



EWMA Document: Home Care-Wound Care Overview, Challenges and Perspectives

A EWMA Document,
produced in collaboration with



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Summary

This document provides an overview of the main approaches to the organisation of wound care within homecare settings across Europe with case exemplars from England, Germany and the Nordic Countries. By identifying possible barriers to best practice wound care in home care settings and uncovering the preconditions needed to provide safe and high quality care for wound patients and support for their families, the authors provide a list of minimum recommendations for the treatment of patients with wounds in their own homes.

Index keywords / search terms:

home care, wound care, wound management, home care-wound care, patient empowerment, informal carer, team work, organisation of care, chronic care model, multidisciplinary teamwork, interdisciplinary, education, best practice, inter-professional collaboration, eHealth assisted care, holistic assessment, patient perspective, guideline implementation, care pathway,

Introduction

During the past decade, the management of chronic wounds in Europe has gone through a dramatic shift in the location of service delivery from hospital towards home care settings. Coinciding with this, the number of hospital facilities, as well as the number of hospital beds has declined, however, investments in resource allocation to home care have been insufficient^{1,2}.

For decades, health care costs across Europe has grown exponentially¹. In order to avoid a future break down of the health care sector, possible means to save costs are being examined by governments across Europe. These health economic considerations are influencing a drive towards an earlier discharge of hospitalised patients² and as a consequence, more patients (including those with wounds) with a complex pathological condition are being treated at home³. The challenges of providing wound care in the home care setting is underscored by the patient chronicity as 76% of patients with chronic wounds have 3 or more comorbid conditions including hypertension, vascular disease and arthritis, and up to 46% have diabetes⁴. There is a paucity of research which focuses on the subject of home care wound care from a clinical perspective^{3,5-8}. This gap can best be illustrated by the fact that there are no guidelines or recommendations of minimum requirements for providing best care to patients with wounds and their families in the home care setting. Furthermore, there is some evidence to suggest that many patients receiving health care services at home never have their wound aetiology diagnosed^{3,5}.

With this background in mind, EWMA initiated the development of the Home Care Wound Care document. In order to provide a multi-country perspective on the provision of home care wound care across Europe, we collaborated with the German Wound Association, Initiative Chronische Wunden e.V. (ICW) and the British Tissue Viability Society (TVS), with support from the non-profit organisation, HomeCare Europe.

Objectives of this document

- To generate critical discussion and debate of what prerequisites, conditions and knowledge/skills of healthcare practitioners are required to manage wounds in the patients' home.
- To provide recommendations for wound care at home. The recommendations are presented from the organisational, the patient's, and the health care professional's point of view.

Definition of Home Care Wound Care

According to Øvretveit, 'Home Care' is a service model of care designed to provide qualified assistance at home at a fair price⁹; collaborates with health care; is provided by a formal organisation in respect to a system and contributes to the network of services in order to meet the needs of users¹⁰.

For the purpose of this document, we have defined 'home care wound care' as the care that is provided by health care professionals and families,

also called informal carers, to patients with wounds living at home^{11, 12}. The setting of 'home' does not include nursing homes or other residential care settings. This home care wound care may be supportive, rehabilitative or palliative^{5, 11}.

- Chapter 1: provides background information on the rationale for developing this document from a European perspective.
- Chapter 2: presents an overview of home care in Europe and elaborates on the complexity of wounds and the delivery of health care service at home. Information about different ways to organise wound care in home settings in the

Structure and content of the document

The document is presented in six chapters:

Table 1.

Acronyms and Abbreviations	Meaning
CCG (England)	Clinical Commissioning Group, NHS organisations that organise the delivery of health care services in England
CCM	Chronic Care Model
Consumer Price Index	Measures changes in the price level of a market basket of consumer goods and services purchased by households
DRG	Diagnosis Related Group, a statistical system of classifying any inpatient stay into groups for the purposes of payment
GDP	Gross domestic Product is the market value of all officially recognised final goods and services produced within a country in a year, or other given period of time.
GP	General practitioner
Healthcare Assistant (Auxiliary Nurse, Auxiliary Staff)	Healthcare Assistants work in hospital or community settings under the guidance of a qualified healthcare professional. The role can be varied depending upon the healthcare setting
IHCA	Interactive Health Communication Applications
Informal carer	People that undertake unpaid care for someone else in the domestic domain who need extra help with daily living because they are ill
NHS (England)	National Health Service, the publicly funded health care system in England
NHS Trust (Acute Trust)	A National Health Service trust provides services on behalf of the English NHS
PHI	Private Health Insurance
Practice nurse	Practice nurses work in GP surgeries as part of the primary healthcare team, which might include doctors, pharmacists and dieticians. In larger practices, you might be one of several practice nurses sharing duties and responsibilities
SHI	Statutory Health Insurance
TVN	Tissue Viability Nurse
Welfare state	A welfare state is a concept of government in which the state plays a key role in the protection and promotion of the economic and social well-being of its citizens. It is based on the principles of equality of opportunity, equitable distribution of wealth, and public responsibility for those unable to avail themselves of the minimal provisions for a good life. The general term may cover a variety of forms of economic and social organisation. Modern welfare states include the Nordic countries, such as Iceland, Sweden, Norway, Denmark, and Finland which employ a system known as the Nordic model.

European context is presented. This process emerged from consultation with EWMA national co-operating organisations board members.

- Chapter 3: three different examples from England, Germany, and the Nordic Countries of the organisation of wound care in home setting are described.
- Chapter 4: best practice, clinical pathways, chronic care model, team working approach and health in the context of managing wounds in a home care setting is discussed.
- Chapter 5: summarises the challenges and perspectives to be considered while implementing home care wound care, including public health and health economics perspectives. This chapter also raises the possibilities of using eHealth and mobile technologies in the management of wounds at home.
- Chapter 6: discusses wound management techniques, wound care products and patient education. It also provides recommendations on what should be taken into the consideration while developing or evaluating wound care in home care settings.

Document development process

A literature search was conducted using the following databases: Pubmed, CINAHL, British Nursing Index, EMBASE, Cochrane Library, and Joanna Briggs Institute. The following key words and MeSH terms were used: wound care, wound management, home care, community care, home settings, guidelines, therapy.

Grey literature and hand searching of journal articles for further relevant sources was performed.

A document development group was formed among EWMA Council members. This group consulted with the Homecare Europe Council and the European Pressure Ulcer Advisory Panel (EPUAP). The final draft was peer reviewed by EWMA council members.

Acronyms and Abbreviations

Acronyms and abbreviations used throughout the document are presented here

Overview of home care wound care in Europe

Despite a growing demand for health care, many European countries have seen a 6% decrease in the number of hospitals¹³. The aim of this shift in care from secondary to primary service provision has been to promote community and home healthcare delivery, while simultaneously delivering better services, improving productivity, increasing patient safety and improving the quality of care¹³.

From a European perspective, reasons for the shift from hospital to home care are influenced by four key factors; firstly, the change in the demographic profile of the population across Europe as we witness an ageing population. It is estimated that by the year 2025, more than 20% of all Europeans will be 65 years or older and the number of those over 80 years will also grow¹⁴. Secondly, an exponential growth of healthcare costs in the context of economic recession is forcing governments to assess the efficiency and effectiveness of healthcare. As an example, the total expenditure on health in the United Kingdom rose from 7.2% of GDP in 2001 to 9.8% in 2009. During this period, the Consumer Price Index rose by 21%, whereas healthcare inflation rose by 30%. The biggest proportion of this increase was accounted for by hospital services, which alone rose by 72%. A similar development has taken place in other European countries¹⁵.

Thirdly, changes in lifestyle trends has seen smaller family sizes, more single households and greater dispersion of the extended family and consequently some erosion in the natural support network.

The final factor influencing the shift from hospital to home care is the growing number of women in the labour market. The informal carers are mostly females, aged 45–65 years¹⁶. The trend in society is for women to continue their working careers and be more active in the labour market, thus leading to a diminished number of informal carers¹⁶.

The EU countries have brought in various reforms to mobilise resources and achieve more cost-effective results by combining public, private and market resources. These new designs of care mixes have made a greater reliance on home care and a larger role for families and relatives. Thus, the models for providing formal, professional care and support at home need to be developed and this concept is not only cost efficient but also desirable to most patients¹¹.

Wound prevalence and aetiology in home care settings

Non-healing wounds are a significant problem within the healthcare system. It is estimated that 1–1.5% of the population in the industrialised world has a wound and in Europe, 2–4% of the

total health care expenditure is used for wound management¹⁷. In Europe today, it is estimated that around 70–90 % of wound care is conducted within the community, the majority of such care being delivered by nurses^{11, 12}. At least 50% of the work load of the primary care nurses is spent on provision of wound care; a study from Ireland set this figure at 68%¹⁸.

Variations in survey methodology and differences in definitions of home care preclude a definitive estimate of the prevalence of individuals with wounds receiving care in their own homes. However, some patterns do emerge as studies in the UK, Canada and the US have shown that 25–35% of all individuals with wounds in the community are cared for in their own home^{4, 7, 13}. Differences in rates may be attributable to the organisation of care, service provision and patient co-morbidity as many may be unable to attend clinics for care delivery. The increasing pressures for early discharge from acute hospitals undoubtedly means that more and more wounds which up till now were managed in acute settings are now being cared for in the community and in the patients' own homes.

The profile of wound aetiology in a recent study from Denmark shows that up to 35% of wounds in the community setting (not only home care) are acute/surgical, followed by 24% pressure ulcers,

19% leg ulcers, 11% foot ulcers and 10% other. The same study showed that the main cost factors for providing wound care were hospitalisation and nursing time¹⁹.

A large study among 2,779 patients of regional nursing units in Belgium reported a prevalence of pressure ulcers as being 6.8% (n=188), with 26.8% (n=744) being at risk of a pressure ulcer [20]. An Irish study of the prevalence of wounds in a community setting, including home care, reported that 15.6% of all patients had a wound. Of these, 38% were acute and of less than four weeks duration, but pressure ulcers were the most frequently encountered chronic wound type overall²¹. Difference in prevalence rates may be attributable to the inclusion of services such as prisons, intellectual disability, clinics and home care in the latter study.

The Home Care Population

The document 'Health at a Glance: Europe 2012' reported considerable gains in the health profile of citizens of Europe in domains such as life expectancy, premature mortality and healthy life years¹. It shows however, an ageing population combined with an increased prevalence of chronic disease such as diabetes and cardiovascular disease with large inequalities in life expectancy and access to healthcare¹. Some risk factors for chronic

diseases are declining, such as the percentage of adults who smoke daily, which is now below 15% in Sweden and Iceland from a high of over 30% in 1980, compared to over 30% of adults who smoke in Greece with high rates also prevalent in Ireland, Latvia and Bulgaria. Alcohol consumption has also declined in some countries but rose significantly in others including Finland and Cyprus.

However, across Europe, 52% of the adult population is now overweight with 17% being obese¹. This has a strong impact on the prevalence of non-healing wounds as there is a direct association between non-healing wounds and chronic diseases and it could be argued that any discussion of the topic must consider the impact of one on the other.

An assessment of patients over 65 years attended by community nursing across a range of settings including home care showed that 55% were at risk of frailty with a prevalence of 16.4% being at risk of cognitive impairment; 20.2% at risk of poor nutrition; risk of falls in 30.8% and prevalence of dependency with associated frailty risk was 23.5%²². The authors suggest that dependency in activities of daily living is strongly associated with a decreased likelihood of living alone and increased likelihood of referring one's self to community nursing services. The profile of home-based patients shows that more than half of those receiving community nursing care live alone (56.7%)²³.

An additional consideration among this predominantly older population of persons with wounds in the home care setting is that of poverty and deprivation. A review of the effect of deprivation on the burden and management of venous ulcers using a database from general practitioners during 2001 to 2006 in the United Kingdom identified 16,500 people from the population of 13,514,289 with a diagnosis of venous ulcer²⁴. Rates of venous ulcers increased

with every increase in deprivation quintile rank compared to the least deprived quintile rank. Eurostat data on the risk of poverty among people aged 65 and over across EU27 reveals an EU average of 19%²⁵.

Provision of services – a home care-wound care overview of EWMA Co-operating Organisations

As part of the development of this home care wound care document, we sent an online questionnaire to the 48 EWMA co-operating organisations. Anonymous responses were collected from June-September 2013. The aim of the questionnaire was to gain an insight into how wound care is provided in the home care setting across Europe. Each organisation was requested to have the questionnaire completed by its own members representing a range of settings and disciplines. We did not have, or request to have, access to any mailing lists from within the organisations so thus could not determine how many individuals the questionnaire was sent to.

Responses were received from 25 countries. Respondents reported home care wound care as being provided by either public, private non-profit, private for-profit or a mix of these, although public funding predominated. Huge variations exist in the funding models, supply of services and products, and regulation of home care wound care.

The main findings included:

- Home care is mainly publicly funded throughout Europe. In Central Europe, the main funding stems from Statutory Health Insurance providers
- Policies and guidelines for home care are generally available. However, it was not specified whether they include wound care in home care.

Variations depending on country and part of Europe were observed

- Generally, there were reimbursement or subsidy plans for dressings, materials and/or home care services throughout Europe, but often the expenses have to be paid in part by the patients
- Home care wound care is predominantly nurse-driven, however responses from Central and Eastern Europe show a trend towards GP-led care

Regulation of home care

The most up to date report of governmental involvement in home care across Europe is provided by Genet, Kroneman and Boerma [26] . This study included 31 European countries, and found that home care varies within Europe, and presents two types of home care:

- The home health care, including nursing care is typically part of the health care system.
- The social home care includes domestic aid and is a part of the social care system.

This report shows that in 16 out of the 31 countries, home health and social home care are regulated by different government ministries. Exceptions were Scandinavian countries, France,

England, Ireland the Netherlands and other smaller countries. In most countries, home care services were at least partially funded by public resources; exceptions were Bulgaria, Croatia and Romania.

The regulation of home care differed vastly between the European countries. The strongest governmental regulation was in Germany and Norway and the weakest in Ireland, Poland and Bulgaria. In general, home health care was more regulated than social home care, but the regulation aiming to control the quality of care was not well-developed²⁶.

Summary

The demographic profile of the European population is showing a trend towards an increasing ageing population, increasing prevalence of chronic disease and chronic wounds. This is coinciding with increased care dependency, reductions in hospital beds and growing health care costs. New and more cost-efficient ways of organising health care are being developed, including providing care for patients in their own homes.

Patients with wounds are being discharged earlier from hospitals and thus, a well-developed home care sector to receive the growing number of care dependent individuals is necessary. Home care can generally be divided up into two types: social home care and home health care.

Models of home care wound care – practice examples

It is beyond the scope of this document to adequately describe the provision of home care wound care across Europe. However, in an attempt to provide some perspective, we provide three exemplars: National Health Service (NHS) England, Germany and Nordic Countries.

The NHS England

Healthcare for the population of the United Kingdom is funded via central taxation and commissioned via four independent NHS systems: NHS England, NHS Wales, NHS Scotland and Health and Social Care Northern Ireland.

Organisation of wound care in the home setting in England

The expectation in England is to provide an excellent wound care service across a diverse population that must be accessible to all, provides equity of care, is patient-centred and able to deliver excellent outcomes. In order to understand who the home care providers are, we have viewed this from the patient's perspective.

Wound care in England is often organised according to wound type or aetiology, duration

and the mobility of the patient. Thus, where organisational leadership is lacking, the approach to wound care delivery can be restricted to groups of practitioners rather than the provision of a comprehensive and proactive service.

The mobility of the patient is often the first feature that will determine the patient pathway. Thus if the individual is mobile, they will be seen by their General practitioner (GP), Practice Nurse, local podiatry clinic or Walk-in Centre. Simple or post-surgical wound care can be managed effectively within this environment. If the wound is of significant depth or requires negative pressure therapy, these patients will often be managed by district nurses with the support of Tissue Viability Nurses (TVNs).

NHS funding is provided via general taxation; provision is via Clinical Commissioning groups (CCGs) at regional level. The funding available for the region is based on the number of residents and level of deprivation. The provider of community-based services for wound management reside in primary care or GP Practices or Community Health Services, such as podiatry or district nurses, that are part of an acute or large community Trust. The

borough Tissue Viability service could be based in an acute or community services or both. Whilst most hospitals have some level of tissue viability provision, fewer community services have access to a TVN who would visit the patients at home or within a community clinic.

The costs associated with wound care provision have largely gone unnoticed due to the disparate nature of the patients and the services in which they reside, however, awareness of this is changing. There has been political determination to drive up quality through the introduction of competition and opening the market within an area, thus increasing patient choice. This was the driver behind the policy Any Qualified Provider (AQP)²⁷.

Policies and guidelines for the organisation of home care wound care in England

The key guidelines for wound management used in the UK are:

- RCN guidelines for Leg Ulcer management (1998, 2000)^{28, 29}
- SIGN Guidelines for the management of chronic venous leg ulcers (2010)³⁰

- NICE guidelines for Surgical Site Infection (2008)³¹, Diabetic Foot problems (2011)³², Pressure Ulcer Management (2005)³³

It is expected that each organisation demonstrates compliance with these national guidelines; however, there are no national data sets utilised comprehensively that can provide comparisons on outcome measures. Unfortunately, with the exception of pressure ulcers, very few generic services collect outcome data. A significant number of Trusts are still using paper records and not capturing digital data. Thus, data from audits, wound prevalence or outcome-focussed projects are primarily overseen by TVNs, Leg Ulcer Specialists or Research Nurses. There are no national audit tools or prevalence data capture. Venous ulcer healing rates at 12 and 24 weeks is captured by some trusts but is not shared across regions.

The Venous Forum of the Royal Society of Medicine³⁴ recommends the referral of people with venous insufficiency to vascular surgeons to deal with the underlying disease. This is a challenge within a healthcare system that has some regions in financial deficit and where treatment of

varicose veins is treated as a Low Clinical Priority Procedures by many CCGs. In most areas across England, this is in conflict with the focus on reducing referrals to secondary care and would require transformation of referral pathways. In response to this challenge, a number of CCGs are commissioning vascular services within primary care that focus on early intervention and raising the profile of vascular and venous disease within the community, including the home care setting.

Vowden and Vowden³⁵ argue that effective compression therapy, a cornerstone of effective venous ulcer guidelines, is still not universally available and while there remains reduced access to a true multidisciplinary team, this therapy will not be maximised for patient benefit. A study by Petherick et al found compression use to be 20% (range of 0–100%)²⁴, however, there is evidence that within specialist centres this usage can increase to 88%³⁶. There remains a lack of data on usage in the home care setting.

The range of professionals involved in wound care in the home care setting

Within the home care setting, wound care is managed by nurses, podiatrists and a number of healthcare assistants. With the strive towards achieving cost-effective solutions for delivery of wound care, there has been an increase in education and certificated courses for healthcare assistants. This is not without its challenges as there are risks associated with assessment and leadership, ensuring accountability is clear.

Podiatry services are integral to the home care service and a range of services are delivered. Increasingly, podiatry assistants are involved in care delivery; these roles are in development and provide care following assessment and a treatment plan created by the qualified podiatrist. Joint working with TVNs is not unusual within England, leading to innovative developments and more

robust pathways. Gait assessment for foot ulcers is commonly provided for foot ulceration but not for leg ulceration.

Wounds of all aetiologies, with the exception of some diabetic foot ulcers, can be referred to TVNs. TVNs provide specialist advice and management in most trusts across England and are a significant area of strength; they are essential to the organisation of wound care and the provision of leadership. The TVN manages all wound types and co-ordinates the delivery of education and implementation of guidelines. Alternatively some Trusts have Leg Ulcer specialists who are important to the management and tracking of this particular group.

Within the area of pressure ulcer prevention and management, the role of the physiotherapist and occupational therapist is being developed, particularly around positioning, off-loading, seating and wheelchair provision. Portable pressure mapping is available to review seating and for risk assessment and is valuable for both clinicians and carers.

Management and leadership

Petherick, Cullum [24] Peterick and colleagues commented that “most leg ulcers are diagnosed and treated by GPs”. [24] This is often not the reality in England as GPs tend not to lead on wound care in primary care, but rather act as the gate keeper to secondary care. Thus, wound care in England is nurse-led, providing critical leadership for this group or patients. The overall lead within home care is the TVN. If this is not a community post, then access may be to the TVN in secondary care. The TVN leads on the provision of guidelines and education plus the co-ordination of patient care.

Access to TVN advice is part of the referral guidelines. However, there is recent evidence that this referral pathway is not apparent for some

patients; a recent review of 439 patients with venous leg ulcers found only 23% were referred to secondary care and only 3 patients saw a TVN³⁷. The number of TVNs required for a population has not been established, unlike the provision of, for example, infection control nurses.

All guidelines mentioned in 3.2.2 point to the need for multidisciplinary input, but within organisations in England this is often lacking in its true sense; patients may be seen by the range of interested clinicians but patients are rarely seen jointly. The Venous Forum state that patients with venous ulcers should be referred to vascular teams for venous assessment and consideration for surgery yet there is little evidence that this is happening as suggested^{35, 37}.

Once a patient has a chronic wound and is seen within secondary care by the Plastics, Vascular or Dermatology departments, the expectation is that the medical lead will then direct care. However, unless the medical or surgical team have an outreach service, they will only see the patient within a clinic setting. For complex patients, this limits the understanding of clinicians as to the psychological and social influences on the patient, their acceptance of treatment and the outcomes. The strength of the TVN role is that they see the patient in all venues with the nursing staff, who more often than not provide the ongoing care.

A further challenge to joint working is the inadequacy of patient records and lack of integrated records across primary and secondary care. For complex or chronic patients, the narrative for decisions and issues is therefore unclear, leading to a lack of confidence in what is being provided from the perspective of both the clinician and patient, wherever the clinician resides.

Who pays for the dressing and equipment?
Pressure relieving equipment is usually purchased

by community health services. The range of equipment and access to bespoke items is determined locally, thus again equitable access to provision is lacking. The provision of orthotics and footwear also varies with some TVNs having no direct access; the requirement of GP referral for orthotics is commonplace.

The dressings required within the home care setting are provided either via prescriptions or through a centralised scheme. Prescribing of dressings is carried out by the patient's GP or Nurse prescriber; recently this has also included physiotherapists and podiatrists. The prescribing route does not provide adequate tracking of spend due to the delay in obtaining data. Dressing formularies are increasingly used to manage increasing costs and access to antimicrobial dressings.

Negative pressure wound therapy is used throughout England but access will vary. Some Trusts will rent devices whilst others will purchase them for their own use. Hyperbaric oxygen therapy is not funded for wound management except via the individual funding route³⁸.

Summary

Home care wound care in England is primarily nurse-managed and lead. This structure is beneficial to patient-centred care where the patient is met in all venues and not only in the clinical setting.

The National Health Service in England promotes guideline-based comprehensive wound care within the community environment. However, the delivery of this and the subsequent outcomes are often determined locally with little ability to compare across regions. There is evidence of wide variation in practice and referral pathways for specialist advice and management, hindered further by a lack of integration across primary and

secondary care. However, there is also a push for outcome data and capture to be standardised so that comparisons are robust and contribute to our understanding of excellent wound care delivery.

Key points

- The pathway for patients is often dictated by their mobility, the aetiology and duration of the wound
- Tissue viability nurses are often the pathway lead within a borough providing a focus and leadership
- There are national guidelines for best practice but comprehensive implementation and ownership depends on local leadership; outcomes are not routinely identified
- There is a need to develop integration between primary and secondary care
- The collection of outcome data has generally been poor and cannot be robustly compared across regions.

Germany

According to the German Health System, every citizen is obliged to have health insurance. More than 90 % of the population is part of the Statutory Health Insurance (SHI) scheme. Each individual may choose to join a Private Health Insurance (PHI) scheme with the decision mainly based on the individual's income. The SHI companies have created catalogues of services that are available as minimal services for every insured individual. These minimal standards are coordinated with the health policy of the government and accepted as "standards of medical care". All insured persons have a right to these benefits. In this context, wound care including wound dressings are paid by the SHI.

The SHI favours the delivery of patient care in an outpatient setting. Consequently minor surgical procedures are performed in surgical praxis or in outpatient clinics. According to the Federal Statistical Office in Wiesbaden, in 2011, 1.9 million (1,865,319) patients were surgically treated on an outpatient basis. By comparison, in 2002, there were only 575,613 patients⁵⁸. With the introduction of the diagnosis related groups (DRG) system in 2005 for reimbursement of the hospitals and the consequential financial incentives the average length of hospital stays has fallen drastically in recent years⁵⁹. According to the second biggest public health insurance institution, the average length of stay in 2012 had dropped to 8.3 days compared to more than 13 days in 1992. The result is the early discharge from hospital of patients with acute or non-healing wounds, who will receive further care in physicians' offices or outpatient clinics. These structures differ in organisation and quality all over Germany.

Organisation of wound care in the home setting in Germany

Patients who are mobile usually go to a physician's office for wound care, to a GP or a specialist of their choice. Wound care, however, is not attributed to one specific medical discipline and GPs are involved, as well as general or vascular surgeons, physicians, dermatologists, diabetologists or angiologists. Depending on the focus of these specialities, there is a great variation in education and knowledge of wound care. A generally accepted accreditation of a physician who treats non-healing wounds has not been established within Germany. Special wound care training courses for physicians were initiated in 2013.

In Germany, specialised physicians work in hospitals but also outside in physicians' offices, and thus qualified medical attendance is available in the outpatient setting. The GP can refer the patient to a specialist physician, but the patient

may also consult another speciality without contacting their GP. However, the clinical pathways to find the best treatment are generally not evident to the patients.

Wound care is garnering increased attention in Germany and the number of “wound clinics” or “wound care centres” is rising. These clinics and centres aim to offer a higher quality wound care in concordance with diagnostic and therapeutic standards. Some of these structures work in cooperation with GPs and care services.

In the rural setting, the family physician is usually responsible for the care, but may delegate the dressing changes to the medical assistants. They rarely have an additional qualification in the field of wound care and without knowledge of wound assessment and appropriate material use, the risk of inappropriate services and undersupply is increased. Alternatively, the physician may involve an ambulatory patient care service. Ambulatory care services take responsibility for long-term care at home by trained nurses as well as the domestic care and medical care.

Wound management is conducted by the physician at predetermined time intervals. In addition to wound assessment and local wound treatment, the diagnosis and treatment of the underlying aetiology is critical to the success of therapy. Often, a diagnostic work-up to find the underlying aetiology is missing in the outpatient sector, especially in leg ulcer patients. Such a work-up would include tissue biopsies, ankle brachial pressure Index (ABPI) measurement, Doppler and duplex sonography as well as examination of the lymphatic system. Consequently, indicated causal therapies such as compression therapy or circulation-enhancing measures are not initiated. These deficits are more pronounced in immobile patients who are cared for in their home environment.

The primary care physician is responsible for local therapy and prescription of materials. The wound care is conducted by care services. Patients are free to choose from either private or public providers of care services. In order to carry out the prescribed treatment individuals must hold a recognised qualification such as nursing or geriatric nurse based on a three-year state-accredited vocational training.

The underlying disease and the availability of physicians and nurses will guide decisions on the range of professions involved in the treatment plan. Thus, in patients with diabetes-related foot ulcers, trained podiatrists and specialised orthopaedic shoemakers for individual shoe adjustments should be involved. Dietician can provide valuable suggestions for diet optimisation in wound patients.

All of these services are financed by the SHI as long as a physician’s prescription is available. Thus, the implementation depends significantly on the level of knowledge and the motivation of the physicians. Unfortunately, these services are budgeted and as a consequence, physicians may not prescribe the necessary measures out of fear of overspending for which they would be financially liable.

Management and leadership

A uniform standard operating procedures does not exist in Germany. A distinction is drawn between the directive level and the executive level. The physicians are exclusively responsible for the directive. Execution generally falls to the nurses who are employees of home care services. They get the physicians’ prescription for home care with precise information regarding type and frequency of services.

In Germany there is an “Expert Standard for the Care of People with Chronic Wounds” that is relevant for nurses³⁹. The Expert Standard directs the involvement of a specialised nurse

for evaluation of medical history and treatment planning. Such a nursing specialist expert has specialist knowledge in the coordination of wound management processes, as well as in inter-professional communication and often are employees of home care companies. However, there are large differences in quality and regulatory authorities do not monitor whether a nursing specialist expert in fact was involved. Thus, the requirements from the expert standard are most likely not met in all cases in Germany.

Who pays for the dressings and materials?

Nursing care is financed by the health insurance funds and care funds. Wound care belongs to “therapeutic care” and is the responsibility of the SHI. Again, a physician’s prescription is always required. Materials such as wound dressings are also financed by the SHI. The prescriptions are all included in the individual budget of each physician. Exceeding the budget can lead to a regress by the local Physicians’ Association, the political advocacy of contract physicians and psychotherapists at the county level that is responsible for compliance with the planned expenditure within one period. Thus, each outpatient physician is personally liable for the overspend of their budget.

An exception to this is the use of some antiseptics and skin protection products and cleansing fluids which have to be paid for by the patients themselves. A solution to this is emerging with new forms of care for the insured. Special contracts between specific insurances and physicians, nurses and other professions allow an improvement for everyone involved. There are contracts for integrated care (SGB V, § 140 ad) and selective contracts (SGB V, § 63, 73). In both, quality and type of services are defined and remuneration fixed. The patient must agree with the type of contract and state compliance with specifications. In return, he or she is relieved of co-payments.

Summary

Social protection in case of illness is largely secured by the SHI in Germany by the introduction of compulsory insurance. The acquisition of medical, material and care costs through cost carrier ensures access to adequate treatment for the insured. The quality of care is ensured by the relevant stakeholders, however the mechanisms to control physicians’, nurses’ and home care providers’ levels of skills and knowledge are lacking,

In recent years there is a growing awareness among all involved parties that the current structures are in part inadequate for the treatment of people with non-healing wounds. Consequently, a search for new ways both in the organisation and in the financing structures is currently ongoing.

Key Points

- The SHI guarantees access to health care for all insured individuals, but organisation of care processes is largely unregulated and decentralised
- The care of people with chronic wounds suffers from a great variation in quality
- There are different training concepts for all professional groups involved
- Interest in training concepts regarding adequate care of patients with chronic wounds is growing
- New structures are necessary and are being created by wound clinics, wound centres and special forms of contract.

The Nordic Countries

The Nordic Countries are known as welfare states, providing all citizens with high quality public social and health care services. In recent years, the economic recession has affected the provision and accessibility of social and health care services in

Nordic countries. The trend has been from non-institutional care toward home care.

Organisation of wound care in the home setting

Home care in the Nordic countries is organised mainly by public social and health care in the local community (Denmark) or in municipalities (Finland and Sweden). Among the 270 municipalities in Sweden, about 50% have the full medical responsibility, in addition to social services responsibility which is provided by the county council following a nurse consultation. The other 50% of municipalities have as their responsibility social services, but medical care is provided by the county council and the registered nurses are not involved in home care at the municipality level. The future vision is that all the municipalities will change the organisation of home care to the care framework being provided by the County Council following a nurse consultation. In Finland, there exists 320 municipalities. Social and health care is the largest sector in the municipalities' activities and the central part of the Finnish welfare service system. People's basic rights of health and social services are the responsibility of municipalities, which can provide the services themselves or engage private service providers.

In some countries the municipalities cannot meet all the demands for home care due mainly to an ageing population which incurs increased service needs. Private companies, associations and foundations are therefore responsible for providing home care services. In Sweden however, private home care services exist which are reimbursed by the public services and thus there is no difference in the service between the private and public home care sectors.

Care of patients with wounds at home is coordinated in different ways across the Nordic countries. For example in Sweden wound care is

coordinated by the hospital or health care centre or by the district nurse or the municipality nurse or even by the experienced health care assistant. In Finland, care coordination may be led by the physician working in home care or health care centre. In some cases, the care of wound patients at home can be also co-ordinated by the hospital-based physician or clinical specialist.

Funding and payment for dressings and materials

The costs of home care in Nordic countries are mainly covered by the state and municipalities and are thus paid by taxation. In Finland and Sweden, patients pay for their home care in nominal terms. The payment of care is dependent on the patient's income. There is a maximum amount of self-paid share, which in Sweden is 1,100 SEK (approximately 124 EUR) per year and in Finland this amount is a minimum of 15% of income and maximum 35% depending on time needed for the care in a one month period. For one home care visit the payment is 9.30 EUR for nurse visit and 14.70 EUR for a visit by a doctor. This funding system guarantees that home care services are available for all patients.

In the case of wound care there is differences in the reimbursement of dressing and wound care material. In Sweden and Denmark wound care products are not paid by patients, but in Finland it depends on the municipality if the wound care products are delivered to patients by home care or if the patients need to buy products themselves. In Finland, the wound care dressings and most of the products do not need prescription and thus the national reimbursement system does not cover them.

The range of professionals involved

Care of patients with wounds in the home care setting is mainly provided by nursing staff, but this can range from registered nurses who are

accredited in wound care, as in Finland, to health care assistants, whose role is increasing, especially in Sweden. A pattern of home care is emerging of an increasing reliance on informal carers. This has been highlighted in a publication in Sweden which has stated that if all informal caregivers stopped doing what they do, the public health care system would break down within 24 hours⁴⁰.

Policies and guidelines

General policies or guidelines for the organisation of wound care in home care do not exist in the Nordic countries with the exception of national guidelines for management of diabetic foot ulceration in Denmark. These guidelines are adaptable for home care settings.

In the consultation process for this document, participants from the Nordic countries were asked to describe the three most important issues to be developed further in the wound care home care setting. Participants highlighted the need to strengthen professionals' knowledge in wound care through education, especially among nursing staff and in Finland, the need for free accessibility to wound care products for all patients was stressed. The important consideration that all respondents expressed was the need for wound aetiology to be diagnosed.

Summary

In the Nordic countries, patients with wounds are treated by home care, which mainly covers social and health home care.

Home care is mainly funded by the state and municipalities, however, private care providers are emerging, especially in Finland. The costs of wound care products are also reimbursed for

the patients. Finland is the exception while the wound care products are in many cases paid by the patients, which increases the risk that the best possible treatment of the wound is not possible to implement, because of the price of products.

The professionals involved in wound care at home are mostly nursing or health care assistants. The professionals' competence in wound care varies according to personal interest and experience. Further education as well as guidelines for wound care in home settings are needed in Nordic countries.

Key points

- Home care is developed within the national care system and is thus available for all patients with wounds
- Home care, as the part of national social and health care, is supervised and controlled by health authorities
- Patients with wounds are recognised as the special patient group in home care, even though there are no national guidelines for this care
- The ageing population in Nordic countries will increase the need for home care and it is very likely that the number of wound patients will also increase, thereby increasing the demands for the skills and competences of staff as well as the role of informal / family care givers, who should be seen as part of care teams
- In Finland, wound care products are not necessary free for the patients and thus the proper wound management may be related to patient income.

Organisation of Care

Most older people prefer to live in their own homes and to have support services provided in a way that would allow them remain in their own homes and communities for as long as possible. The provision of higher levels of care and support for older people, particularly for the growing number of those living alone, becomes necessary as dependency increases with age⁴¹. In terms of access to services, it is proposed that the most important service is the GP clinic, followed by community nursing, home help, day care and other community health services⁴¹.

The identification of older people who would benefit from home care from nursing services is important because home nursing care may require input from medical professionals due to the complexity and co-morbid disease states of frail older adults in receipt of such care²³.

Best practice

The delivery of the highest quality, evidence informed best practice that promotes improved patient outcomes at an economically viable cost to the health care provider is the goal of all health care professionals and healthcare institutions. Central to this is the concept of evidence-based practice which has been defined as ‘the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients’⁴².

The term ‘best practice’ is used widely throughout the literature often to denote the use of evidence-based practice. However, best practice is context-

related and may be dependent on many factors including the organisation of care structures, local resources, availability of expertise, education and training of healthcare professionals, patient understanding and treatment goals. That said, best practice can emerge from reference to the multiplicity of guidelines and policy documents that are purported to guide care and treatment decisions and can be adapted to meet local needs.

While there are many guidelines in the hospital setting developed, there is little research on how to implement and disseminate guidelines, and how to evaluate patient outcomes when implemented. Work by researchers in Canada^{4, 43, 44} serve to underscore the resources that are required to implement best practice with specific reference to management of venous leg ulcers in the community setting. Work by this group records efforts over a 10-year period to understand the practice setting, establish networks and practice development groups, educate and implement guideline driven care and evaluate outcomes. This has resulted in a Queen’s University Research Roadmap for Knowledge Implementation (QuRKI), which provides valuable insights for delivery of practice change^{44, 45}.

It is being increasingly understood that implementation of guidelines cannot just be left to teams and individuals. An example of how a strategic authority took ownership is described in a British study⁴⁶. The organisation recognised that an ambition to eliminate avoidable pressure ulcers required a creative marketing approach with frontline staff involved in the development of

the campaign, ensuring relevance and ownership. Coordination of services across health and social care organisations is promoted especially within the area of safeguarding and the development of pressure ulcers in the vulnerable adult. However, a view on reporting in the UK continues to cause variation of capture, something which has led to the development of a consensus document⁴⁷, driven by the Tissue Viability Society and subsequently supported by the Department of Health.

Poor adherence to clinical practice guidelines for pressure ulcer prevention in home care has been reported, with 64.8% (n=482) in one study being administered pressure ulcer prevention measures which were not in adherence to the clinical practice guidelines and in 30.8% (n=229) of those cases, at risk of developing pressure ulcers prevention was lacking [20]. Additionally, research in the area of leg ulcer management has shown poor overall performance in care delivery as only 11% had a record of having an ABPI performed. Interestingly, while older people (78–87 years) were less likely to have an ABPI performed, they were more likely to receive compression therapy than people between 68–77 years old (odds ratio 1.39)²⁴. The practice level variable was shown to contribute to over 30% of the variation in the results²⁴.

Lack of adherence to guidelines may be attributable in part to poor dissemination and lack of support for implementation. With this in mind, industry and wound care organisation can play a central role in the dissemination process and have actively engaged in this role in the past⁴⁸. Barriers among community nurses to delivering best practice in leg ulcer management include: poor concordance; patient's health status; inadequate resources; poor home environment; lack of up-to-date education and inadequate communication^{49, 50}.

Acceptability and use of guidelines in practice must also be assessed as a survey among 132

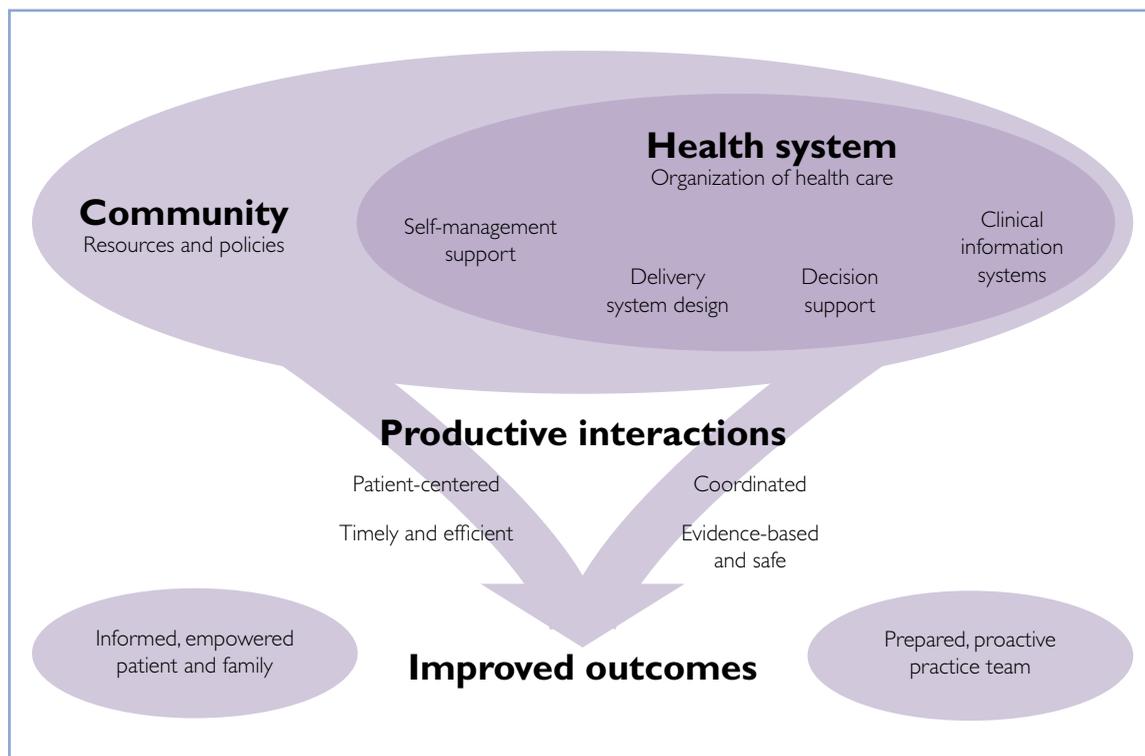
community nurses demonstrated that reference to published guides was the fifth most frequent source of information, with specialist nurses being the most frequent⁴⁹.

The provision of evidence-based clinical practice guidelines adapted to meet local needs can provide a solid base upon which to audit and evaluate practice. Through this process, clinicians can understand current practice, and identify areas where practice falls short of current guidelines and develop a strategy to improve practice and patient outcomes. This process is also a means of benchmarking ones practice against others or against an expected norm. Benchmarking is defined as the continuous, systematic search for, and implementation of, best practice which lead to superior performance⁵¹. Three major stages in benchmarking are proposed: defining what to benchmark; the collection and analysis of data and the action and implementation⁵¹. Comparative measurement is fundamental to the benchmarking process and while standard setting is well established in healthcare, a standard does not provide any certainty as to whether best practice is achieved. Quantitative standards alone do not say anything about qualitative aspects and thus the problems of applicability of standards become clear⁵¹.

Home care pathways

Communication among health professionals is a key factor in promoting best practice in wound care⁶. Clinical pathways may be developed to facilitate this. There is no universally agreed definition on what a clinical pathway does or does not do but it can be defined as a method for the patient-care management of a well-defined group of patients during a well-defined period of time⁵². Such a pathway explicitly states the goals and key elements of care based on evidence-based practice guidelines, best practice and patient

Figure 1. The Chronic Care Model adapted from Wagner et al. (2001)⁵³



expectations by facilitating communication, co-ordinating roles and sequencing the activities of the multidisciplinary care team, patients and their relatives; by documenting, monitoring and evaluating variances; and by providing the necessary resources and outcomes⁵². The aim of a clinical pathway is to improve the quality of care, reduce risks, increase patient satisfaction and increase the efficiency in the use of resources⁵².

The chronic care model

Living with a chronic wound requires on-going adjustments by the affected person and interactions with the health care system. Almost half of all people with chronic wounds manifest multiple comorbidities¹⁷. As a result, many integrated

delivery systems and managed care systems have taken a great interest in correcting the many deficiencies in current management of diseases such as diabetes, heart disease, depression, asthma and others⁵³. Overcoming these deficiencies will require a transformation of health care from a system that is essentially reactive - responding mainly when a person is sick - to one that is proactive and focused on keeping a person as healthy as possible. Comprehensive models of care, such as the Chronic Care Model (CCM)^{53, 54} are used here for illustrative purposes to show how this may work in the context of home care wound care. The CCM was developed more than a decade ago and is a widely adopted approach to improving ambulatory care that has guided clinical quality initiatives in the United States and around the world. We examine the

evidence of the CCM's effectiveness by reviewing articles published since 2000 that used one of five key CCM papers as a reference. Accumulated evidence appears to support the CCM as an integrated framework to guide practice redesign. Although work remains to be done in areas such as cost-effectiveness, these studies suggest that redesigning care using the CCM leads to improved patient care and better health outcomes⁵⁵.

CCM comprises 6 components that are hypothesised to affect functional and clinical outcomes associated with disease management. The 6 components defined by Wagner, Austin⁵³ are:

1. Health system — organisation of health care (i.e., providing leadership for securing resources and removing barriers to care)
2. Self-management support (i.e., facilitating skills-based learning and patient empowerment)
3. Decision support (i.e., providing guidance for implementing evidence-based care)
4. Delivery system design (i.e., coordinating care processes)
5. Clinical information systems (i.e., tracking progress through reporting outcomes to patients and providers)
6. Community resources and policies (i.e., sustaining care by using community-based resources and public health policy)

The sum of these CCM component parts are purported to create more effective health care delivery systems that institute mechanisms for decision support, link health care systems to community resources and policies, deliver comprehensive self-management support services for patients, and operate and manage patient-

centred clinical information systems. Despite evidence indicating widespread application of CCM to multiple illnesses, such as diabetes, this model may be also applied for patients with chronic wounds.

The team approach

The terms multi-disciplinary and interdisciplinary are subject to varying interpretations and understandings, but does come within the scope of the term Interprofessional Collaboration (IPC)⁵⁶. IPC is defined as the process in which different professional groups work together to positively impact health care and involves negotiated agreement between professionals⁵⁶. This further acknowledges and values the expertise and input from various healthcare professionals in improving patient care⁵⁶. According to Oxman 2008,⁵⁶ there are five key elements of care co-ordination including: involvement of numerous participants in care co-ordination, the necessity of co-ordination, the importance of participants having knowledge of one's own and others' roles, and the importance of information exchange. Placing these in the context of service delivery specific to wound care in the patient's own home is challenging.

The EWMA document 'Managing Wounds as a Team'⁵⁷ proposes a Universal Model for the Team Approach to Wound care and sets out five essential elements to this approach including:

- A patient focus using an advocate for the patient
- Referral mechanisms that are responsive
- Aggregation of assessment data to form a single plan
- Appropriate remuneration systems
- A health care system sensitive to team models

The team approach model is considered a practical step towards working as a team in wound care, whereas the Chronic Care Model is the theoretical (and evidence-based) foundation for the home care wound care document, because it is developed for the delivery of care and social services in the home setting.

Within the home care setting, it is important that good relationships are built between the patient and/or the informal carer and the health care professional, particularly so as the patient/client may see many different personnel over a course of time. Development of these interpersonal relationships enhances therapeutic care and can have a direct impact on quality of care⁵⁸. While the value of interpersonal relationships is acknowledged it is also recognised that home care is delivered by a range of personnel not always working as a team. This is demonstrated in research by Kapp and Annells⁵⁹ in which the individual patients reported seeing a range of clinicians but each was only focused on their specialist area of practice with little interest in other patient problems.

Research has shown that of 79 patients receiving home care visits (not specific to wound care), the number of daily visits by different personnel ranged from 1–7 (mean 2.3) and during a 4-week period, the number of different carers visiting the individual ranged from 5–35 with a mean of 17¹⁵⁸. The consequence of this was low levels of interpersonal continuity and in general patients seldom saw the same carer from one care episode to another. Similar trends have been shown in wound care as during a 4-week period, patients with wounds had on average 10–12 nursing visits; this is in addition to any other encounter with other health professionals^{4, 19}. While the findings of these studies may not be generalisable to all health care settings or to all European countries it does underscore the need for good communication and documentation structures to be in place and the

need to develop a team approach. Hidden within these findings also is the lack of consideration to the impact on the patient of so many people visiting their home in any one day and the effects on them in terms of fatigue and loss of control over their own daily schedule.

The impact of wounds on the individual in the home care setting is quite profound. Reports have shown consistent themes of isolation, ability to maintain domestic role being constrained, pain and soreness^{59, 60}. Further experiences by patients coping with negative pressure wound therapy reported them as being fearful of alarms going off, being ‘trapped’ by the device, fear of people seeing the device, and fear of being restricted in their own ability to care for the wound as it required the input from health professionals⁶⁰.

Documentation of care including assessment, evaluation and monitoring needs to be comprehensive as care is provided in the patient’s home, often by a lone practitioner assessing, making decisions and performing interventions without other colleagues present⁶¹. It is argued that comprehensive documentation is expected to make the invisible visible, facilitating continuity through information to professionals, patients and significant others⁶¹.

eHealth-Assisted Care

The proper assessment, knowledge, and expertise of medical personnel to assist patients with wound management is required. Some countries have the practice of establishing Wound Ostomy and Continence Nurse (WOCN) who can provide the expertise in wound management and promote quality care and positive outcomes, both clinical and fiscal⁶².

Quite often, home care professionals team members are presented with a challenge to

provide management for a patient with different comorbidities. An appropriate plan of care includes that for wound care, as well as the psychosocial support, time management, and cost issues. This often requires ingenuity and flexibility on the part of the home care team. Comorbidities frequently increase the acuity of the nursing care as well. In any case and no matter how difficult the circumstances, the goal for the patient's plan of care is to achieve an optimal outcome.

The growth of telecommunication technologies utilisation to increase access to treatment, reduce cost, and enhance intervention adherence in self-care management is a promising development. Telecommunication technologies, especially instant messaging and regular telephone have provided the capacity to extend the reach of self-management education programs to individuals with chronic illnesses and their caregivers. These technologies are low cost and robust, widely available in health care services, and are capable of overcoming distance barriers. The majority of patients are likely to have telephone service in the home to coordinate care, to maintain close family relationships, and to facilitate socialisation. The low cost, ease of use, and universality of telephone technologies make intervention with this modality especially attractive. Most tele-health research with family caregivers of persons with disabilities has been performed using a regular telephone and the overall results of these studies have been positive⁶³.

Telecommunication was reported to be successfully implemented in the monitoring of wound size⁶⁴,

feet temperature, surgical wounds⁶⁵, presence of the pressure ulcers⁶⁶ with the conclusion that telephone contact can be a useful tool for identifying the presence of a pressure ulcer, but videoconferencing is required to obtain an evaluation reasonably close to that of a home visit. Nevertheless, some risks appear here, as medical consultants (wound and ostomy nurses) who provide the remote nurse-to-nurse consultations without directly visualising patient's wounds through digital images are at risk for under- or over treating the patients with wounds⁶⁷.

In general, there is a lack of evidence in how the reliability of telemedicine on providing a good standard care for patients with wounds. Although separate publications support the use of this low cost, ease of use, and universal communication media, future studies are needed to determine statistical and clinical significance.

Summary

The current Health Care system is developing and changing rapidly. Improvements in technology, contracting budgets, greater emphasis on primary care, changing profile of the population, increased life expectancy, increased numbers of person over 65 years, increasing prevalence of chronic illness such as diabetes and cardiovascular disease and the increasing rates of obesity are all posing additional challenges on the health service. All of these have implications for home care wound care practice and pose challenges for future service planning and education and training needs.

Home Care Wound Care: Challenges and perspectives

The transfer of care from the hospital to the home care setting raises economic and organisational issues like low levels of physician involvement, an increasing use of technology in the home care setting, or a significant increase in private spending^{12, 68}. This has consequences for the personal lives of patients and informal carers⁶⁹. It is demonstrated that informal carers, whether partners, family or friends, are making a significant economic and service delivery contribution to the health care sector, especially in the home care setting^{68, 70, 71}.

Holistic Assessment

Holistic care approaches are advocated in wound management⁷²⁻⁷⁶. An holistic approach as the philosophical orientation to care underpins the fundamental wholeness of human beings and emphasises the importance of balance within the person and between the person and his/her environment⁷⁷. Thus, an holistic approach includes the elements of the physiological, sociological, economic, psychological and spiritual dimensions and thus provides an opportunity to assess the patient as a whole and in relation to his/her living context.

In a way it is in contrast to the modern medical model approach to health and illness, which consider the individual aspects of the patient in isolation from the living context. While focusing on wound care in home settings, the holistic approach highlights the patient as a whole. Not only the wound and obviously the patient are in focus⁷²; also the family and environmental factors are taken into consideration⁷³. Thus society itself with the economic and cultural dimensions as well as the organisational factors related to care provider, like professionals, their knowledge and skills as well as available material resource, like technology, dressings and wound care products are part of the holistic care approach.

The holistic approach in the assessment of patients with wounds optimise healing while it takes into consideration all factors that influence the care and maximises the available resources. It prevents fragmented or inappropriate care for individual patients and contributes to a focus on cost-effectiveness and high quality⁷⁴. Some research has highlighted that professionals focus more on assessment, planning, and implementation of wound management of leg ulcer patients and wound healing factors rather than a holistic

approach including the wound, the patient and their environment. The same study also found that patients or relatives were seldom or never involved in the management of chronic leg ulcers even though the nurses expressed a positive attitude toward their involvement. It is also known that interdisciplinary working is essential for the holistic approach to non-healing wound management⁷⁴, but implementation of it is rare in practice. The implementation of holistic approach in wound care is still a challenge that needs to be met, especially while caring for patients with wounds in home care settings.

The holistic care approach in assessment of patients with wounds in home care settings focuses on

- the patient's physical, psychological, social, spiritual and economical needs: diseases, functional capability, attitude, fears, expectations, beliefs, social network, hobbies and activities, daily living costs, need for economical support
- patient's personal resources and empowerment: income, ability to be involved in wound care
- patient's and his/her family life context including physical, psychological, spiritual, social and economic dimensions: family income, daily activities, family members and relatives expectation, interpersonal relations and attitudes, fears and beliefs
- patient's living habits and possible risk's for wound healing or re-ulceration: malnutrition, overweight, smoking, stress experience, lack of sleeping, low physical activities
- wound and periwound status and symptoms: size, tissue in wound bed, surrounding skin, bleeding, exudate amount, viscosity and colour, odour, pain, oedema

- efficient use of resources: professional's knowledge and skills, wound care products and technology

Nutrition and home care wound care

Adequate nutrition is a prerequisite to support wound healing. For patients with wounds or at risk of developing a wound, monitoring and assessment in residential settings and acute settings is achievable. However, in the home care setting where health professionals may only 'visit' once per week, assessment of nutritional status is more problematic.

A study among ten GP practices investigating the prescription of oral nutritional supplementation (ONS) among those attending showed that of those prescribed ONS, 82% had one or more chronic disease states; 12.8% were sitting out of bed; 6.4% were bed bound and that 37% (n=29) were at high risk of malnutrition⁷⁸. While the study reported that ONS was appropriate in the majority of cases the high risks for malnutrition and its implications for wound management and wound prevention cannot be ignored.

Common causes of malnutrition in the elderly include: decreased appetite; dependency on help for eating; impaired cognition; poor positioning; frequent acute illness; medications that decrease appetite or increase nutrient loss; polypharmacy; decreased thirst response; monotony of diet and intentional fluid restrictions because of fear or incontinence or choking if dysphasic⁷⁹. A combination of immobility, loss of lean body mass which comprises muscle and skin and challenges to the immune system increase the risk of pressure ulceration in the elderly population by 74%⁷⁹. To improve nutrition; addressing impairments to dentition and swallowing, addressing physical or cognitive deficits and auditing of practice are all required, in addition to appropriate assessment.

Risk factors

The risk factors that influence healing in the older adults include thinning and flattening of the epidermis, atrophy of the dermis, decreased vascularity of the dermis, loss of collagen and elastic fibres, decreased epidermal proliferation, decreased number of sweat glands, compromised vascular response and a reduction of subcutaneous fat⁸⁰. In addition to this, the underlying nutritional status is paramount to supporting optimal healing.

Malnutrition

Malnutrition is a “state of nutrition in which a deficiency, excess or imbalance of energy, protein or other nutrients, including vitamins and minerals, causes measureable adverse effects on body function and clinical outcome”⁸¹. Screening for malnutrition in older people is a recommendation of many national and international wound related guidelines^{82, 83}. The Malnutrition Universal Screening Tool (MUST) is well validated and has demonstrated very high sensitivity and specificity as a tool to identify malnutrition or risk of malnutrition in the elderly [84]. Assessing nutritional parameters is an important part of nursing assessment, especially in patients with wounds or for those patients at high risk for developing wounds and are essential in prevention of wound complications. While the nurse may be the first person to assess the nutritional status of the patient it is important to refer those at risk of poor wound healing due to nutritional deficiencies to the dietician for a more comprehensive assessment and development of a nutrition plan.

Nutrients

There are many nutrients necessary for optimal wound healing. In older adults, the absorption and metabolism of nutrients are impaired because of the effects of aging on the gastrointestinal tract and liver⁸⁰. As the individual ages, protein normally decreases, body water is reduced, and

there is a redistribution of fat stores as well as loss in bone density. Substances necessary for healthy skin and proper healing include protein, carbohydrates and fatty acids, vitamins C, A, B, E, K, zinc, iron, amino acids and albumin.

Perspectives in home care wound care

Home care clients today are becoming ever older; they often have multiple diseases, more disabilities and more complex health needs than was previously known. Thus, home care patients tend to require extensive help^{85, 86}. Care workers' job description has consequently become more and more complicated, requiring greater collaboration with home care staff to deal with clients' health problems⁸⁷.

Staff working in home care come from different training backgrounds and they must work closely on a daily basis. Assessment of the client's needs for medication, early diagnosis, steps to prevent illnesses from deteriorating and early intervention are all important aspects of home care, and it is crucial that physicians work alongside clients and other staff to provide integrated assessment and care management⁸⁸.

Patients' needs in chronic wound care often continue over weeks, months or even a lifetime. Therefore, planning wound care requires empowering patients and their informal carers by involving them and allowing them to contribute to decision-making and ensuring that they are satisfied with the care they receive. Probst et al.⁶⁹ reported how patients and their informal carers receive little support and practical information from healthcare professionals. Other literature show that healthcare professionals need to include patients and their informal carers in their care by providing information and advising them on how to manage a wound in the home care

sector, where to get dressings and how to choose the appropriate dressing, and how to cope with wound-related symptoms⁸⁹⁻⁹¹.

Patient perspectives

Chronic wounds are common in primary care settings (as stated in 2.1) and require a high level of resources. Such wounds have a profound impact on a patient's quality of life and hence, collaboration between the patient and practitioner is important. However, living with a non-healing wound at home can have a pervasive and profound effect on the daily lives of patients⁹². The impact of physical, psychological as well as social effects and quality of life are overwhelming. For most patients, caring for a chronic wound in the home care setting is a challenge as all aspects of daily life are affected. A number of restrictions are described by patients and include limitations of mobility, personal hygiene, as are choices for shoes and clothes⁹¹. Many patients struggle with maintaining their daily activities or are withdrawing from their daily activities and limiting their contact with others until their condition improves. Wound-related symptoms like odour or pain can dominate individuals' lives, especially at home. For example pain may interrupt sleep, limit mobility and lower mood. Wound-related symptoms are often a constant reminder of living with a wound^{93,94}.

Living with a wound can also change personal relationships and make forming new ones difficult. Therefore patient satisfaction plays an important role in maintaining good relationships between patients and health care professionals, compliance with medical regimens, and continued use of medical services¹².

Challenges to achieve safe patient care are associated with failing home care processes and weak systems. To achieve a good quality of care with a good patient satisfaction and safety it is important that health care professionals

receive skills and knowledge and have available integrated standards of care⁹⁵. Additionally, good communication and teamwork help to achieve a robust patient safety culture within home care health services.

Informal carer perspectives

A key member of the multidisciplinary team is the informal carer, usually a family member. The role of informal carers in the prevention and management of wound related issues should not be underestimated and must be recognised. These carers, who may include spouses, children, neighbours or friends, are often lacking in the knowledge and skills to undertake prevention and management strategies. However, Pacqay et al.²⁰ has highlighted the important role that informal carers have in the prevention of pressure ulcers. This study has reiterated that only a limited proportion of the patients' at risk of pressure ulcer and their informal carers were informed and motivated by the nurse to participate actively in the prevention and their actual participation in prevention was low. It is time to take note and investigate what mechanism of training, education and support can be provided to such individuals in order to maximise their input and improve patient outcomes.

A further consideration is the importance of the health of the informal carer. Research and policy analysis show that many carers experience isolation- geographical, social and emotional⁴¹. Carers frequently describe complex needs and require assistance in acquiring the knowledge and skills needed for the caring role.

It is increasingly evident that family members play an important role in the provision of home healthcare. Family members as informal carers are defined as "lay persons" that take over a close supportive role and who share the illness experience of the patient. Additionally they

undertake care work and emotion management. Informal carers have to acquire skills and knowledge of non-healing wound care to manage their relative's wound. When caring for a family member, most informal carers experience a shift in the relationship from being a partner to being a supportive carer. A recent study demonstrated the burden that families take on when caring of a patient with a non-healing wound. Probst et al.'s study demonstrated how challenging it was for informal carers to manage wound-related symptoms⁸⁹. Experiencing wound symptoms worsened the quality of life for both the patient and the informal carer as the management of these symptoms was both physical and psychological. Nevertheless, informal carers often gain satisfaction from their caring role as they are willing to take over the responsibility for caring for a family member at home. The literature demonstrates that there are numerous risks to informal carers like sleep disorder, anxiety, depression, and economic consequences related to out-of-pocket costs when taking over the caregiving role. Unmet practical needs of families, including medication and pain management, physical symptoms and comfort, nutrition, personal hygiene and elimination, positioning, professional support and emergency measures was identified by Bee et al.⁷⁰. This demonstrates that the informal carer has to receive appropriate support to be able to undertake practical health care tasks like the application of a wound dressing⁷⁰.

The disruption of the informal carer's life does not change immediately after their family member develops a wound but mostly occurs when the wound of the person deteriorates⁹⁶. If the burden of care is enormous the family's health may break down with the consequence of proximate loss of support for the patient^{97, 98}. Ensuring that appropriate information is available for informal carers and that they can access support for their decision-making role is crucial⁹⁹.

Perspectives of health care professionals

The public, as recipients of care expect those delivering that care to be competent in assessing, planning, implementing and evaluating care. Competence is therefore a central determinant of the quality of services received by patients and clients of the healthcare system.

Key competencies of specialist wound care nurses across Europe have been identified with experts rating 'the application of high level of wound care knowledge with regards to factors such as wound aetiology, underlying causes of problem wounds and treatment options in patient care; ability to protect information provided by or about patients and honesty and integrity in patient care as the top three most important¹⁰⁰. Conversely, the ability to design a RCT, ability to write scientific articles and to communicate in English were the three least important competencies¹⁰⁰. While the ability to design an RCT is best done by experts in trials methodologies, 75% of the panel of experts rated ability to consult with other healthcare professionals and justify these choices as being a competency and only 54% agreed that wound care nurses should be able to understand organisational structures. This is an interesting artefact within the range of competencies as one could argue that in order to develop and effect good communication strategies, which are the cornerstone of the multi-disciplinary team approach, then one should be able to understand the organisational structures that support this system and be able to consult effectively with other healthcare professionals.

It is proposed that nurses' clinical competence with regard to pressure ulcer risk assessment and pressure ulcer grading needs to be improved through education and training. Nurses should be attentive when assessing pressure ulcer risk, to label patients effectively as at risk when the risk status is determined²⁰.

Competencies include the skill of critical analysis, problem solving, decision-making and reflective practice. These domains of competence represent a broad enabling framework to facilitate the assessment of health care professionals as it relates to wound care in the home care setting. Competency is always context based¹⁰¹ and thus it will change over time as roles and functions develop in response to many factors affecting the provision of health care. Therefore, the resources necessary to determine competence must be adaptable to change over time, location and role.

An additional element in the provision of modern wound care is an increased use of technology such as negative pressure wound therapy, intermittent pneumatic compression therapy, profiling beds and pressure redistribution devices, all combining to place added pressures on this service. As a result, what was once the remit of acute and long term care with 24 hour onsite support of professionals is now in the home care setting with minimal or no out of hours service. The impact of these devices in improving practice in the home care setting needs to be evaluated in terms of necessary training and back-up support.

An audit of training and education needs of health professionals working in the home care setting will provide a baseline upon which to design and implement future education updates. One study identified such needs among community nurses in delivering best practice in leg ulcer management include: regular updates on management, access to specialist clinic and professional expertise and information on prevention⁴⁹.

Perspectives of nurses and physicians

The experiences of nurses undertaking the care of patients and their informal carers in the home care sector is challenging as they have to deal with physical and psychological needs of patients and

their informal carers. Nurses report that taking care of such patients was often found to be physically and emotionally difficult.

Nurses and health care professionals have to work in an environment where they are guests and have to deal with a large range of products that they generally use in accordance with the available evidence¹⁰². However, most of the dressings are not available for the home care sector. As for coping with the wound-odour, the high costs of the dressings followed by the psychological needs of the patient and their informal carers were additional problems that nurses in home care had to face^{102, 103}.

Nurses report that due to patients' altered body image, they tended to isolate themselves. Probst and colleagues¹⁰⁴ stated that nurses often tend not to show their feelings by keeping a straight face while caring for patients with a non-healing wound, especially if the wound was malodorous. The main difficulties nurses have to face were applying dressings to wounds with uncontrollable wound-related symptoms like odour, pain or exudate. An overview by Goode et al.¹⁰⁵ of non-healing wounds report that such wounds have a psychological effect on patients and that this has been recognised by nurses, but is not necessarily evidenced in the research.

Technological advances (self-management, online consultancy and monitoring)

Non-healing ulcers as well as acute surgical or traumatic wound healing in many cases is a complex clinical problem that may take weeks or months to resolve and are very costly for health services. Home-care and self-management are very important components of the whole treatment process but require methodological and technical support to the patient and home-care provider.

The different means of technical assistance to self-management are used in the treatment of various chronic conditions such as hypertension, cardiac and lung diseases or diabetes. Mobile phone messaging applications, such as Short Message Service (SMS) and Multimedia Message Service (MMS), have been investigated as convenient, cost-effective ways of supporting self-management and improving patients' self-efficacy skills through, for instance, medication reminders, therapy adjustments or supportive messages. A systematic review of the publications on this issue found moderate quality evidence that under certain conditions, these applications may indeed have a positive impact on the health status of patients, as well as on their ability to manage their own condition, although for some outcomes no significant effect was observed¹⁰⁶. Another technical method for improved self-management improvement for the treatment of long-term conditions involves media-delivering of the messages targeted for psycho-education. A review of the literature concluded that face-to-face therapy is clinically superior to media-delivering, but economic factors and availability of the clinician suggest that media-delivered self-help may be useful for people who are not able or are not willing to use other services¹⁰⁷.

Another evolving stream in the treatment of chronic illnesses is computer-based assistance. People with chronic disease have multiple needs, including the acquirement of information about their illness and the various treatment options; social support; support with making decisions; and help with achieving behaviour change, for example, changes in diet or exercise. So called IHCA's (Interactive Health Communication Applications) are usually web or computer-based information packages that combine health information with at least one of social, decision, or behaviour change support^{108, 109}. A review of randomised trials found that IHCA's

had a significant positive effect on knowledge, social support and clinical outcomes. IHCA's also had a significant positive effect on continuous behavioural outcomes; it was not possible to determine the effects of IHCA's on emotional or economic outcomes¹¹⁰.

An interesting alternative to IHCA's might be considered as means of sharing the wound management knowledge at the community or national level. The most known examples are Leg Club (better known as Lindsay Leg Club Model) that is promoting adherence via socialization and support and Lively Legs promoting adherence to compression, leg exercises and walking via counselling and behaviour modification^{111, 112}. Although reviewing of the literature concluded that based on the existing models, there is no evidence that these initiatives significantly improve healing of venous leg ulcers or quality of life more than nurse home-visits, however, further studies are needed in this area¹¹³.

Studies investigating other potential interventions, such as education programmes are slowly making an appearance. Assessment of the feasibility of conducting a home-based progressive resistance exercise programs for participants experiencing venous leg ulcers concluded that education program are deemed feasible but there were, however, no significant difference observed over time between groups in relation to healing. Authors concluded that although not statistically significant, participants who received a home-based exercise program in addition to usual care had a 32% greater decrease in ulcer size and a 10% improvement in the number of participants healed compared to the usual care group. Future studies with larger sample sizes are needed to determine statistical and clinical significance¹¹⁴.

An evaluation of a community-based educational intervention to improve wound-care practice

reported that significant reductions were found in the proportion of non-healing wounds, the proportion of wounds requiring a daily dressing change, increased frequency of dressing change, mean nurse time spent in wound care per week, and the total cost of wound care per week⁸. This

study concluded that it is possible to improve wound-care practice and reduce the resource costs of wound care through a systematic program of education and training, tailored to suit the needs of local communities⁸.

Conclusions and Recommendations

Home care is organised and funded differently within Europe. In taking care of patients with a chronic wound, an assessment of the patient's needs is mandatory and can only be performed by specialists, although the tendency in home care is shifting towards employment of non-registered nurses. Therefore, health care professionals are required to acquire skills and knowledge on how to manage wounds in the home care setting. Patients and informal carers have to be included in the wound management process.

The Chronic Care Model

To offer patient centred care, the use of the Chronic Care Model (CCM) is recommended to provide patients and their families with self-management skills and tracking systems. The CCM is a way to facilitate partnerships between health care systems and communities.

The CCM is based on six components, which are described in this document (see 4.4). All six components are required in order to affect functional and clinical outcomes associated with the disease management of each patient with a wound, and thus enable an efficient collaboration between primary and secondary care.

1. Health system — organisation of health care:

- a. Effective communication is key to improving service delivery. Examine current communication pathways and structures and explore means through which these can be further developed.
 - b. Communication is enhanced through accurate, timely and comprehensive documentation. Review current documentation practice and identify areas for shared documentation in order to avoid repetition.
 - c. Identify key professionals required to deliver wound care in the home care setting. Once identified, aim to establish links and build a team approach.
2. Self-management support:
- a. Promote an inclusive and concordant approach to patient care and include the patient and his/her informal carer in treatment decisions and goal setting
3. Decision support:
- a. Identify the education needs of individuals delivering home care wound care; this should form a baseline for future planning and service provision

- b. Define the possibilities of the Health System in providing multi-professional and also very specialised knowledge and assessment for decision making in home care settings
4. Delivery system design:
- a. Adapt clinical practice guidelines to meet the needs of the home care setting
- b. determine wound aetiology
5. Clinical information systems:
- a. Baseline data on the prevalence of home care wound care in an area can provide vital quantitative data to contribute to future service development and may justify the need for specialist services in your area
- b. On-going audit of practice development, guideline driven care and patient outcomes is essential in order to monitor and evaluate performance and for future planning
6. Community resources and policies (i.e., sustaining care by using community-based resources and public health policy)
- a. define the possibilities of community resources to support home care wound care service development
- b. Evaluate and document the quality, cost and effectiveness of home care wound care and report on a regular basis to policy makers

Minimum recommendations for Health Care Professionals' knowledge and skill

To be able to treat, support and educate patients and informal carers in prevention and

management of wounds, a set of minimum skills should be attained.

Minimum education level

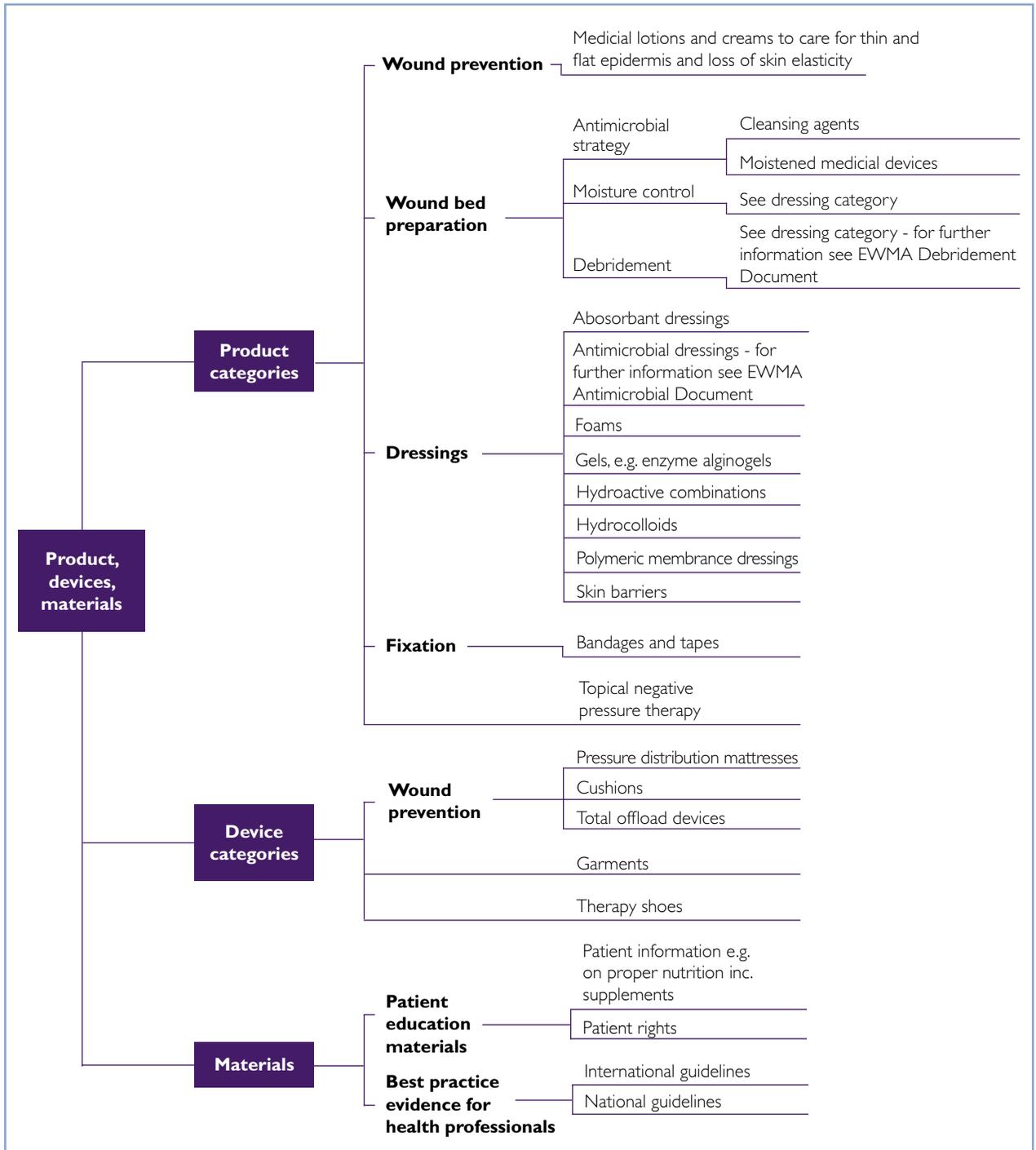
The health care professional providing home care wound care should have a level of education which enables him/her to work independently under the following circumstances:

- Complexity of wound circumstances:
 - assess complex wounds and wound healing
 - implement wound management based on best practice and evidence
 - select best available wound care products in the context of holistic care
 - support patient's independence and participation in decision making
 - educate patient and informal carers in self-care and wound prevention
- document wound healing, symptoms and treatment of wounds as well as patients' and informal carers' concordance with care
- ensure the continuity of care in all circumstances/conditions
- integrate multi-professional knowledge for the patient care by using consultation and ehealth

The health care professional providing home care wound care should as a minimum have the following competences:

- be able to attend the patient and/or the environment of the patient during the different phases of their illness

Figure 2. Recommendations for products, devices and materials available for home care wound care^{116, 117}



- provide education for patients and their informal carers within their social environment
- coordinate the management of the wounds regarding the prophylactic and therapeutic principles
- engage in continuous professional development to maintain knowledge and skills
- use products that reduce pain (to reduce risk and anxiety from the patient and the informal carer)
- use products that have a wide range of application (i.e. not just very specialist products for difficult wounds but products that can be used daily on simple wounds and have, when necessary, the features required for the treatment of more complex situations).

Recommendations for products, devices and materials for wound prevention and wound management

Further information about the evidence of outcome measures in evaluating interventions in wound healing including infection rate, bacterial contamination, wound pain, resource utilisation and economic costs, can be found in the EWMA Patient Outcome Document (2010)¹¹⁵.

To encourage the patient and his/her informal carer to apply the required wound prevention and wound management procedure (i.e., increase their compliance):

- use safe products (with minimal collateral effects)
- use simple to use products (to reduce risk and anxiety from the informal carer or the patient)
- use disposable products when possible (to reduce risk of transmission of infections from home to home)
- wound dressings can be effectively used through extended parts of the healing continuum
- wound dressings should not stick to the wound bed, and should eliminate or minimise need for wound bed cleaning
- wound products are easy to use and access, especially if patient or informal carer takes part in wound management
- wound products enable the lowest overall cost, including the cost of home care services and patient costs
- wound product are eco-friendly

Key issues for health care professionals when selecting a product in home care wound care:

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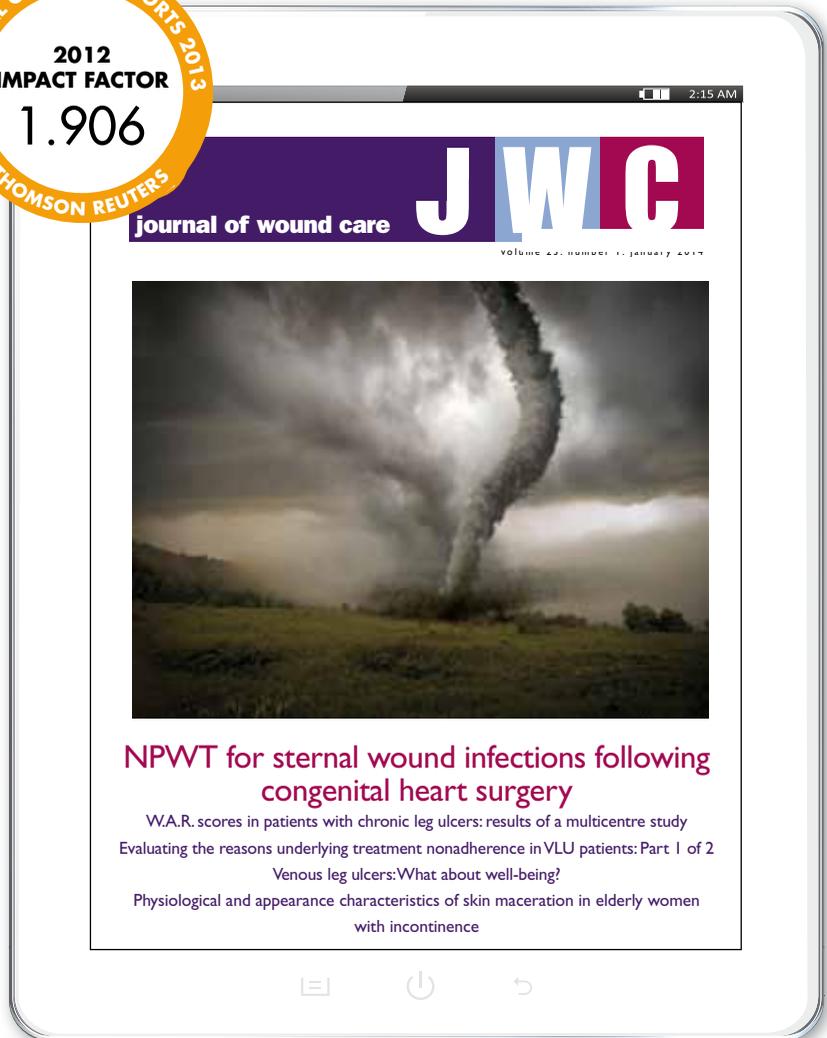
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