per time period.
- **Necrosis:** The local death of tissue. This tissue is often black/brown in colour and leathery in texture.
- **Neuro-ischaemic:** The combination of diabetic neuropathy and peripheral arterial disease.
- **Neuropathy:** Nerve damage leading to numb or sometimes painful feet.
- **NPUAP:** National Pressure Ulcer Advisory Panel.
- **Onychauxis:** Thickening of the nails.
- **Onychocryptosis:** Nail deformities such as ingrown toenails.
- **Onychogryphosis:** Deformities of the nails.
- **Orthosis:** An appliance which controls, corrects or accommodates a structural or functional abnormality.
- **Osteomyelitis:** Inflammation of bone and marrow usually caused by pathogens that enter the bone during an injury or surgery.
- **Overgranulation:** See Hypergranulation.
- **Pathogen:** Any disease- producing agent or micro-organism.
- **Pemphigus:** A group of serious diseases of the skin characterises by the appearance of bullae (blisters) of various sizes on apparently normal skin and mucous membrane. It is thought to be an autoimmune disease and occurs in men and women in middle and late adulthood.
- **Pemphigus:** An uncommon chronic intra-epidermal blistering disease characterised by thin walled bullae.
- **Perfusion:** Blood flow to the skin.
- **Perioperative:** Literally, around (the time of) surgery. More specifically, the period of time extending from when the patient goes into the hospital, clinic, or doctor's office for surgery until the time the patient is discharged home.
- **Peripheral arterial disease (PAD):** Disease of mostly small blood vessels in the extremities (hands and feet), as narrowing of arteries.

- **Periwound:** The area immediately around the wound.
- **Phlebitis:** Inflammation of a vein.
- **Potable:** water of sufficient quality to be served as drinking water.
- **Pressure Ulcer:** Area of localised tissue damage caused by ischaemia due to pressure, friction, or shear.
- **PSI:** Pounds per square inch. A measure used to determine pressure applied to a wound when various wound cleansing techniques are used.
- **Purpura:** Bleeding beneath the skin or mucous membranes; it causes black and blue spots (ecchymosis) or pinpoint bleeding.
- **Pus:** Thick fluid indicative of infection containing leukocytes, bacteria and cellular debris.
- **Pyogenic:** Producing pus.
- **Reactive hyperaemia:** Extra blood in vessels occurring in response to a period of blocked blood flow.
- **Revascularisation:** Improving blood supply through vascular surgery. A bypass graft will be inserted into the blocked or narrowed blood vessel.
- **Senescent cells:** An age-related decrease in the proliferation potential in dermal fibroblasts; an occurrence observed in chronic wounds in which fibroblasts have an impaired responsiveness to growth hormone; a response that may be due to the increased number of senescent cells.
- **Shear:** Trauma caused by tissue layers sliding against each other; results in disruption or angulation of blood vessels.
- **Sinus:** Course or pathway that can extend in any direction from the wound surface; results in dead space with potential for abscess formation.
- **Slough:** The term used to describe the thick yellow layer which often covers the wound and is strongly adherent to it. Its presence can be related to the end of the inflammatory stage of healing when dead cells have accumulated in the exudate.
- **Stasis:** Stagnation of blood caused by venous congestion.
- **Stemmer sign:** Thickened skin fold at the base of the second toe or second finger that is an early diagnostic sign of lymphoedema. A positive result occurs when this tissue cannot be lifted only grasped as a lump of tissue. In a negative result it is possible to lift the tissue normally.
- **Strike- through:** Evidence of wound exudate appearing on the outer surface of the wound dressing, indicating a need for dressing change. Exudate saturating non-occlusive dressing which does not have a bacterial barrier is believed to act as a portal for the entrance of pathogens.
- **Surgical Site Infection:** classed according to the Centre for Disease Control (www.cdc.org) classification. That is, only skin and subcutaneous tissue (superficial incisional SSI), and those involving deeper soft tissues of the incision (deep incisional SSI).
- **Tenosynovitis:** Inflammation of the tendon sheath.
- **Theraputic footwear:** Footwear designed to relieve biochemical stress on an ulcer and which can accommodate dressings.
- **Thrombosis:** Intravascular formation of a blood clot (thrombus)
- **Tinea pedis:** Fungal infection of the foot.
- **Transcutaneous:** Through the skin.
- **Trophic:** Thinning of skin and ridging of nails.

- **Ulcer:** Open sore.
- **Undermine:** Tissue destruction to underlying intact skin along wound margins.
- **Unstageable pressure ulcer:** Covered with eschar or slough which prohibits complete assessment of the wound.
- **Varicosities:** dilated tortuous superficial veins.
- **Vasculitis:** Inflammation of small arteries or veins with resulting fibrosis and thrombi formation. It is usually associated with rheumatoid disease.
- **Vasoconstriction:** Constriction of the blood vessels.
- **Vasodilation:** Dilation of blood vessels especially small arteries and arterioles.
- **Venous Insufficiency:** Deep or superficial veins become incompetent permitting reverse flow and resulting in raised pressure in the superficial veins during ambulation.
- **Venous:** Pertaining to veins.
- **Verruca:** Small hard benign growths on the skin: warts.
- **Vesicle:** Circumscribed, elevated, palpable mass < 0.5 cm, containing serous fluid..
- **Virulence:** degree of pathogenicity of an organism.
- **Wound Bed Preparation (WBP):** is the global management of the wound to accelerate endogenous healing or to facilitate the effectiveness of other therapeutic measures.
- **Wound:** A cut or break in the continuity of the skin caused by injury or operation.

Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Wound Assessment Inventory

Name _____ Address _____

_____

_____ PCN _____ D.O.B. _____ Phone Number _____

Consultant _____ Nurse _____ GP _____

Contact Details _____

Medications (current and recent)

Past Medical History

Peripheral Vascular Disease _____

Myocardial Infarction _____

C.O.A.D. _____

C.V.A. _____

Hypertension _____

Osteroartritis _____

Rheumatoid Arthritis _____

Diabetes Type 1 _____ Type 2 _____

Random Blood Sugar _____

Phlebitis _____

D.V.T. _____

Injury to ankle or leg _____

Varicose Veins _____

V.V. injections or surgery _____

Appetite Poor ___ Fair ___ Good ___

Smoking Yes ___ No ___

Allergies

Do you have any known allergies to :

Dressings _____

Medication _____

Other _____

Appendix 2: Examples of Wound Assessment Forms (continued)

Name	PCN

Date											
Wound Size (in cm2)											
Measurement of slough; % of wound it covers											
Wound Bed (indicate if present or absent)											
Epithelization											
Granulation											
Necrosis											
Slough											
Exudate levels											
Low											
Moderate											
High											
Very high											
Did last dressing hold exudate?											

Date											
Odour											
None											
On dressing change											
All the time											
Peri wound area											
Maceration											
Oedema											
Erythema											
Fragile											
Dry /scaling											
Healthy / Intact											
Pain Score (0-5) Assess prior to dressing change using visual analogue score											
Indicate if wound swabs were taken											
Dressing applied											
Signature											

Appendix 2: Examples of Wound Assessment Forms (continued)

Date of Review											

	Right	Left
Patients Blood Pressure		
Limb Assessment		
Stasis Oedema		
Eczema		
Brown Pigmentation		
Atrophe Blanche		
Visible Varicose Veins		
Induration/ Lipodermatosclerosis		
Ankle Flare		
Ankle Pulses		
Palpable		
Reduced		
Absent		
Measurements		
Ankle Circumference		
Calf Circumference		
Ankle Movements Full/ limited/ fixed		
Doppler Assessment		
	Right	**Left**
Bracial Systolic		
Central Bracial Systolic		
Dorsalis Pedis Pulse		
Posterior Tibialis		
Highest Ankle Systolic		
A.B.P.I.		

Wound Aetiology

1. Venous Ulcer
2. Mixed Venous/ arterial
3. Arterial
4. Pressure Ulcer
5. Pretibial laceration
6. Surgical wound
7. Burn
8. Diabetic neuropathic
9. Diabetic ischaemic
10. Neuro-ischaemic
11. Trauma
12. Other_____

Location

please state

_____

Wound History

Recurrence

Length of time since previous ulcer

Number of occurrences

Duration of wound

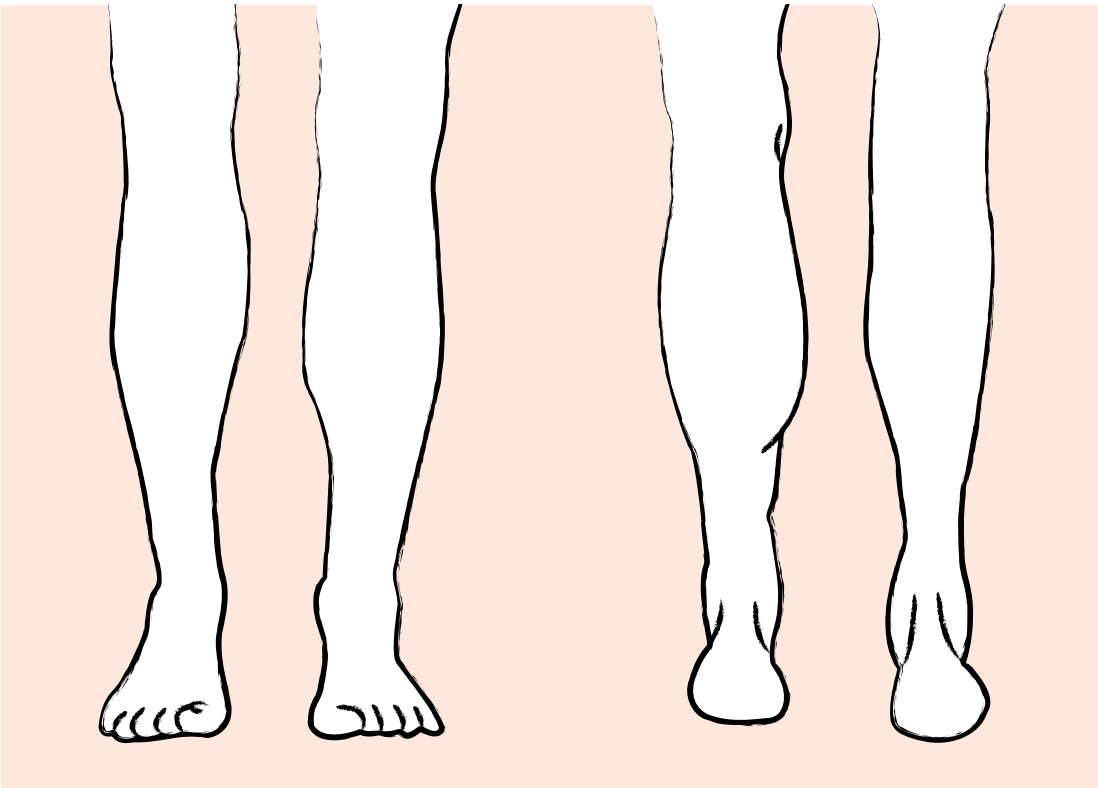
Size at assessment

Current dressing regime

Frequency of dressing changes.

Anatomical chart

Please mark the area of lower limb ulceration on chart.



Appendix 2: Wound Assessment Forms from AMNCH Tallaght

THE ADELAIDE & MEATH HOSPITAL, DUBLIN
INCORPORATING
THE NATIONAL CHILDREN'S HOSPITAL

Name: .....
Address: .....
.....
M.R.N.: ..... D.O.B.: .....
Phone No.: .....
Consultant: .....

WOUND ASSESSMENT & MANAGEMENT CHART

INITIAL ASSESSMENT DETAILS

Type of Wound: .....

Duration of Wound: .....

Location of Wound: .....

Nutrition: Poor / Adequate / Good ..... **Referred to Nutritionalist:** Yes / No .....

FACTORS WHICH MAY DELAY HEALING (TICK IF PRESENT)			
(THIS IS NOT A DEFINITIVE LIST)			
Autoimmune Diseases		**DRUGS**	
Diabetes Mellitus		Steroids	
Cardiac Disease		N.S.A.I.D.S	
Anaemia		Cytotoxics	
Reduced Tissue Perfusion		Immunosuppresents	
Chronic Breathing Difficulties		Anticoagulants	
Malabsorption Syndrome		Smoker	
Wound Infection Present		Other	
Foreign Body			
Radiotherapy			
Immobility			

Allergies:.....

B.P. ..... **Urinalysis:**.....

.....

Blood Sugar: Yes ☐ No ☐ Result: .....

Ankle Brachial Index Performed: Yes ☐ No ☐

RESULT: Right..... Left.....

Compiled developed by Tissue Viability Clinical Nurse Specialists AMNCH & SJH. & Area 4 Community R520

335706163

THE ADELAIDE & MEATH HOSPITAL, DUBLIN
INCORPORATING
THE NATIONAL CHILDREN'S HOSPITAL

Surname: .....
Forenames: .....
Address: .....
.....
Hospital No.: ..... D.O.B.: .....
Consultant: .....

WOUND ASSESSMENT CHART

To be completed at each dressing change/measure weekly

Date										
WOUND DIMENSIONS										
Max. length mm.										
Max. width mm.										
Depth mm.										
Undermining mm.										
WOUND BED					ESTIMATE IN %					
Necrotic (black)										
Sloughy (yellow)										
Granulating (red)										
Epithelialising (pink)										
Other										
Exudate—Content: High/Moderate/Low										
Odour:										
Condition of surrounding skin										
Intact										
Blisters										
Erythema										
Macerated/Excoriated										
Eczema										
Odema										
Pain in wound:										
Intermittent Continuous										
At Dressing										
*VRS:1-10										
Infection: Yes/No										
Wound swab taken										
Signature:										
Ward:										

*VRS= Verbal Rating Scale

Appendix 2: Wound Assessment Forms from AMNCH Tallaght (continued)

THE ADELAIDE & MEATH HOSPITAL, DUBLIN
INCORPORATING
THE NATIONAL CHILDREN'S HOSPITAL

Surname: .....
Forenames: .....
Address: .....
.....
Hospital No.: ..... D.O.B.: .....
Consultant: .....

WOUND MANAGEMENT PROGRAMME

Only re-write if plan changes

	DATE	DATE	DATE	DATE	DATE
Treatment Objective					
Type of cleansing solution					
Treatment of surrounding skin					
Type of primary dressing					
Type of secondary dressing					
Method of securing dressing					
Type of compression therapy					
Frequency of dressing change					
Patient Education					
Removal of: Sutures / Staples Steristrips					
Signature:					
Ward:					

OUTCOME:
Wound healed ☐ Discharged ☐ Did not continue to attend ☐

FOLLOW-UP REFERRAL:
G.P. ☐ P. H.N. ☐ OPD ☐ A & E ☐ Day Hosp. ☐ Other ☐

Signature: ..... *Date:* .....

THE ADELAIDE & MEATH HOSPITAL, DUBLIN
INCORPORATING
THE NATIONAL CHILDREN'S HOSPITAL

Surname: .....
Forenames: .....
Address: .....
.....
Hospital No.: ..... D.O.B.: .....
Consultant: .....

NURSING NOTES

Date	Time		Signature RGN	Signature Student Nurse

Appendix 3: Examples of Pressure Ulcer Risk Assessment tools - Waterlow

Name: Date of Birth: Room No / Unit:

Waterlow Pressure Ulcer Prevention/Treatment Policy

Ring Scores in Table, Add Total, more than 1 Score/Category Can Be Used

Build/Weight for Height	●	**Skin type Visual Risk Areas**	●	**Sex Age**	●	**Malnutrition Screening Tool (MST) Nutrition Vol. 15, No.6 1999-Australia**		**Date**	**Score**	**Signature**
Average BMI – 20 – 24.9 Above Average BMI – 25 – 29.9 Obese BMI > 30 Below Average BMI < 20 BMI= Wt(kg)/Ht(m)2	0 1 2 3	Healthy Tissue Paper Dry Oedematous Clammy, Pyrexia Discoloured Grade 1 Broken/Spots Grade 2-4	0 1 1 1 1 2 3	Male Female 14-49 50-64 65-74 75-80 81+	1 2 1 2 3 4 5	A – Has Patient Lost Weight Recently Yes - go to **B** No - go to **C** Unsure - go to **C** And score **2** C – Patient Eating Poorly Or Lack of Appetite 'No' = 0; 'Yes' Score = 1	B – Weight Loss Score 0.5 - 5 kg = 1 5 - 10kg = 2 10 - 15kg = 3 >15kg = 4 unsure = 2 Nutrition Score If > 2 refer for Nutrition assessment / intervention			
Continence	●	**Mobility**	●	**Special Risks**						
Complete/ Catherised Urine incont. Faecel incon. Urinary + Faecel Incontinence	0 1 2 3	Fully Restless/Fidgety Apathetic Restricted Bedbound e.g. Traction Chairbound e.g. Wheelchair **# Scores can be discounted after 48 hours provided patient is recovering normally.**	0 1 2 3 4 5	**Tissue Malnutrition** Terminal Cachexia Multiple Organ Failure Single Organ Failure (Resp, Renal, Cardiac,) Peripheral Vascular Disease Anaemia (Hb<8) Smoking	● 8 8 5 5 2 1	**Neurological Deficit** Diabetes, MS, CVA Motor/Sensory Paraplegia (Max of 6) Major Surgery or Trauma Orthopaedic / Spinal On Table > 2 hr# On Table > 6 hr#	● 4-6 4-6 4-6 5 5 8			
Score										
10+ At Risk										
15+ High Risk										
20+ Very High Risk										

Medication – Cytotoxics, Long Term/High Dose Steroids Anti-Inflammatory Max of 4

J Waterlow 1985 Revised 2005* Obtainable from the Nook, Stoke Road, Henlade TAUNTON TA3 5LX
The 2005 revision incorporates the research undertaken by Queensland Health.

Appendix 3: Examples of Pressure Ulcer Risk Assessment tools - Braden Scale

BRADEN SCALE FOR PREDICTING PRESSURE SORE RISK

Patient•s Name _____ Evaluator•s Name_____ Date of Assessment

SENSORY PERCEPTION ability to respond meaningfully to pressure-related discomfort	**1. Completely Limited** Unresponsive (does not moan, flinch, or grasp) to painful stimuli, due to diminished level of con-sciousness or sedation. OR limited ability to feel pain over most of body	**2. Very Limited** Responds only to painful stimuli. Cannot communicate discomfort except by moaning or restlessness OR has a sensory impairment which limits the ability to feel pain or discomfort over • •of body.	**3. Slightly Limited** Responds to verbal commands, but cannot always communicate discomfort or the need to be turned. OR has some sensory impairment which limits ability to feel pain or discomfort in 1 or 2 extremities.	**4. No Impairment** Responds to verbal commands. Has no sensory deficit which would limit ability to feel or voice pain or discomfort..				
MOISTURE degree to which skin is exposed to moisture	**1. Constantly Moist** Skin is kept moist almost constantly by perspiration, urine, etc. Dampness is detected every time patient is moved or turned.	**2. Very Moist** Skin is often, but not always moist. Linen must be changed at least once a shift.	**3. Occasionally Moist:** Skin is occasionally moist, requiring an extra linen change approximately once a day.	**4. Rarely Moist** Skin is usually dry, linen only requires changing at routine intervals.				
ACTIVITY degree of physical activity	**1. Bedfast** Confined to bed.	**2. Chairfast** Ability to walk severely limited or non-existent. Cannot bear own weight and/or must be assisted into chair or wheelchair.	**3. Walks Occasionally** Walks occasionally during day, but for very short distances, with or without assistance. Spends majority of each shift in bed or chair	**4. Walks Frequently** Walks outside room at least twice a day and inside room at least once every two hours during waking hours				
MOBILITY ability to change and control body position	**1. Completely Immobile** Does not make even slight changes in body or extremity position without assistance	**2. Very Limited** Makes occasional slight changes in body or extremity position but unable to make frequent or significant changes independently.	**3. Slightly Limited** Makes frequent though slight changes in body or extremity position independently.	**4. No Limitation** Makes major and frequent changes in position without assistance.				
NUTRITION usual food intake pattern	**1. Very Poor** Never eats a complete meal. Rarely eats more than • •of any food offered. Eats 2 servings or less of protein (meat or dairy products) per day. Takes fluids poorly. Does not take a liquid dietary supplement OR is NPO and/or maintained on clear liquids or IV•s for more than 5 days.	**2. Probably Inadequate** Rarely eats a complete meal and generally eats only about • •of any food offered. Protein intake includes only 3 servings of meat or dairy products per day. Occasionally will take a dietary supplement. OR receives less than optimum amount of liquid diet or tube feeding	**3. Adequate** Eats over half of most meals. Eats a total of 4 servings of protein (meat, dairy products per day. Occasionally will refuse a meal, but will usually take a supplement when offered OR is on a tube feeding or TPN regimen which probably meets most of nutritional needs	**4. Excellent** Eats most of every meal. Never refuses a meal. Usually eats a total of 4 or more servings of meat and dairy products. Occasionally eats between meals. Does not require supplementation.				
FRICTION & SHEAR	**1. Problem** Requires moderate to maximum assistance in moving. Complete lifting without sliding against sheets is impossible. Frequently slides down in bed or chair, requiring frequent repositioning with maximum assistance. Spasticity, contractures or agitation leads to almost constant friction	**2. Potential Problem** Moves feebly or requires minimum assistance. During a move skin probably slides to some extent against sheets, chair, restraints or other devices. Maintains relatively good position in chair or bed most of the time but occasionally slides down.	**3. No Apparent Problem** Moves in bed and in chair independently and has sufficient muscle strength to lift up completely during move. Maintains good position in bed or chair.					
				Total Score				

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Appendix 3: Examples of Pressure Ulcer Risk Assessment tools - Braden Scale

(continued)

Protocols by Risk Level from the Braden Scale

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AT RISK (15-18)* ♦ Frequent turning ♦ Maximal remobilization ♦ Protect heels ♦ Manage moisture, nutrition, and friction and shear ♦ Pressure-reduction support surface if bed- or chair-bound	**MANAGE MOISTURE** ♦ Use commercial moisture barrier ♦ Use absorbent pads or diapers that wick & hold moisture ♦ Address cause if possible ♦ Offer bedpan/urinal and glass of water in conjunction with turning schedules
MODERATE RISK (13-14)* ♦ Turning schedule ♦ Use foam wedges for 30• lateral positioning ♦ Pressure-reduction support surface ♦ Maximal remobilization ♦ Protect heels ♦ Manage moisture, nutrition, and friction and shear	**MANAGE NUTRITION** ♦ Increase protein intake ♦ Increase calorie intake to spare proteins. ♦ Supplement with multi-vitamin (should have vitamin A, C & E) ♦ Act quickly to alleviate deficits ♦ Consult dietitian
HIGH RISK (10-12) ♦ Increase frequency of turning ♦ Supplement with small shifts ♦ Pressure reduction support surface ♦ Use foam wedges for 30• lateral positioning ♦ Maximal remobilization ♦ Protect heels ♦ Manage moisture, nutrition, and friction and shear	**MANAGE FRICTION & SHEAR** ♦ Elevate hob no more than 30•••• ♦ Use trapeze when indicated ♦ Use lift sheet to move patient ♦ Protect elbows & heels if being exposed to friction
VERY HIGH RISK (9 or below) ♦ All of the above + ♦ Use pressure-relieving surface if patient has: • Intractable pain, or • Severe pain exacerbated by turning, or • Additional risk factors *low air loss beds do not substitute for turning schedules*	**OTHER GENERAL CARE ISSUES** ♦ No massage of reddened bony prominences ♦ No donut type devices ♦ Maintain good hydration ♦ Avoid drying the skin

*** If other major risk factors are present, advance to next level of risk.**

Major Risk Factors:
- ♦ Advanced Age
- ♦ Fever
- ♦ Poor Dietary Intake Of Protein
- ♦ Diastolic Pressure Below 60
- ♦ Hemodynamic Instability

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Available at www.bradenscale.com/newlevels.htm

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Appendix 4: MUST Tool

BAPEN
Advancing Clinical Nutrition

'Malnutrition Universal Screening Tool' ('MUST')

MAG
Malnutrition Advisory Group
A Standing Committee of BAPEN

BAPEN is registered charity number 1023927 www.bapen.org.uk

'MUST'

'MUST' is a five-step screening tool to identify **adults,** who are malnourished, at risk of malnutrition (undernutrition), or obese. It also includes management guidelines which can be used to develop a care plan.

It is for use in hospitals, community and other care settings and can be used by all care workers.

This guide contains:

- A flow chart showing the 5 steps to use for screening and management
- BMI chart
- Weight loss tables
- Alternative measurements when BMI cannot be obtained by measuring weight and height.

The 5 'MUST' Steps

Step 1

Measure height and weight to get a BMI score using chart provided. *If unable to obtain height and weight, use the alternative procedures shown in this guide.*

Step 2

Note percentage unplanned weight loss and score using tables provided.

Step 3

Establish acute disease effect and score.

Step 4

Add scores from steps 1, 2 and 3 together to obtain overall risk of malnutrition.

Step 5

Use management guidelines and/or local policy to develop care plan.

Please refer to *The 'MUST' Explanatory Booklet* for more information when weight and height cannot be measured, and when screening patient groups in which extra care in interpretation is needed (e.g. those with fluid disturbances, plaster casts, amputations, critical illness and pregnant or lactating women). The booklet can also be used for training. See *The 'MUST' Report* for supporting evidence. Please note that 'MUST' has not been designed to detect deficiencies or excessive intakes of vitamins and minerals and is of **use only in adults.**

'Malnutrition Universal Screening Tool' ('MUST')

BAPEN
Advancing Clinical Nutrition

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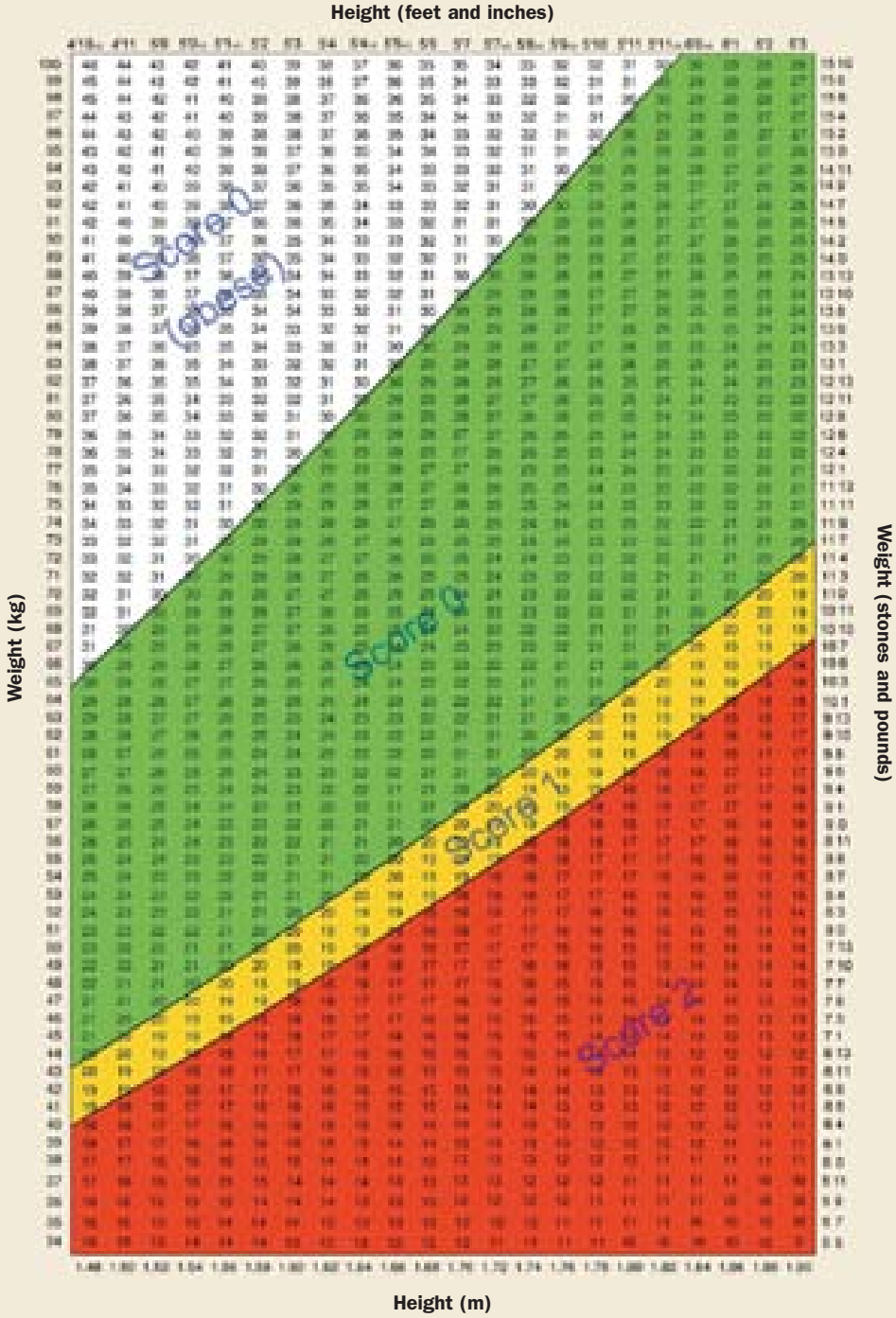
Malnutrition Advisory Group
A Standing Committee of BAPEN

BAPEN is registered charity number 1023927 www.bapen.org.uk

Step 1 – BMI score (& BMI)



Note : The black lines denote the exact cut off points (30,20 and 18.5 kg/m^2), figures on the chart have been rounded to the nearest whole number.

Appendix 4: MUST Tool

(continued)

BAPEN
Advancing Clinical Nutrition

'Malnutrition Universal Screening Tool' ('MUST')

MAG
Malnutrition Advisory Group
A Standing Committee of BAPEN

BAPEN is registered charity number 1023927 www.bapen.org.uk

Step 1 + Step 2 + Step 3

Step 1 – BMI score

BMI kg/m²	Score
>20(>30 Obese)	= 0
18.5-20	= 1
<18.5	= 2

Step 2 – Weight loss score

Unplanned weight loss in past 3-6 months

%	Score
<5	= 0
5-10	= 1
>10	= 2

Step 3 – Acute disease effect score

If patient is acutely ill and there has been or is likely to be no nutritional intake for >5 days
Score 2

If unable to obtain height and weight, see reverse for alternative measurements and use of subjective criteria

Step 4

Overall risk of malnutrition

Add Scores together to calculate overall risk of malnutrition
Score 0 Low Risk Score 1 Medium Risk Score 2 or more High Risk

Step 5

Management guidelines

0 Low Risk

Routine clinical care

- Repeat screening
  Hospital – weekly
  Care Homes – monthly
  Community – annually
  for special groups
  e.g. those >75 yrs

1 Medium Risk

Observe

- Document dietary intake for 3 days if subject in hospital or care home
- If improved or adequate intake – little clinical concern; if no improvement – clinical concern - follow local policy
- Repeat screening
  Hospital – weekly
  Care Home – at least monthly
  Community – at least every 2-3 months

2 or more High Risk

Treat*

- Refer to dietitian, Nutritional Support Team or implement local policy
- Improve and increase overall nutritional intake
- Monitor and review care plan
  Hospital – weekly
  Care Home – monthly
  Community – monthly

* Unless detrimental or no benefit is expected from nutritional support e.g. imminent death.

All risk categories:

- Treat underlying condition and provide help and advice on food choices, eating and drinking when necessary.
- Record malnutrition risk category.
- Record need for special diets and follow local policy.

Obesity:

- Record presence of obesity. For those with underlying conditions, these are generally controlled before the treatment of obesity.

Re-assess subjects identified at risk as they move through care settings
See *The 'MUST' Explanatory Booklet* for further details and *The 'MUST' Report* for supporting evidence.

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Step 2 – Weight loss score

Weight before weight loss (kg)

	SCORE 0 Wt Loss < 5%	SCORE 1 Wt Loss 5-10%	SCORE 2 Wt Loss > 10%
34 kg	<1.70	1.70 – 3.40	>3.40
36 kg	<1.80	1.80 – 3.60	>3.60
38 kg	<1.90	1.90 – 3.80	>3.80
40 kg	<2.00	2.00 – 4.00	>4.00
42 kg	<2.10	2.10 – 4.20	>4.20
44 kg	<2.20	2.20 – 4.40	>4.40
46 kg	<2.30	2.30 – 4.60	>4.60
48 kg	<2.40	2.40 – 4.80	>4.80
50 kg	<2.50	2.50 – 5.00	>5.00
52 kg	<2.60	2.60 – 5.20	>5.20
54 kg	<2.70	2.70 – 5.40	>5.40
56 kg	<2.80	2.80 – 5.60	>5.60
58 kg	<2.90	2.90 – 5.80	>5.80
60 kg	<3.00	3.00 – 6.00	>6.00
62 kg	<3.10	3.10 – 6.20	>6.20
64 kg	<3.20	3.20 – 6.40	>6.40
66 kg	<3.30	3.30 – 6.60	>6.60
68 kg	<3.40	3.40 – 6.80	>6.80
70 kg	<3.50	3.50 – 7.00	>7.00
72 kg	<3.60	3.60 – 7.20	>7.20
74 kg	<3.70	3.70 – 7.40	>7.40
76 kg	<3.80	3.80 – 7.60	>7.60
78 kg	<3.90	3.90 – 7.80	>7.80
80 kg	<4.00	4.00 – 8.00	>8.00
82 kg	<4.10	4.10 – 8.20	>8.20
84 kg	<4.20	4.20 – 8.40	>8.40
86 kg	<4.30	4.30 – 8.60	>8.60
88 kg	<4.40	4.40 – 8.80	>8.80
90 kg	<4.50	4.50 – 9.00	>9.00
92 kg	<4.60	4.60 – 9.20	>9.20
94 kg	<4.70	4.70 – 9.40	>9.40
96 kg	<4.80	4.80 – 9.60	>9.60
98 kg	<4.90	4.90 – 9.80	>9.80
100 kg	<5.00	5.00 – 10.00	>10.00
102 kg	<5.10	5.10 – 10.20	>10.20
104 kg	<5.20	5.20 – 10.40	>10.40
106 kg	<5.30	5.30 – 10.60	>10.60
108 kg	<5.40	5.40 – 10.80	>10.80
110 kg	<5.50	5.50 – 11.00	>11.00
112 kg	<5.60	5.60 – 11.20	>11.20
114 kg	<5.70	5.70 – 11.40	>11.40
116 kg	<5.80	5.80 – 11.60	>11.60
118 kg	<5.90	5.90 – 11.80	>11.80
120 kg	<6.00	6.00 – 12.00	>12.00
122 kg	<6.10	6.10 – 12.20	>12.20
124 kg	<6.20	6.20 – 12.40	>12.40
126 kg	<6.30	6.30 – 12.60	>12.60

Weight before weight loss (st lb)

	SCORE 0 Wt Loss < 5%	SCORE 1 Wt Loss 5-10%	SCORE 2 Wt Loss > 10%
5st 4lb	<4lb	4lb – 7lb	>7lb
5st 7lb	<4lb	4lb – 8lb	>8lb
5st 11lb	<4lb	4lb – 8lb	>8lb
6st	<4lb	4lb – 8lb	>8lb
6st 4lb	<4lb	4lb – 9lb	>9lb
6st 7lb	<5lb	5lb – 9lb	>9lb
6st 11lb	<5lb	5lb – 10lb	>10lb
7st	<5lb	5lb – 10lb	>10lb
7st 4lb	<5lb	5lb – 10lb	>10lb
7st 7lb	<5lb	5lb – 11lb	>11lb
7st 11lb	<5lb	5lb – 11lb	>11lb
8st	<6lb	6lb – 11lb	>11lb
8st 4lb	<6lb	6lb – 12lb	>12lb
8st 7lb	<6lb	6lb – 12lb	>12lb
8st 11lb	<6lb	6lb – 12lb	>12lb
9st	<6lb	6lb – 13lb	>13lb
9st 4lb	<7lb	7lb – 13lb	>13lb
9st 7lb	<7lb	7lb – 13lb	>13lb
9st 11lb	<7lb	7lb – 1st 0lb	>1st 0lb
10st	<7lb	7lb – 1st 0lb	>1st 0lb
10st 4lb	<7lb	7lb – 1st 0lb	>1st 0lb
10st 7lb	<7lb	7lb – 1st 1lb	>1st 1lb
10st 11lb	<8lb	8lb – 1st 1lb	>1st 1lb
11st	<8lb	8lb – 1st 1lb	>1st 1lb
11st 4lb	<8lb	8lb – 1st 2lb	>1st 2lb
11st 7lb	<8lb	8lb – 1st 2lb	>1st 2lb
11st 11lb	<8lb	8lb – 1st 3lb	>1st 3lb
12st	<8lb	8lb – 1st 3lb	>1st 3lb
12st 4lb	<9lb	9lb – 1st 3lb	>1st 3lb
12st 7lb	<9lb	9lb – 1st 4lb	>1st 4lb
12st 11lb	<9lb	9lb – 1st 4lb	>1st 4lb
13st	<9lb	9lb – 1st 4lb	>1st 4lb
13st 4lb	<9lb	9lb – 1st 5lb	>1st 5lb
13st 7lb	<9lb	9lb – 1st 5lb	>1st 5lb
13st 11lb	<10lb	10lb – 1st 5lb	>1st 5lb
14st	<10lb	10lb – 1st 6lb	>1st 6lb
14st 4lb	<10lb	10lb – 1st 6lb	>1st 6lb
14st 7lb	<10lb	10lb – 1st 6lb	>1st 6lb
14st 11lb	<10lb	10lb – 1st 7lb	>1st 7lb
15st	<11lb	11lb – 1st 7lb	>1st 7lb
15st 4lb	<11lb	11lb – 1st 7lb	>1st 7lb
15st 7lb	<11lb	11lb – 1st 8lb	>1st 8lb
15st 11lb	<11lb	11lb – 1st 8lb	>1st 8lb
16st	<11lb	11lb – 1st 8lb	>1st 8lb
16st 4lb	<11lb	11lb – 1st 9lb	>1st 9lb
16st 7lb	<12lb	12lb – 1st 9lb	>1st 9lb

Appendix 4: MUST Tool

(continued)

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Alternative measurements and considerations

Step 1: BMI (body mass index)

If height cannot be measured

- Use recently documented or self-reported height (if reliable and realistic).
- If the subject does not know or is unable to report their height, use one of the alternative measurements to estimate height (ulna, knee height or demispan).

If height & weight cannot be obtained

- Use mid upper arm circumference (MUAC) measurement to estimate BMI category.

Step 2: Recent unplanned weight loss

If recent weight loss cannot be calculated, use self-reported weight loss (if reliable and realistic).

Subjective criteria

If height, weight or BMI cannot be obtained, the following criteria which relate to them can assist your professional judgement of the subject's nutritional risk.

1. BMI

- Clinical impression – thin, acceptable weight, overweight. Obvious wasting (very thin) and obesity (very overweight) can also be noted.

2. Unplanned weight loss

- Clothes and/or jewellery have become loose fitting (weight loss).
- History of decreased food intake, reduced appetite or swallowing problems over 3-6 months and underlying disease or psycho-social/physical disabilities likely to cause weight loss.

3. Acute disease effect

- No nutritional intake or likelihood of no intake for more than 5 days.

Further details on taking alternative measurements, special circumstances and subjective criteria can be found in *The 'MUST' Explanatory Booklet*. A copy can be downloaded at www.bapen.org.uk or purchased from the BAPEN office. The full evidence-base for 'MUST' is contained in *The 'MUST' Report* and is also available for purchase from the BAPEN office.

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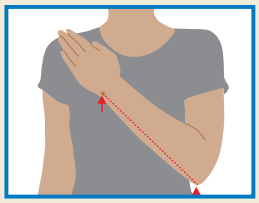
Alternative measurements: instructions and tables

If height cannot be obtained, use length of forearm (ulna) to calculate height using tables below.
(See The 'MUST' Explanatory Booklet for details of other alternative measurements (knee height and demispan) that can also be used to estimate height).

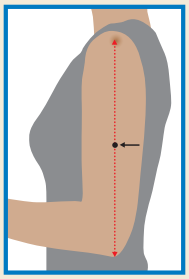
Estimating height from ulna length



Measure between the point of the elbow (olecranon process) and the midpoint of the prominent bone of the wrist (styloid process) (left side if possible).

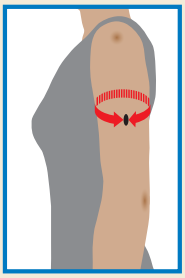
HEIGHT (m)	Men(<65 years)	1.94	1.93	1.91	1.89	1.87	1.85	1.84	1.82	1.80	1.78	1.76	1.75	1.73	1.71
	Men(>65 years)	1.87	1.86	1.84	1.82	1.81	1.79	1.78	1.76	1.75	1.73	1.71	1.70	1.68	1.67
	Ulna length(cm)	32.0	31.5	31.0	30.5	30.0	29.5	29.0	28.5	28.0	27.5	27.0	26.5	26.0	25.5
HEIGHT (m)	Women(<65 years)	1.84	1.83	1.81	1.80	1.79	1.77	1.76	1.75	1.73	1.72	1.70	1.69	1.68	1.66
	Women(>65 years)	1.84	1.83	1.81	1.79	1.78	1.76	1.75	1.73	1.71	1.70	1.68	1.66	1.65	1.63
HEIGHT (m)	Men(<65 years)	1.69	1.67	1.66	1.64	1.62	1.60	1.58	1.57	1.55	1.53	1.51	1.49	1.48	1.46
	Men(>65 years)	1.65	1.63	1.62	1.60	1.59	1.57	1.56	1.54	1.52	1.51	1.49	1.48	1.46	1.45
	Ulna length(cm)	25.0	24.5	24.0	23.5	23.0	22.5	22.0	21.5	21.0	20.5	20.0	19.5	19.0	18.5
HEIGHT (m)	Women(<65 years)	1.65	1.63	1.62	1.61	1.59	1.58	1.56	1.55	1.54	1.52	1.51	1.50	1.48	1.47
	Women(>65 years)	1.61	1.60	1.58	1.56	1.55	1.53	1.52	1.50	1.48	1.47	1.45	1.44	1.42	1.40

Estimating BMI category from mid upper arm circumference (MUAC)



The subject's left arm should be bent at the elbow at a 90 degree angle, with the upper arm held parallel to the side of the body. Measure the distance between the bony protrusion on the shoulder (acromion) and the point of the elbow (olecranon process). Mark the mid-point.

Ask the subject to let arm hang loose and measure around the upper arm at the mid-point, making sure that the tape measure is snug but not tight.



If MUAC is < 23.5 cm, BMI is likely to be <20 kg/m^2.
If MUAC is > 32.0 cm, BMI is likely to be >30 kg/m^2.

Appendix 5: Diabetic Foot screening assessment sheet for clinical examination

The foot is at risk if any of the below are present	
Deformity of bony prominence	Yes/no
Skin not intact (ulcer)	Yes/no
Neuropathy Monofilament undetectable Tuning fork undetectable Cotton wool undetectable	 Yes / no Yes / no Yes / no
Abnormal pressure, callus	Yes / no
Loss of joint mobility	Yes/ no
Foot pulses Tibial posterior artery absent Dorsal pedal artery absent	 Yes/ no Yes/no
Discolouration on dependency	Yes / no
Any others Previous ulcer Amputation	 Yes / no Yes / no
Inappropriate footwear	Yes / no

AUDIT TOOL
for
NATIONAL WOUND MANAGEMENT GUIDELINES

Appendix 6: Clinical Audit Tool

CLINICAL AUDIT

Definition:

'Clinical audit is a quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria and the review of change. Aspects of the structures, process, and outcomes of care are selected and systematically evaluated against explicit criteria. Where indicated changes are implemented at an individual, team, a service level and further monitoring is used to confirm improvement in health care delivery'
(Best Practice in Clinical Audit, 2002 **www.clinicalauditsupport.com***)*

Instructions for use

Each statement in the audit tool has been taken from the accompanying national wound management guidelines. Each care setting can assess to what degree they comply with the statements in their own area of practice. It is intended that this audit tool will provide each care setting with a baseline tool through which they can assess their own practice and identify areas which require improvements. Users of this audit tool are free to add in additional statements, as they deem appropriate and adopt this tool for use in their own setting.

For further support and information please contact your local clinical audit team or to find out more information please see:
www.clinicalauditsupport.com **www.hiqa.ie**

General Principles of Wound Management

Assessment

Statement 1

The individual will receive a comprehensive assessment that reflects the intrinsic and extrinsic factors that have the potential to impact on wound healing or potential wounding.

Quality Objective	Outcome Measure	Target
To ensure that decisions and interventions are based on documented clinical findings	There is evidence of a documented assessment that reflects intrinsic and extrinsic factors	100%
Comment: There should be evidence that the factors listed for patient assessment and wound assessment (see page 27) are recorded.		

Statement 2

On-going assessment should be performed and provide evidence of wound healing or deterioration in wound healing.

Quality Objective	Outcome Measure	Target
To ensure that any changes in treatment are based on changes in patient factors and/or wound factors.	There is documented evidence that provides evidence of wound healing / deterioration?	100%
Comment: On-going assessment should reflect the factors listed for patient assessment and wound assessment (see page 27).		

Statement 3

The individual and carer, if they permit, will be informed of the outcomes of the assessment and will be supported in the decision making for potential management options.

Quality Objective	Outcome Measure	Target
To promote concordance with treatment regimes the individual should be assisted to make informed decisions because of the assessment.	Documented statements that the individual (+/- carer) has been informed of the outcomes of the assessment.	100%
Comment: See page 27.		

Objective

Statement 4

Identify short and long term treatment goals and provide a time frame to review these goals.

Quality Objective	Outcome Measure	Target
To measure the outcomes of wound management, by stating the short and long term goals. Healing may not always be possible and treatment objectives may focus solely on pain and exudate control. Short-term goals may have to be reached to maximise potential for healing, for example debridement.	There is evidence of documented treatment goals.	100%
Comment: See page 28.		

Treatment

Statement 5

All wounds are potentially painful. An approach to pain management should address the cause of pain and implementation of local, regional or systemic patient factors to control it.

Quality Objective	Outcome Measure	Target
To promote wound healing, pain experienced by a patient should be assessed. Pain assessment ensures that factors which can identify deterioration of a wound or aid in diagnosis of wound aetiology or complications are identified.	There is evidence of documented pain assessment.	100%
Comment: See page 28.		

Statement 6

An aseptic wound cleansing technique should be used when a)The individual is immuno-compromised, b) The wound enters a sterile body cavity.

Quality Objective	Outcome Measure	Target
To minimise the potential for wound infection in surgical wound and for immuno-compromised individuals an aseptic technique for wound cleansing should be adopted.	There is documented evidence that an aseptic technique for wound cleansing was taken for these two patient groups.	100%
Comment: See page 28.		

Evaluation

Statement 7

Patients should be referred to members of the multi-disciplinary team or for more detailed diagnostic assessment based on the findings of the initial assessment process or following evaluation of response to current management strategies.

Quality Objective	Outcome Measure	Target
To ensure that patients receive optimal opportunity for assessment and treatment and wound healing in a timely manner.	There is documented evidence of referral for further evaluation when appropriate.	100%
Comment: See page 30.		

Leg Ulceration

Assessment

Statement 8

Patients presenting with leg ulceration should have an assessment and investigations undertaken by a health care professional.

Quality Objective	Outcome Measure	Target
To ensure that individuals have assessments conducted by health professionals	Comprehensive leg ulcer assessments are conducted.	100%
Comment: See table 3, table 4 and table 5 for patient and wound factors that should be recorded at baseline.		

Statement 9

All patients presenting with leg ulceration should be screened for evidence of arterial disease by measurement of ABPI. This should be conducted by a person trained in such measurement.

Quality Objective	Outcome Measure	Target
To ensure that screening for evidence of arterial disease is performed.	ABPI is performed.	100%

Objective

Statement 10

Identify short and long term treatment goals and provide a time frame to review these goals.

Quality Objective	Outcome Measure	Target
To measure the outcomes of wound management, short and long term goals should be stated. Healing may not always be possible and treatment objectives may focus solely on pain and exudate control. Short-term goals may have to be reached to maximise potential for healing, for example debridement.	There is evidence of documented treatment goals.	100%
Comment:		

Treatment

Statement 11

Graduated multi-layer compression systems with adequate padding, or alternate forms of compression therapy, capable of sustaining compression for at least one week should be the first line of treatment for uncomplicated venous leg ulcers (ABPI >0.8) in all settings.

Quality Objective	Outcome Measure	Target
To ensure that compression therapy is the first line of treatment for uncomplicated venous leg ulcer (ABPI > 0.8).	Compression therapy applied, consistent with patient consent agreed treatment goals.	100%
Comment: To ensure that all patients considered suitable for compression therapy receive treatment unless the patient considers it unacceptable or intolerable.		

Evaluation

Statement 12

Venous ulcers that have been open continuously without signs of healing for 3 months or that do not demonstrate any response to treatment after 6 weeks should be reassessed and considered for biopsy for histological diagnosis.

Quality Objective	Outcome Measure	Target
To ensure the underlying factors which may impede healing or alternative diagnosis are identified.	There is documented evidence of reassessment when there are no signs of healing within 6weeks which includes, unless contraindicated, a biopsy for histological diagnosis.	100%
Comment:		

Diabetic Foot Disease

Assessment

Statement 13

All persons with diabetes should be examined at least once a year for potential foot problems by health care professionals.

Quality Objective	Outcome Measure	Target
To ensure early detection of individuals 'at – risk' for foot ulceration.	Annual documented foot assessment	100%
Comment:		

Statement 14

Persons with diabetes who demonstrate risk factors for ulceration should have foot examination completed every 1-6 months.

Quality Objective	Outcome Measure	Target
To ensure close monitoring for foot changes or early signs of ulceration.	Foot examination is conducted every 1-6 months in persons with diabetes and high risk factors for ulceration.	100%
Comment:		

Objective

Statement 15

Identify short and long term treatment goals and provide a time frame to review these goals.

Quality Objective	Outcome Measure	Target
To measure the outcomes of wound management, short and long term goals should be stated. Healing may not always be possible and treatment objectives may focus solely on pain and exudate control. Short-term goals may have to be reached to maximise potential for healing, for example debridement.	There is evidence of documented treatment goals.	100%
Comment:		

Treatment

Statement 16

In persons at high risk for diabetic foot ulceration, callus and nail and skin pathology should be treated regularly, preferably by a trained foot care specialist.

Quality Objective	Outcome Measure	Target
To promote identification and reduction of risk factors in persons at high risk of Diabetic foot ulceration the individual should be assessed by a trained foot care specialist	Documented evidence of complete foot assessment.	100%
Comment:		

Statement 17

Persons with a diabetic foot ulcer deeper than subcutaneous tissues should be treated intensively and depending on local resources and infrastructure, hospitalisation should be considered.

Quality Objective	Outcome Measure	Target
To promote the best opportunity for healing intensive therapies should be provided if required.	Documented evidence of comprehensive wound assessment and treatment.	100%
Comment:		

Evaluation

Statement 18

Ill-fitting shoes are a frequent cause of ulceration in persons with diabetes. Therefore shoes should be examined meticulously in all patients.

Quality Objective	Outcome Measure	Target
To ensure that risk factors for ulceration such as worn or ill-fitting shoes are identified early in persons with diabetes.	Documented evidence that footwear has been examined	100%
Comment:		

Statement 19

All aspects of care, including assessment, treatment plan, implementation and evaluation should be documented clearly, comprehensively, and meet legal requirements and local policies and/or guidelines.

Quality Objective	Outcome Measure	Target
To ensure communication of wound status between professionals, accurate and comprehensive documentation of wound assessment and evaluation must be recorded.	Documentation of assessment, implementation, and treatment regimes in medical notes.	100%

Pressure Ulceration

Assessment

Statement 20

Inspect skin regularly for signs of redness in individuals identified as being at risk of pressure ulceration.

Quality Objective	Outcome Measure	Target
To ensure early detection of individuals 'at – risk' for pressure ulceration.	Documented skin assessment	100%
Comment: See page 41 for information relating to skin assessment		

Statement 21

Screen and assess nutritional status for every individual at risk of pressure ulcers in each health care setting.

Quality Objective	Outcome Measure	Target
To ensure early identification and management of under-nutrition is completed.	Documented nutritional assessment	100%
Comment:		

Statement 22

Conduct a structured risk assessment on admission and repeat as regularly as required by patient acuity

Quality Objective	Outcome Measure	Target
To ensure early identification of patients at risk of pressure damage a structured risk assessment should be carried out.	Documented structured risk assessment (ie using a recognised risk assessment scale).	100%
Comment: See page 38 for information on risk assessment practice.		

Objectives

Statement 23

The use of repositioning should be considered for all at risk individuals .

Quality Objective	Outcome Measure	Target
To reduce the duration and magnitude of pressure over vulnerable areas of the body.	Documented evidence of repositioning.	100%
Comment:		

Treatment

Statement 24

As a minimum, a higher specification foam mattress rather than standard hospital foam mattress should be used for all individuals assessed as at risk for pressure ulcer development.

Quality Objective	Outcome Measure	Target
To ensure early intervention in preventing pressure ulcers.	The mattress should be appropriate to the clinical status and pressure ulcer risk status of the individual	100%
Comment:		

Statement 25

Use an active support surface (overlay or mattress) for patients at higher risk of pressure ulcer development which is appropriate with the clinical assessment of the risk status of the patient.

Quality Objective	Outcome Measure	Target
To ensure early intervention in prevention of pressure ulcers.	The mattress should be appropriate to the clinical status of the patient, the pressure ulcer risk status and the care setting.	100%
Comment:		

Suggestion 26

Limit the time an individual spends in a chair without pressure relief

Quality Objective	Outcome Measure	Target
To promote pressure relief ensure seating is limited to a time frame consistent with the patient's clinical condition.	Documented evidence that pressure relief was provided while patient was seated	100%
Comment: See p (78)		

Evaluation

Statement 27

Document all skin assessments including details of any pain possibly related to pressure damage.

Quality Objective	Outcome Measure	Target
Accurate documentation is essential to monitor the progress of the individual and to aid communication between professionals.	Documented of skin assessment.	100%
Comment:		

Statement 27

Record reposition regimes, specifying the frequency, position adopted and the evaluation of the outcomes of the repositioning regime.

Quality Objective	Outcome Measure	Target
Accurate documentation supports inter-professional communication and appropriate patient management.	Accurate documentation of repositioning regimes.	100%
Comment:		

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