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Co-operating Organisations
As I sat down to contemplate the state of the EWMA Journal with a view to preparing this editorial, I have to confess to a feeling of satisfaction. This year has seen some significant developments for the journal. Obviously the most important is the fact that we are now indexed in CINAHL. But we have also established a Scientific Review Panel to assist the Editorial Board in reviewing all the papers submitted to the journal. Given that the Editorial Board were being given a considerable number of papers to review, this has made a difference to their workload. I would like to record my thanks to both the Editorial Board and the Scientific Review Panel for their support and valued comments on the papers they are sent. They help to ensure that we publish high quality papers in the journal.

However, the development that gives me the greatest satisfaction at the moment is the fact that we will be able to publish three issues next year. This takes us a step closer to my ambition of establishing the journal as a quarterly journal. To achieve this requires sufficient material as well as funding. Funding will always to some extent be an issue as the journal is circulated free of charge to 13,000 health care professionals across Europe and beyond. Also there are increasing numbers of wound care journals competing for papers. Therefore it is important for the EWMA Journal to remain true to its purpose to provide a mix of original scientific reports, reviews, clinical and background information in relation to wounds of all types and also information about developments in wound healing and management across Europe.

In keeping with this, we continue to publish papers that help to share developments in different countries in Europe such as the Czech 2100 Project as well as a range of scientific and clinical papers such as the paper by Professor Partsch discussing the stiffness of bandages and the relevance for practice or the paper by Dr Anna Hjerpe analysing the prevalence of chronic leg ulcers in Pirkanmaa Health Care in Finland. We have also had a number of authors submitting papers exploring historical aspects of wound healing. Although none of the current papers are ready for this issue, it is good to provide a forum for this type of paper as they are rarely found in other wound care journals. I suppose I should express a vested interest at this point, having written several of these papers myself!

So in the final issue for 2006, I would like to pronounce the EWMA Journal in good shape and ready to meet the challenges in 2007.

Carol Dealey, Editor
We call it **QuadraFoam™** because “Healing-Cleansing-Absorbing-Moisturising-Comfortable-Easy-Fast-Acting Dressing” just didn’t seem as catchy.

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Chronic leg ulceration is often a recurrent problem especially among elderly people involving massive health care resources. The aim of this study was to redefine how the prevalence of leg ulcers has changed during the past 20 years in Pirkanmaa Hospital District.

A questionnaire was sent to all of the clinics in Tampere University Hospital, and to all the health centres in the cities of Tampere, Lempäälä, Vesilahti and Mänttä. The dates involved were 3.10.1984, 3.10.1995 and 3.10.2005. Questions about the aetiology and the duration of wounds were asked as well as those regarding the demographic data of the patients.

In 1984 the average patient was 71 years old, increasing to 73 years old in 1995 and rising again to 75.7 years in 2005. The number of leg ulcer patients had also increased. In 1984 there were 83 patients with leg ulcers increasing to 106 patients in 1995 and further to 145 leg ulcer patients in 2005, giving point prevalence 0.055%, 0.064% and 0.076% on the days involved.

The present study shows that the prevalence of patients with chronic ulcers is increasing and that the patients are becoming older. We need to take this into consideration when the limited health care resources are shared.

Introduction
Leg ulcers comprise a very diverse group of cutaneous diseases with very different pathogenesis and manifestations although 70-80% of leg ulcers are of venous origin\textsuperscript{1-2}.

Leg ulcers are also an important health concern in western societies with their aging populations since not only are they causing enormous economic burdens\textsuperscript{3-9}, but also negative effects on the health and well being of sufferers, especially older adults. Leg ulcers represent important causes of long-standing pain and itching and burning sensations, functional impairment, disability and even morbidity for the patients\textsuperscript{10-12}. Delayed healing of chronic wounds is also known to be significantly associated with anxiety and depression\textsuperscript{13} so the consequences of a chronic leg ulcer are of great diversity not only to the individual patient but also for society.

Previous studies suggest from 0.06% to 3.6% prevalence for an open or open and healed leg ulcers in the western adult population\textsuperscript{14}. The western population is becoming older and it is also known that chronic leg ulcers are mostly diseases of the elderly so a rise in the number of leg ulcer patients should be expected in modern societies\textsuperscript{15}.

Knowledge of the extent of the leg ulcer problem is important for planning and providing necessary health care services for patients and education for the health care professionals. The primary purpose of this study was to determine the trends in the number and age of leg ulcer patients in our region on a specific study day at 10-year intervals over the last 20 years. A further aim was to evaluate the problems experienced in nursing the leg ulcer patients.

Methods
A questionnaire was sent to all the clinics in Tampere University Hospital, to all the health centres in the cities of Tampere, Lempäälä and Vesilahti as well as to all their in- and out patient clinics. The Health Care District of Mänttä Region was also included. The investigation sites were originally selected in 1984 because, even then, they were all linked via computer databases and were estimated to represent the different levels of Finnish health care organisations. Tampere is a major city, Lempäälä and Vesilahti represent rural counties and Mänttä is a mixed urban and rural county.
Patients with leg ulcers above 18 years were included. Paediatric and psychiatric departments were excluded.

Ethics committee approval was unnecessary since individual patients were not studied.

The ward manager informed the staff about the investigation beforehand and no other prior arrangements were made. The questionnaire contained a short introduction and it was easy to complete by the nursing staff. Two separate questionnaire sheets were sent to investigation sites.

The first question sheet asked about the place of treatment, number of patient contacts and the number of patients with leg ulcers on that study day. If a patient had been admitted to the hospital for any reason other than leg ulcer but had an open ulceration below knee area that required treatment on the study day they were considered as a leg ulcer patient and included in the study.

The second questionnaire sheet was completed separately for each patient suffering from an ulceration of the leg. It contained questions about the aetiology and the duration of wounds as well as demographic data on the patients treated on the study day. The design of the questionnaire has remained fairly unchanged during the years. Keeping the data collection method, timing of survey, size of questionnaire and questions as similar as possible throughout the years ensured the comparability of the results over time. The classification of the ulcers was based on the patient’s records. Open questions were also asked of the nursing staff about the difficulties and needs for education in the treatment of chronic ulcers.

The days involved were 3.10.1984, 3.10.1995 and 3.10.2005, respectively.

Results

The number of leg ulcer patients is increasing in our study area (Fig 1) from 83 in 1984 to 106 in 1995 and then to 145 patient contacts in 2005 on the study days involved. This is equal to a rise of 28% more patient contacts from 1984 to 1995 and a rise of 37% more patient contacts from 1995 to 2005. Even when the growing population is taken into consideration the point prevalence was 0.055% in 1984 in an adult (≥18 years) study population of 151,635 inhabitants, 0.064% in 1995 in an adult study population of 166,588 inhabitants and 0.076% in 2005 in the study population of 189,967 inhabitants. The number of elderly people in the study area has not increased over time. In 1984 16.7% of the population were 65 years or older, in 1995 18.4% and just 18.3% in 2005.

The mean age has changed considerably (Fig 2) from 71 years in 1984 to 73 years in 1995 and further to 75.7 years in 2005. The age range has also changed during the years, especially in 2005 the age range varied from 18 to 101 years. Unfortunately the age range was not calculated in 1995.

As illustrated in Figure 3 most of leg ulcer patients are nursed outside hospitals in our region. Of the 83 patients in 1984, 25 patients (30%) were receiving treatment on wards and 58 patients (70%) patients visited clinics on that day or were treated by community nurses. In 1995 somewhat more patients were in hospital wards, 43 patients (41%) and yet fewer patients were on wards in 2005, just 35% of the total group of 145 patients.

The durations of the ulcers are presented in Table 1. Ulcers with short durations have diminished in number during the past 20 years. In 1984 only 5% of ulcers were reported to have been open for over five years and this had changed to 12% by the year 2005.

<table>
<thead>
<tr>
<th>Duration</th>
<th>Year</th>
<th>1984</th>
<th>1995</th>
<th>2005</th>
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<tbody>
<tr>
<td></td>
<td>n=83</td>
<td>n=106</td>
<td>n=145</td>
<td></td>
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<tr>
<td>1-6 months</td>
<td>71</td>
<td>43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;6 months</td>
<td>24</td>
<td>45</td>
<td></td>
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<tr>
<td>&gt;5 years</td>
<td>5</td>
<td>12</td>
<td></td>
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<tr>
<td>&lt; 2 years</td>
<td>82</td>
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</tr>
<tr>
<td>&gt; 2 years</td>
<td>18</td>
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The aetiologies of leg ulcer patients were not well known. In 11% of the cases reported in 2005, no diagnosis at all was known by the nursing staff. In only 26% of the cases had the patient been examined thoroughly enough to get a specific diagnosis for the ulcer. Most of leg ulcers with known diagnoses were reported to be of venous origin (70%), the second most common type were diabetic (10%) ulcers. The five most common other diagnoses were expectedly heart failure, diabetes mellitus, arteriosclerosis, dementia and strokes.

Most of the ulcer patients were nursed by educated staff. In only 1% of the cases reported in 2005 had the carer had no education in nursing sciences.

The open questions for the nursing staff uniformly showed difficulties in the selection between the numerous local care options or products for each individual patient. Precise guidelines and regular and practical education was also constantly requested during the 20 year study period.

Discussion

Patients with leg ulcers are becoming more numerous and older throughout western society\textsuperscript{2,14,15} as shown by the present evaluation. Our study also demonstrated that the durations of the ulcers have become longer during the past twenty years. This implies the fact that perhaps simple uncomplicated venous ulcers of short durations will nowadays heal with conservative local care together with additional compression therapy and, therefore, the remaining ulcers are more complex with multiple factors contributing to their development as also found by Moffat et al\textsuperscript{16} and so require more treatment.

It has been calculated that chronic venous leg ulceration solely accounts for about 1% of the total health costs of developed countries\textsuperscript{17} but the true costs may well exceed this amount. In a Finnish study it was calculated that the costs of treatment were 1599€ per three months treatment period including administrative and travelling costs when the community nurse goes to the patient and treats a small (≤ 25 cm\textsuperscript{2}) venous ulcer. The patients themselves pay for the bandages and all the other materials and for the medications needed\textsuperscript{18}. It is simple, therefore, to calculate that the costs from an ulcer will be higher the longer it stays open and unhealed.

The present evaluation showed an unsatisfactory trend in increasing wound duration. It has been shown that in a chronic wound the sytogenic activity is diminished and the fibroblasts respond poorly to proliferative stimuli\textsuperscript{19-20}. And the wounds will heal better with smaller wound area and duration\textsuperscript{21}.

The specific aetiologies of the ulcers were not well known either. In a recent study in Portugal, in 33% of cases, the cause of ulceration was also unknown to the health professional treating the patient\textsuperscript{22}. In our study this number was even higher at 74%. This is an unfortunate finding, since only when the proper diagnosis is made, can the treatment be directed to correct the etiological factors of the wound.

Previous studies have reported a high proportion of poor diagnostic procedures employed\textsuperscript{23-24} which was also the case in our study. The present study showed that inevitably practical guidelines are constantly needed as daily tools for the treatment of patients with leg ulcers. We need to prepare simple directives where the recommendations are clearly set out and we also need to regularly educate new health care professionals to achieve the most cost-effective treatment options for the different types of patients with different types of ulcerations.

The leg ulcer patients should be assessed in a more systematic and controlled way. In Canada after reorganisation of the care for people with leg ulcers the healing rates improved and the nursing visits were used more efficiently\textsuperscript{25}. This is important because the recurrence of ulcers, especially venous leg ulcers, is frequent and in many cases many treatment methods will be needed to cure one patient. Plastic surgery on ulcers with free skin graft is known to promote healing but when it is the only procedure adopted recurrence is frequent\textsuperscript{26} however, with additional surgical correction of superficial venous reflux the 12-month ulcer recurrence can probably be reduced\textsuperscript{27}.

The majority of leg ulcer patients are managed in the community. We found a higher percentage of patients are treated in hospitals than in the Lothian and Forth Valley Leg ulcer study\textsuperscript{28} or in a previous Swedish study\textsuperscript{29}, but this may just reflect the differences in health care organisations.

A limitation to the present study was that clinical specialist doctors did not assess the patients according to the aetiologies of the ulcers. The diagnoses were collected solely from the patient charts by the nurses and added to the questionnaire. The results show only one day’s contact...
with patients with leg ulcers. No direct conclusions can be drawn about the true prevalence of the ulcers. On the other hand, the true prevalence of leg ulcers is difficult to evaluate because the patients often conceal them, possibly in the fear of social stigma, fear, embarrassment, or costs\(^\text{30}-\text{32}\).

The population’s life expectancy at birth in Finland is 75.5 years for males in 2005 and 82.3 years for females. However, according to the same statistics a 75-year-old male can expect to live 10 years over the average and a female over 75 years is expected to live on 12 more years.

If a Finnish female has survived for 85 years, she is expected to live at least five more years\(^33\). This surprisingly high life expectancy proves that that the care of the elderly should be active in wound care.

In our study area the increasing number of leg ulcer patients cannot solely be explained by the increasing age of the patients. The study day point prevalence should have diminished in time since our study area is younger than the whole Finnish population and the number of population ≥ 65 years has remained fairly unchanged. In fact it seems that the ulcers are becoming harder to heal. This may be influenced by changes in the patient demography, occupational patterns and lifestyle and (multi) medications.

Therefore more and accurate studies about this development are needed. Future research should be directed toward identifying the risk factors and predictors for ulcers, and effective prevention. The ever growing number of leg ulcer patients needs to be taken into consideration when limited health care resources are shared and probably the most cost-effective assessment and treatment is to be expected when a multidisciplinary team of specialists is provided for each individual patient with chronic ulcers.

Acknowledgements

This study was supported by a grant from Pirkanmaa hospital district. The authors thank all the nursing staff that helped to collect the data and especially the previous researchers; Head of Unit, Professor Timo Reunala, Dr Marja-Leena Tuomi and Chief Nurse Kisti Nikula.

References

Some wounds remain ‘static’ even after the barriers to healing appear to have been addressed. This may be due to an imbalance in protease activity. By controlling pH levels and modulating protease activity, CADESORB will help to correct the natural balance in chronic wounds. This can assist the migration of the epidermal margin and stimulate healing.
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- Biatain - Ibu may reduce wound pain caused by tissue damage\(^1,3,4\).
- Biatain - Ibu releases ibuprofen locally with no observed systemic effect\(^1\).

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2 Steffansen, Bente and Herping, Sofie Paarup Kirkby. Novel wound models for characterising the effects of exudates levels on the controlled release of ibuprofen from foam dressings. Poster. EWMA 2006, Czech Republic.
ABSTRACT
Test systems for the pre-clinical evaluation of new drugs and dressings in wound healing should ideally meet several criteria: they should be closely related to human skin, avoid animal experiments, be reproducible, be easy to handle in a large number of trials, and be economically justifiable.

Many systems used for the evaluation of wound healing experiments to date, e.g. cultured human keratinocytes and fibroblasts, skin equivalents, and in vivo animal models, fail to fulfil one or several of these conditions.

We have established a porcine ex-vivo wound healing model accomplishing the expectations mentioned above. Porcine skin has been shown to be comparable to human skin. Using only skin from the inner side of ears of slaughtered animals of same age and race makes the experiments highly reproducible and avoids animal experiments. Several models can be investigated concurrently, and the models are, compared to other systems, inexpensive.

This model can be used for questions of basic research, e.g. the role of cell-cell junctions in wound healing, as well as for the evaluation of drugs and dressings. As an example for the application of this model, we show the influence of maggot extracts on wound healing progress.

Support of normal WH and improvement of delayed or non-healing wounds has ever been challenging. Due to ethical restrictions it is not acceptable to investigate new substances or wound dressings in humans, therefore applicable wound healing models are required. An ideal wound healing model should be as close as possible to human skin physiology, be reproducible, be realisable in a large number of trials, exclude animal experiments and fulfil reasonable economic expectations. For a detailed overview of wound healing models see also 6.

Cultured human keratinocytes and fibroblasts, frequently used in mono- or co-cultures for the investigation of WH, such as in in tests commonly-called scratch-assays (e.g. 7-9), are appropriate models for preliminary investigations. They are of human origin and – provided that a pool of cells from several donors in the same passage is used - well reproducible. Moreover they are easy to handle and a wide spectrum of methods for their investigation is established. However, the cultivation of primary cells is quite expensive, human donors are necessary and, last but not least, conditions in mono- and co-cultures are quite artificial and far from skin, a three-dimensional system comprising several cell types and an extracellular matrix.

To overcome this problem various skin-equivalents have been established. Dermal equivalents consist of fibroblasts in a collagen matrix. In epidermal-dermal equivalents this “dermis” is covered...
by a multi-layered sheet of keratinocytes. More sophisticated systems include melanocytes, Langerhans-cells and additional scaffold-molecules e.g. glycosaminoglycan. These models are vast steps forward to mimicking human skin. However, they are quite expensive, difficult to handle (especially with respect to the formation of reproducible sheets and wounds), the cells are hyperproliferative and the epidermal barrier is not fully developed. However, such models might well be very valuable in the future after further development especially in terms of WH.

Many WH experiments have been carried out with rodents and pigs. The advantage of animal experiments is that the in vivo situation allows observation of all phases of WH. Therefore, they are good models especially for investigating the influence of inflammation and the late phases of WH. Rodents are small, low priced and easy to handle, however, their usefulness for WH experiments is limited due to the species-specific WH, e.g. their thin epidermis and a strong influence of wound contraction compared to human skin. Transplantation of full thickness human skin or skin equivalents on mice or splinted wounds might be alternatives to overcome these problems but are expensive and laborious. Nevertheless, mouse experiments are indispensable in WH, especially in terms of transgenic mice. For many years pigs have been used as a model system for human WH and have shown the highest comparability to human skin. However, due to their size they are quite expensive to keep and larger series of experiments, e.g. for drug screening, are impossible due to costs and animal welfare concerns.

Here we describe the establishment of an ex vivo porcine wound healing model (PWHM) using the advantage of porcine skin but avoiding animal experiments and costs. PWHM is an organ culture model (OCM). OCMs are often classified as in vitro models, as studies with these models are performed in vitro. We prefer the term “ex vivo” (lat. out of the living) to stress that the experiments are done in living tissue, directly taken from an in vivo organism, even though the experiments are performed in an artificial environment. As an example for the application of our model, we describe the influence of an extract of lucilia sericata maggots in various concentrations on the progress of WH. Living lucilia sericata larvae have been shown to be beneficial for WH as they remove necrotic tissue and infections. Moreover, promotion of granulation tissue formation has been observed, contributing to improved WH. We wanted to determine whether a maggot extract containing promising proteins might accelerate WH by improving epidermal regeneration.

Materials and methods

Antibodies

Polyclonal antibodies recognizing claudin-1 (71-7800) and connexin 43 (71-0700) were purchased from Zymed Laboratories (San Francisco, CA, USA), monoclonal antibodies recognizing Ki67 (MIB-1) from Dako A/S (Glostrup, DK) and cytokeratin 1/10/11 (K8.60) from Progen (Heidelberg, Germany).

Porcine wound healing model (granted patent DE 10317400)

Porcine skin was obtained from a local slaughterhouse. All the pigs were of the same age (6 months) and race (crossbred Yorkshire/Deutsches Edelschwein). The ears were removed directly after slaughtering and delivered immediately to the laboratory. The animals were slaughtered for human consumption and the ears were harvested following slaughtering, i.e. this model does not represent animal experiments.

After washing and disinfecting the pig’s ears, punch biopsies with a diameter of 6 mm were taken from the plicate of the ears. Fat, subcutis and parts of the dermis were removed. Subsequently, wounds were generated by removing epidermis and upper dermis from the centre of the biopsies (ø 3mm). The biopsies were placed dermis down on gauze in culture dishes filled with Dulbecco’s modified Eagle’s medium supplemented with hydrocortisone, fetal calf serum, penicillin, and streptomycin, taking care that the medium was in contact with the dermis only while the epidermis remained exposed to the air (“air-liquid-interphase”). The resultant wound healing models were incubated with 10% CO₂ at 37°C for several days (up to 5-7 days). The samples were snap-frozen in isopentane pre-cooled with liquid nitrogen, and stored at -80°C.
Evaluation of wound healing progress

Cryostat sections (6 µm) of the middle of the PWHM were fixed in -20°C acetone for 10 minutes and stained with hematoxylin/eosin by standard methods. Afterwards, progress of WH at both wound margins from two different sections was evaluated with a DMLS light microscope from Leica (Wetzlar, Germany) using a scale in which no progress of WH yielded 0, sparse progress 1, large progress 2, mono-layered regenerated epidermis 3, and multi-layered regenerated epidermis 4 (see also Figure 2). Statistical analysis was made by using paired Student’s t-test.

Immunofluorescence staining

Immunofluorescence staining was performed as previously described.

Extracts from Lucilia sericata larvae

Lucilia sericata maggots of stage 3 were homogenized in 0.9% NaCl at 4°C. After centrifugation for 60 minutes at 20000 x g the pellet was discarded and the supernatant supplemented with 50% ammonium sulphate, followed by another centrifugation for 30 minutes at 20000 x g. The pellet was discarded and the supernatant was saturated with ammonium sulphate to 75%. After centrifugation for a further 30 minutes at 20000 x g the supernatant was discarded and the pellet dissolved in 40 ml PBS. The solution was dialysed against PBS, lyophilized and stored at 4°C. Before application into the PWHM the lyophilisate was dissolved in the appropriate amount of PBS.

Results and discussion

Application and limitation of the porcine wound healing model

The PWHM is a partial thickness wound healing model (see above) based on intact skin from pigs’ ears (Fig 1a). Due to the inexpensiveness of the starting material and the economic expenditure of time PWHM is comparably cost effective. The costs are less than 70% of experiments with cultured human keratinocytes.

It comprises epidermis and dermis, i.e. keratinocytes, melanocytes, fibroblasts, Langerhans cells, Merkel cells and extracellular matrix, in physiologic composition. Several publications have shown that pig skin is highly related to human skin, especially concerning WH (see introduction). Therefore, epidermal WH as well as changes in the dermis can be investigated in PWHM in a three-dimensional system that resembles human skin. The duration of the experiment is five days, up to seven days at maximum, thus limiting the examination of tissue remodelling and scarring with this model. PWHM has a diameter of 6mm, the wound itself of 3mm. It is possible to administer water-soluble substances, ointments, creams, and cultured (human) cells in to and wound dressings on the wound (Fig. 1b, c, 28). Furthermore ointments, creams and water-soluble substances can be applied onto the wound margins. Several models (up to 14-20/ear; several ears simultaneously) can be investigated concurrently (Figure 2), which can be used for a comparative application of different substances or for the investigation of different points in time. Due to a high cross-reactivity of antibodies directed to human or mouse antigens with the porcine counterparts (Brandner JM, own observations), the models can not only be evaluated concerning WH progress (re-epithelialization; Fig 3) but also with respect to several additional parameters, such as proliferation, apoptosis, differentiation, barrier formation, and cell-cell communication (Fig 4 and 28). For general assessment of drugs and dressings it is often sufficient to appraise WH progress by evaluating the WH rate in H+E stained sections. In Fig 3, three different examples for

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Figure 2:
Photograph of a culture well plate with several PWHMs, which can be investigated concurrently. Bar: 6 mm.
WH rates (48 hr after wounding) can be seen. For a further explanation of the molecular mechanisms resulting in acceleration or deceleration of WH it is necessary to investigate further key events of WH, e.g. proliferation, differentiation, apoptosis, communication and barrier regeneration (Fig. 4). This can be performed by investigating the appropriate markers at the wound margins, in regenerating epidermis, in the dermis and distant from the wound 28, e.g. Ki67 for proliferation, TUNEL-staining for apoptosis, various cytokeratins and cell-cell junction proteins for differentiation, cornified envelope-, adherens junction- and tight junction proteins for barrier formation and connexins and cytokines for cell-cell communication. We have not tried to measure tensile strength of incision in our model yet, therefore we cannot state whether it is suitable for this kind of investigation.

The model is segregated from blood circulation. While endothelial cells are still present there is no further supply from components of the blood and immune system. Therefore, our model is not suitable for investigating the normal inflammatory phase. However, this provides the opportunity to examine the influence of selected components of the inflammatory phase by supplying them into the medium or into the wound. This might be of special importance as the inflammatory phase in chronic wounds is also different to that in acute wounds and might be mimicked in our model by the application of certain factors.

Example for the utilisation of PWHM:
Investigation of the influence of extracts from *Lucilia sericata* maggots on wound healing
The application of living maggots has been shown to be beneficial for WH 30, 31. However, patients often do not like living animals in their wounds. Therefore we were interested in discovering whether maggot extracts might also have a positive effect on WH. Maggot extract 4 (ME4; see materials and methods), which contains several promising proteins, was applied in various concentrations into the wounds of our PWHM and WH progress was evaluated 48 hrs after wounding. We could observe that ME 4 had a beneficial effect on WH at 1 µg/ml and 0.1 µg/ml while it had little or no inhibiting effects at other concentrations (Fig 5). The morphology of wound margins/regenerating epidermis was normal (Fig. 3). Further experiments will ascertain whether this extract has anti-microbial potential. Nevertheless, this extract cannot completely replace living maggots, as they are still necessary for the debridement of wounds. Moreover, the maggot extract used is not identical to the secretion of maggots.

Conclusion
The porcine WH model is economical, highly reproducible, easy to handle in large numbers of trials, avoids animal experiments, reflects normal, three-dimensional skin and is close to human skin due to the similarities between human and pig skin. Therefore, it represents an excellent model to investigate the effect of soluble substances, ointments, creams, wound dressings and cultured cells in spontaneous WH. Furthermore, its benefits make it bound to be used for investigating questions in basic science. As it can be further adapted to special requirements, e.g. infected wounds, ill-nourished wounds and other characteristics of non-healing wounds it may well be beneficial in the investigation of several questions concerning chronic wounds. However, it is important to know the limitations of the PWHM and we suggest this model be combined with other methods in WH research.
References


Compression therapy of venous ulcers

Haemodynamic effects depend on interface pressure and stiffness

ABSTRACT

Background: The interface pressure and stiffness of a bandage has a decisive influence on the haemodynamic effects in patients with venous insufficiency.

Aim: To discuss the relationship between the exerted pressure of different bandages on venous diameter and intravenous pressure in different body positions.

Methods: The diameters of leg veins in different body positions have been measured by Duplex under increasing pressure produced by pneumatic cuffs containing ultrasound-permeable windows. The difference in the interface pressure between standing and supine measured proximal to the inner ankle is a parameter for stiffness.

Results: In the upright position a pressure of about 50-70 mmHg is necessary to narrow and occlude veins of the lower leg. Intermittent pressure peaks of this magnitude may be obtained during walking under compression material of high stiffness.

Conclusion: To obtain haemodynamic improvement in patients with severe venous insufficiency, the pressure peaks of a compression device should intermittently exceed the local intravenous pressure on the leg during walking. This can be achieved by using compression devices with high stiffness resulting in a tolerable resting pressure in the supine position and a high working pressure.

Leg ulcer patients – victims of gravity

The deciding triggering factor for the development of venous leg ulcers is the elevated pressure in the leg veins during walking – i.e. ambulatory venous hypertension.

In a standing position the pressure at any point of the lower extremity corresponds to the weight of the blood column between the measuring point and the right heart which, in both healthy individuals and in patients with venous insufficiency, is about 80-100 mm Hg in a dorsal foot vein and 50-70 mm Hg at calf level, depending only on the body height. In normal individuals this intravenous pressure will fall during walking to values around 20 mmHg due to normal functioning valves. In patients with valvular insufficiency, intermittent refluxes will occur with each step so that the intravenous pressure in the distal leg may stay at around 50 mm Hg or higher. This situation, called ambulatory venous hypertension, will, in patients presenting a variety of abnormal compensating mechanisms on their tissue metabolic level, lead to an increased extravasation of fluid into the tissue, and may trigger a chronic inflammatory reaction with skin changes like hyperpigmentation or lipodermatosclerosis, and may lead ultimately to venous ulceration.

Treatment options

The main target of any effective treatment of severe venous disease is to lower ambulatory venous hypertension. This can be achieved by the abolishment of venous refluxes through venous surgery, sclerotherapy or by compression treatment.

One of the main intentions of adequate compression therapy of the lower extremities is to counteract gravity.

What is adequate compression treatment?

Compression is able to affect venous haemodynamics if the interface pressure is high enough to overcome the intravenous pressure, always adjusted to the body position. The ideal compression device would exert a low sub-bandage resting pressure in the supine position that is well tolerated during nighttime and would show a pressure increase when the patient stands up in order to counteract the increasing intravenous pressure. While walking the external compression should reduce venous refluxes by intermittent narrowing of the veins and should increase the amount of blood pumped up towards the heart with every step.
Which compression pressure do we need?
In order to narrow superficial and deep leg veins the external compression pressure should be higher than the intravenous pressure. This can be shown by observing the venous diameter with a Duplex probe through a fenestrated, pneumatic cuff as it is gradually inflated. The pressures needed to narrow and then to occlude a vein depend on the body position. They correspond to the physiological values mentioned above; this is about 20 mm Hg in the supine and 50-70 mmHg in the upright position at lower leg level.

How can we achieve a compression pressure in the range of 50-70 mmHg?
In general this pressure range is higher than that of compression stockings and can, in the main, only be produced with strongly applied compression bandages. Ideally these high values should be exerted only during standing and walking and should fall immediately when the patient lies down.

Ways to adapt the interface pressure to the body position
In principle two possibilities can be considered to adjust compression pressure to within the needed range depending on the body position:
- a pump regulating the pressure according to continuous sensor-readings,
- a compression material that does not give way to the changes of leg volume during standing and walking.

New inventions following the first option have been developed and will become commercially available soon while stiff, non-yielding compression devices that achieve changes of interface pressure due to the changes of the leg position have been on the market for a long time. However, their specific actions have not been fully understood.

What does stiffness mean?
Stiffness characterizes the relationship between the resting and working pressures of a compression device. It is defined as the increase in sub-bandage pressure per centimetre increase in the circumference of the leg. This parameter characterizes the extensibility of a textile as well as the elastic property of a composite bandage, which plays an important role in the performance of a compression device during standing and walking. When the muscle contracts, inelastic material will produce a higher increase of interface pressure than elastic, yielding material. Stiffness may be measured in the laboratory where it corresponds to the slope of the hysteresis curve. The fact that it can also be assessed by in-vivo measurements on the individual leg will certainly be of increasing practical importance in future trials.

How can we assess stiffness in-vivo?
In order to obtain valuable information on the elastic property of a compression device which may be quite complex when several materials are combined, the so called “static stiffness index (SSI)” may be a useful parameter. To ascertain SSI a calibrated pressure sensor is fixed to the medial aspect of the leg about 12 cm above the inner ankle. This is the area where the muscular part of the gastrocnemius muscle changes into the tendonous part and shows the most extensive changes in local curvature and leg-circumference when changing the body position between supine and standing. The difference between the interface pressure in the standing and in the lying position (mmHg), called SSI, is a valuable parameter for the required stiffness of the compression system.

Measurement of dynamic stiffness during walking requires sophisticated instrumentation and can therefore not be used for clinical routine.

The pressure peaks and the pressure amplitudes during walking are also parameters for stiffness and correlate well with SSI. However, these parameters depend on the walking ability of the patient and require measuring systems that allow dynamic pressure readings.

Which materials provide high stiffness?
As shown in Fig. 1, starting with the same resting pressure, inelastic material produces a much higher pressure increase in the upright position than elastic material. When several layers of elastic material are applied over each other stiffness of the final bandage will increase. This is also true for elastic stockings applied over each other. Adhesive and cohesive materials increase stiffness. Table I gives a short review.

Figure 1
It is important to note that different stiffness indices may be obtained with differently sized sensors. Therefore reliable comparisons will only be possible by testing different compression devices with the same sensor on the same site.

Table I: Overview on low and high stiffness compression materials

<table>
<thead>
<tr>
<th>Low stiffness</th>
<th>High stiffness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compression stockings (single layer)</td>
<td>Rigid bandages (e.g. zinc paste), Velcro-band devices, pumps</td>
</tr>
<tr>
<td>Single component elastic bandages</td>
<td>Short stretch bandages, adhesive, cohesive material</td>
</tr>
<tr>
<td>multi-layer bandages</td>
<td></td>
</tr>
</tbody>
</table>

Sub-bandage pressure does not depend on the material but on the force that the user exerts during application.

What are the haemodynamic consequences of higher stiffness?

The effects of compression do not depend only on the interface pressure. With the same resting pressure, inelastic compression material reduces venous refuxes more effectively than elastic bandages. In contrast to compression stockings which exert a pressure of around 30 mmHg, inelastic bandages, applied with a pressure of more than 50 mmHg, are able to reduce ambulatory venous hypertension, even in patients with deep vein incompetence.

How can the more powerful haemodynamic effect of high stiffness material be explained?

As it can be demonstrated by Duplex measurement of the venous diameter on the lower leg using a fenestrated inflatable cuff, stiff material can lead to intermittent occlusion of the lower leg veins with each muscle contraction during walking. For a short moment the sub-bandage pressure peaks during muscle systole will overcome the intravenous pressure and will thereby occlude the vein (Fig. 2). Stiff bandages may therefore act like an artificial valve suppressing refuxes during each muscle systole. At the same time the muscle veins will be squeezed out thus increasing the volume of blood expelled towards the heart during walking. As we know from several experiments using pneumatic compression pumps, intermittent pressure waves also have a marked effect on the release of vasodilating, anticoagulatory and anti-inflammatory mediators from the endothelial cells.

Disadvantages of high stiffness bandages

The application of stiff bandages exerting high pressure is not easy and should only be undertaken by individuals who have been trained in the technique. Usually these bandages are applied to the lower leg in the sitting patient whose ankle is in maximal dorsiflexion. In general such bandages should be applied using several layers with a considerably higher resting pressure compared to elastic material. Just by lying down and relaxing the ankle, the interface pressure will show an immediate pressure drop. This pressure drop will continue in the first minutes and hours when the patient is walking to values that are 30-40% lower compared to the initial pressure. This is mainly due to an immediate reduction of leg volume. For the next few days only a mild further pressure drop occurs. Depending on the amount of oedema removed the bandages will loosen and require adjustment and renewal accordingly.

High stiffness and arterial occlusive disease

Sustained external compression should never exceed the intra-arterial pressure, which can be assessed by measuring the systolic ankle pressure using a Doppler probe. Up to now a systolic ankle pressure of 50-70 mmHg was a clear contraindication for any kind of compression therapy. However, some recent experiments using specially designed intermittent pneumatic compression devices have shown that short pressure pulses with peak values of more than 100 mm Hg followed by long intervals without pressure may increase arterial blood flow and produce beneficial clinical effects even in severe stages of peripheral arterial occlusive disease.

Bandages with high stiffness, applied with intentionally low resting pressure adjusted to never exceed the systolic ankle pressure, will produce intermittent pressure peaks in a similar way when the patient is walking or moving the ankles. The resulting massage effect of inelastic compression material will reduce the swelling and increase the arterial blood flow, especially in patients with oedema and mixed, arterial and venous disease. Such bandages should be applied by well-trained staff and should be changed frequently because some slippage is inevitable especially when oedema is reduced. Another reason for frequent bandage change is the need for a careful inspection of...
the skin in order to avoid overlooking any kind of initial pressure-damage.

Elastic bandages with low stiffness exerting a sustained external resting pressure should not be applied in any kind of peripheral arterial disease.

**Some practical aspects concerning bandage application**

The application of good compression bandages should be trained and requires some practice. An experienced bandager will adjust the tension during bandage application to the circumference of the leg using more force over large leg segments and much lower power over thin legs. Putting some padding over the dorsal tendon at the ankle or over the shin will enlarge the circumference and thereby lower the local pressure. A rubber foam pad applied behind the inner ankle will increase the local pressure, which may be of deciding importance in a case with a retromalleolar ulcer (“concentric compression”).

Experienced bandagers will be able to achieve the same resting pressure with every compression material independent of its elastic property (Table I).

A stiff ankle causes an additional defect of the venous pump and should therefore be mobilized by encouraging the patient to exercise. Correctly applied bandages using high stiffness material do not impede ankle-movement. They will reduce oedema effectively and will be tolerated also in the supine position, even when applied with a rather high pressure in the sitting position.

**Some practical considerations concerning measurement of pressure and stiffness in vivo**

In future trials comparing different compression devices, it will be mandatory to measure the “dosage” of the exerted pressure on the individual leg. This is especially important when multi-component bandages are developed, for which the elastic property of the final bandage is unpredictable. Laboratory experiments have shown that the addition of several layers of elastic material increases bandage stiffness\cite{16}. These findings could be confirmed also by in-vivo tests using different combinations of various materials\cite{17,18}.

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The pressure that is exerted during standing and walking is more relevant than the resting pressure in the supine position.

There is an excellent correlation between the standing pressure and the peak pressure during walking (Fig. 3), which, as a rule, is only slightly higher than the standing pressure when measured proximal to the inner ankle. Using simple transducers that can only measure static, but not dynamic, pressures the standing pressure can therefore be taken as a surrogate parameter for the working pressure. As a rule of thumb, inelastic bandages will show values below 10. Elastic bandages and round knitted compression stockings show values above 10.

For routine it is recommended to measure the pressure in the lying and in the standing position approximately 12 cm above the inner ankle. The difference between standing and supine pressure characterizes stiffness (SSI). As a rule, inelastic bandages will show values higher than 10, while elastic bandages and round knitted compression stockings show values below 10.

Experienced bandagers will adapt the strength of the applied bandage to the circumference of the leg, the amount of oedema and to the walking ability of the patient. It is rather unrealistic to adjust the bandage pressure to the degree of ambulatory venous hypertension in an individual case. However, based on the relationship between external compression pressure and intravenous pressure explained above, it seems reasonable to use strong compression in cases with severe venous pathology while light or medium pressure may be enough to treat milder cases.

Implications for Clinical Practice
- Compression devices with high stiffness follow an “intelligent design”.
- With a tolerable resting pressure they exert high-pressure peaks during standing and walking, counteracting the intravenous pressure and thereby improving venous haemodynamics.
- Inelastic and short stretch bandages should be applied with a high initial pressure that will fall instantly to a tolerable range.

Further Research
- As postulated in a recent consensus document there is a need to measure interface pressure and stiffness of the final bandage in future trials comparing the clinical outcome by using different compression products.
- In-vivo measurements of these parameters are also recommended when new compression devices are developed.

References
12. Larsen AM, Futteri P. Watch the pressure-It drops. EWMA Journal 2004;4:8-12
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Seasonal variation of onset of venous leg ulcers

ABSTRACT

Background. Many vascular pathologies exhibit seasonal fluctuation, and perhaps are climate dependent. In Central and Western Europe, where four distinct seasons exist, vascular pathologies related to thrombosis have their peak of frequency during winter, while clinical symptoms associated with chronic venous disorders are most severe during summer.

Methods. A review of the medical documentations of 213 consecutive patients with active venous ulceration managed in a leg ulcer clinic from January 2000 to December 2005 was carried out.

Results. There were two peaks of frequency of ulcer onset, in spring and autumn, and two nadirs, one in winter and the second (smaller) during summer. These fluctuations were found to be statistically significant (p<0.05). These fluctuations were due mainly to recurrent ulcers, while primary ulcerations had rather equal distribution throughout the year. However, these differences did not reach the level of statistical significance.

Discussion. These data show that though venous ulcerations are related to pathological venous circulation, perhaps the triggering factor is not associated with the vascular system. Revealed seasonal variations are similar to these of peptic ulcer disease. The pathogenesis of these two pathologies, in which epithelial lesions occur, surprisingly is similar. It could be hypothesized that the onset of venous leg ulcer is either triggered by an as yet undiscovered bacteria (like Helicobacter pylori in peptic ulcer disease), or there is the same triggering molecular factor (e.g. pro-inflammatory cytokine – interferon-gamma).

Introduction

It is widely accepted that so called venous leg ulcers are the most severe expression of chronic venous insufficiency. This venous insufficiency is characterized by persistent lower limb venous hypertension, which is caused by venous reflux, venous occlusion, or failure of the calf muscle pump. It is a common clinical problem, as venous ulcers affect 0.2-1% of the population in developed countries. Though venous ulcerations are always associated with venous ambulatory hypertension, the exact mechanism leading from pathological hemodynamics in venous circulation to the necrotic lesions in the skin still remains undiscovered. Former concepts that such disorders as tissue hypoxia or ischemia-reperfusion could contribute to the development of ulcerations in patients with chronic venous insufficiency were not fully confirmed. It rather appears that underlying events are far more complex. Many experiments have shown that the tissue injury in venous ulcer patients was induced by leukocytes, but it is not clear which population of leukocytes is involved in the development of the ulceration, and which molecular factors are responsible.

Many vascular pathologies exhibit seasonal fluctuation, and perhaps are climate dependent (temperature, day’s length, humidity, etc.). In Central and Western Europe, where four distinct seasons (spring, summer, autumn, and winter) exist, vascular pathologies related to thrombotic events (e.g. arterial thrombosis, myocardial infarction, cerebral stroke, venous thromboembolism, gut ischemia) have their peak of frequency during winter1-6. Conversely, clinical symptoms associated with chronic venous disorders (pain, cramps, oedema) are most severe during summer, and also clinical consultations related to chronic venous insufficiency, as well as phlebotonic drug consumption in European countries, are more frequent and higher in summer7.

The aim of this study was to assess if there was any seasonal difference in the frequency of onset of venous leg ulcers.

Methods

A retrospective review of medical documentations of 297 consecutive patients with active venous ulceration managed in a leg ulcer clinic from January 2000 to December 2005 was performed, and in each case the month of onset of the ulcer was obtained. As data of patients with long history of ulceration could be misleading, only 213 cases with ulcer histories shorter than one year were included. This analysis was also performed separately for primary and recurrent ulcers. Statistical analysis by χ² test was performed and was considered statistically significant at p<0.05.
Results
The distribution of ulcer frequency is shown in the diagram. There were two peaks of frequency of ulcer onset, in spring and autumn, and two nadirs, one in winter and the second (smaller) during summer. These fluctuations in comparison with theoretical equal distribution of onsets of ulcers throughout the year were found to be statistically significant (p<0.05). It was also found that these fluctuations were due mainly to recurrent ulcers (p=0.095), while primary ulcerations appeared in equal distribution throughout the year (p=0.67) – it should be kept in mind that subgroups of patients were relatively small, and perhaps a larger group of patients could improve statistics.

Discussion
There are at least two reports coming from Southern Asia, which describe seasonal fluctuations in the frequency of leg ulcers. In these papers, authors found a higher frequency of ulcers during monsoon season – but it seems that the majority of these ulcers were due to infected insect bites, and were not associated with venous insufficiency. Our report is perhaps the first one that demonstrates the seasonal fluctuations of venous leg ulcers in Europe.

Some venous leg ulcers are related to trauma, however such lesions seem to be in the minority, and almost all ulcerations develop spontaneously. There is no clear correlation between severity and duration of venous disease and risk of development of ulceration. The only definite risk factor is the positive history of previous ulceration. Therefore it was even suggested that though the venous hypertension is the underlying pathology, the triggering factor could be independent of the venous system and be situated in the digestive tract. This hypothesis however was not confirmed.

Nowadays there are several theories explaining the pathogenesis of venous ulcers. According to one theory, (fibrin cuffs hypothesis) ulcerations develop as a result of local ischemia due to thrombosis in the microcirculatory bed of the extremity. Another theory (leukocyte trapping hypothesis), which is the current ruling theory, claims that ulcers, like less severe forms of chronic venous insufficiency, develop due to leukocyte adhesion, migration and activation. If one of these two hypotheses were true, venous ulcers should develop more frequently in winter (first theory), or in summer (second theory). Ulcers associated with trauma should also occur more frequently in summer (when legs are not protected by stockings and high shoes).

However, our results show that the triggering factor is probably quite different and is not associated with the vascular system. Revealed seasonal variations are similar to those of peptic ulcer disease. Maybe the pathogenesis of these two pathologies, in which epithelial lesions occur, is similar. It could be hypothesized that onset of venous leg ulcer is triggered by as yet undiscovered bacteria (like Helicobacter pylori in peptic ulcer disease), or there are some psychological factors responsible, or there is the same triggering molecular factor (peptic ulcers probably develop due to local over-expression of the pro-inflammatory cytokine – interferon-gamma). Recently there is growing evidence that venous leg ulcers should be regarded as an autoimmune disorder, and the immunologic system, and perhaps also central nervous system, can be involved in the pathophysiology of ulcerations. Some papers have reported seasonal variations in lymphocyte mitogenic responses, and in the quantity of circulating populations of leukocytes and pro-inflammatory cytokines. Also, specific melanocyte receptors on lymphocytes have been identified.

It seems reasonable to start investigations to prove our results in other countries (preferably as a prospective study), and perhaps to establish the autoimmune background of pathogenesis of venous leg ulcers.

References
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INTRODUCTION
The prognosis of wound healing after minor amputation in patients with diabetic foot is uncertain. Many risk factors for foot ulcers and amputations were studied, but there is a lack of studies dealing with risk factors for healing after minor amputation.

AIM
Our retrospective, case-note study was to assess the risk factors for unsuccessful wound healing after minor amputation in patients with diabetic foot.

Material and Methods: We evaluated 128 patients (mean age 69±12 years, 87.5% Type 2 diabetes) treated in our foot clinic and indicated for minor amputation during the period from 4/2000 to 7/2003. The main reason for amputation was osteomyelitis in 115/128 (90%) of patients. The healing was evaluated after six months since primary amputation. Criterion for successful healing after the amputation was a healed wound below the metatarsal level; unsuccessful healing was assessed as a non-healed wound or re-amputation above the ankle. Potential risk factors for unsuccessful healing were selected from risk factors for foot ulcers and amputations, gathered from previous studies. We evaluated those factors as: type of diabetes; diabetes duration; diabetes control measured by glycosylated haemoglobin (HbA1C); presence of ischaemic heart disease and cerebral ischaemia; severe diabetic polyneuropathy measured by biothesiometer; peripheral arterial disease assessed by transcutaneous oxygen tension (TcpO2), and laboratory blood parameters of infection- C-reactive protein (CRP) and white blood cells count. Potential risk factors were assessed at the time of primary amputation. Student T-test or Mann Whitney test for univariate analyses and stepwise logistic regression for multivariate analyses were used to determine which of the factor(s) are associated with the unsuccessful healing after minor amputation.

RESULTS
Unsuccessful healing was seen in 29/128 (22.7%) of patients. Of those, 10 (7.8%) were healed after re-amputation above the ankle and 19 (14.9%) were unhealed during the study period. (Table 1) Other assessed potential risk factors were not significant.

DISCUSSION
The results of our study support the premise that measurement of transcutaneous oxygen tension and CRP before minor amputation is helpful in predicting the prognosis of wound healing after minor amputation. Aggressive therapy of the infection and ischaemia before minor amputation is necessary for the improved prognosis of wound healing.

Supported by the grant MZO00023001.

Table 1: Significant risk factors for unsuccessful wound healing after minor amputation

<table>
<thead>
<tr>
<th>Variable</th>
<th>Univariate analysis</th>
<th>Multivariate analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Groups</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unsuccessful Healing</td>
<td>Successful Healing</td>
</tr>
<tr>
<td>TcpO2 (mmHg)</td>
<td>13.83±8.4</td>
<td>43.64±10.9</td>
</tr>
<tr>
<td>CRP (mg/l)</td>
<td>65.03±26.4</td>
<td>24.75±22.9</td>
</tr>
<tr>
<td>Cerebral ischaemia (%)</td>
<td>17.2</td>
<td>12.1</td>
</tr>
</tbody>
</table>

OR = Odds ratio
As a part of its public awareness program Healing 21, the Czech Health Promotion Society (CHPS) carried out a sample survey among leg ulcer patients aimed at studying leg ulcer prevalence and experiences of treatment procedures in the Czech adult population. CHPS bought 12 questions in an omnibus sample survey carried out by the reputable Czech opinion poll agency, STEM. A representative sample of 1690 respondents over 18 years of age from across the Czech Republic was interviewed in April 2006.

Examined below are the interesting results of the research:

1. One third of respondents did not know the term leg ulcer. This was illustrated in their responses to the question asking for a definition of the disease. The answers were categorized according to appropriateness of answers to open questions.

“How have you ever heard about a disease called leg ulcer, leg ulcers? Could you please explain what this disease looks like and what is the nature of this illness?”

2. More than 3% of respondents are suffering/had suffered from leg ulcer, either currently or earlier in their lives. (This a sum of rounded figures of the first two bars). If we add family members, we can say one fifth of the Czech adult population has had either direct or indirect experience of leg ulcers.

“How have you or someone from your family ever suffered from leg ulcer?”

3. About one fifth of patients (21%) suffered for four and more years and more than one third of all respondents (37%) were suffering for more than a year.

“How long have or had you been suffering from leg ulcer?” (%; n=43 respondents)

4. Two thirds of respondents suffering from leg ulcer are or were treated by GPs, and one half by dermatologists.

“What is/was the specialty of the physician who has been/was treating your leg ulcer?” (%)
5. Ointment (58%), gauze (28%) and powder (14%) seem to be very common treatment preparations in leg ulcer therapy. The moist dressing has been used in 40% of cases.

"Which methods have been used in your leg ulcer treatment?" (%, n=43 respondents)

6. One third of respondents have been/were suffering from leg ulcer for several years.

"How long did your treatment take?" (%, n=43 respondents)

7. In the case of relatives, the situation is even worse: more than half of relatives suffering from LU were treated for four and more years.

"How long have/had your relative's problems with leg ulcer lasted?" (%, n=248 respondents)

In summary, we learned the leg ulcer prevalence seemed to be higher compared to small sample clinical studies. However cross-validation studies are necessary to obtain reliable data. As far as treatment methods and length of treatment are concerned clinical validation is even more vital.

EWMA Position Document 2006

Management of wound infection
The 2006 European Wound Management Association (EWMA) position document on ‘Management of wound infection’ continues last year’s exploration of the criteria for wound infection by tackling the complex clinical challenges healthcare professionals face when making decisions about how to treat wound infection.

With the recent escalating prevalence of bacterial resistance there has been renewed interest in the use of topical antimicrobials particularly silver, iodine, honey and maggot therapy. However, injudicious use and the limited clinical evidence to support their use has led to further problems and controversies. In producing this position document, EWMA pays particular attention to the appropriate use of topical antimicrobials and provides practical recommendations for clinicians.

This position document, the fifth in the series, was launched at Prague, 18-20 May 2006. The document comprises four seminal papers:

- An integrated approach to managing wound infection – P Vowden and RA Cooper
- Demystifying silver – J-Y Maillard and SP Denyer
- Topical management of infected grade 3 and 4 pressure ulcers – Z Moore and M Romanelli
- Topical antimicrobials and surgical site infection – A Melling, FK Gould and F Gottrup

‘Management of wound infection’ has been supported by an unrestricted educational grant from ConvaTec and is available in English, French, German, Italian, Spanish and Japanese.

Previous Position Documents:
ABSTRACTS OF RECENT COCHRANE REVIEWS

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Dressings for healing venous leg ulcers
Palfreyman SJ, Nelson EA, Lochiel R, Michaels JA
The Cochrane Database of Systematic Reviews
Submitted for publication in Issue 3, 2006 Copyright© 2005 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

ABSTRACT
Background: Venous leg ulcers, sometimes called varicose or stasis ulcers, are a consequence of damage to the valves in the veins of the legs, leading to raised venous pressure. Venous ulcers are characterised by a cyclical pattern of healing and recurrence. The main treatment is the application of compression, either in the form of compression bandages or hosiery. Dressings are usually applied beneath the compression to aid healing, comfort and to control exudate. Wounds heal quicker in a moist environment and dressings are used to absorb excess fluid or retain fluid in an otherwise dry wound in order to achieve a ‘moist wound environment’. There are a large number of dressing products and types available. It is unclear whether particular dressings aid healing of leg ulcers.

Objectives: To assess the effectiveness of wound dressings for the treatment of venous leg ulcers.

Search strategy: We searched the Cochrane Wounds Group Specialised Register (April 2006) and CENTRAL (issue 1, 2006) and several other electronic databases (up to April 2005). Manufacturers of dressing products were contacted for unpublished studies.

Selection criteria: Randomised controlled trials that evaluated dressings for the treatment of venous leg ulcers. There was no restriction in terms of source, date of publication or language. Ulcer healing was the primary endpoint.

Data collection and analysis: Data from eligible studies were extracted and summarised using a data extraction sheet by two authors independently.

Main results: 42 randomised controlled studies were identified that met the inclusion criteria. The main dressing types that were evaluated were hydrocolloids (n = 23), foams (n = 6), alginates (n = 4), hydrogel dressings (n = 6) and a group of miscellaneous dressings (n = 3). In none of the comparisons was there evidence that any one dressing type was better than others in terms of number of ulcers healed. Current evidence does not suggest that hydrocolloids are more effective than simple low adherent dressings used beneath compression (9 trials; relative risk for healing with hydrocolloid 1.09 (95% CI 0.89 to 1.34)). For other comparisons there was insufficient evidence.

Authors’ conclusions: The type of dressing applied beneath compression has not been shown to affect ulcer healing. For the majority of dressing types there was insufficient data to allow us to draw strong conclusions except for hydrocolloid compared with a low adherent dressing. The result of the meta-analysis indicate no significant difference in healing rates between hydrocolloid dressings and simple, low-adherent dressings when used beneath compression. Decisions regarding which dressing to apply should be based on local costs of dressings and practitioner or patient preferences.

PLAIN LANGUAGE SUMMARY
There is no evidence that any wound dressing is better than a simple dressing for leg ulcer healing. There are many kinds of dressings used for the treatment of venous ulcers, usually beneath compression bandages. There was no evidence of additional benefit associated with wound dressings other than simple dressings when used beneath compression. There was no evidence of difference in healing rates between other dressings but most studies are too small to allow us to rule out important differences. Inexpensive, simple non-adherent dressings should be used beneath compression therapy unless other factors, such as patient preference, take precedence.

EWMA values your opinion and would like to invite all readers to participate in shaping the organisation. Please submit possible topics for future conference sessions. EWMA is also interested in receiving book reviews, articles etc. Please contact the Journal Secretariat at ewma@ewma.org

EWMA Journal 2006 vol 6 no 2
SILVERCEL* dressing uses new hydro-alginate technology to complement the effectiveness of silver release. It is a dressing that becomes stronger as it absorbs, facilitating removal from the wound. Clinically tested, SILVERCEL* dressing encourages healing even in very wet wound situations by providing an optimal moist wound environment. The sustained and balanced release of silver ions kills a broad spectrum of microorganisms associated with the bacterial colonization and infection of wounds, including MRSA, MRSE and VRE.
Wound care today, necessitates, from the carer, to develop a full understanding of the physiology of wound healing and the management of chronic and acute wounds.

This book leads us through a logical and comprehensive pathway to the understanding of wound healing and complications. Risk factors for impaired healing are fully described high lightening the importance of good patient evaluation with a holistic approach and adequate nursing interventions. Particular emphasis is made on nursing assessment and observation of the wound using defined criteria for quality of documentation to ensure continuity of care. Coloured illustrations and sketches are proposed by the author to enable a facilitated approach to wound assessment with commented frameworks to use with reference to practical and useful tools.

A particularly interesting chapter concerns the use and management of wound care products. Here a historical perspective is presented offering a better understanding of the evolution of products from the early days to nowadays. The wide range of modern dressings is presented in a straight forward and clear manner related to their components and actions. However I would have appreciated more practical details on the use of non-medicated, medicated tulles, ointments and creams, in this section. Furthermore we are invited to discover the fascinating advances in technology and treatment alternatives with reference to recent studies and expertise advice.

Management of patients with chronic wounds is a copious subject in this book covering pressure ulcers, venous and arterial leg ulcers, ulcers of mixed aetiology, diabetic foot ulcers, malignancy, fungating wounds and lymphoedema. I particularly appreciated the concise explanations of the different aetiologies underlining the specificity of each disease to maximise comprehension of preventive and therapeutic attitudes. Summary boxes remind the reader of key points. Recent references are given to national surveys on prevalence, incidence and costs in different countries with practical recommendations for prevention and treatment. A diversity of scientific views are presented and commented.

A complete chapter is dedicated to acute wounds giving precise definitions, clinical criteria for observation and detection of complications. Practical aspects are described with reference to scientifically based studies and practical experiences.

An encouraging perspective to wound care is given in the last part of the book which describes the emergence of nurse wound care specialists with the development of their role which recently comprises prescriptions. Development of wound care centres and nursing lead ulcer clinics is an interesting presentation that gives openings to other countries in the future.

The editor gives us a large view of useful sources (literature and electronic databases) available to develop high-quality care, based on research, yet we are invited to develop a critical review, which for many nurses today, has yet to be acquired.

The third edition of this book offers an excellent and comprehensive approach to wound management and the role the nurse is expected to undertake in a holistic approach. I particularly appreciated the logical layout of this book with its numerous illustrations, clear summarized charts and open indexing which enables the reader to travel in and out of chapters. References at the end of each chapter are consistent enabling quick reference to articles and further reading.

I warmly recommend this book to all clinicians, teachers and members of the interdisciplinary health care team. It’s a useful guide to best-practice offering numerous practical clinical tools to help everyday practice with reference to national and international clinical guidelines.

Carolyn Wyndham-White
Senior lecturer, Clinician, consultant, specialist in wound care and tissue viability, carolyn.wyndham-white@bluemail.ch
Within living memory the formation of pressure ulcers meant a patient was irrevocably near death. This image still persists in the mind of some people, but this situation has not been true for almost 50 years.

When I started to read through the 214 pages of this book, with its 52 illustrations including 34 colour plates, I was most impressed and planned to include it on my bookshelf for frequent reference.

In its 22 chapters, this book covers almost all aspects of pressure ulcer management.

The book reads very easily and the chapters are relatively short. All aspects of wound healing in pressure sores management are covered including the historical aspects, basic science, risk factors, pressure ulcer classification, risk assessment scales, skin care, nutrition, wound bed preparation, surgical management, debridement and conservative management. All manner of topics are covered in detail in an easily read format. The tables are well presented, clear and easily understood.

“While for the professional the information to help improve pressure ulcer care is available, the next major innovation in pressure ulcer prevention and management is likely to flow from attempts from national and international bodies to place pressure ulcers firmly among the priorities of healthcare policy-makers and the general public.” writes K.G. Harding expressing the task of the first years of the 21st century. This book is written by a very distinguished panel of authors who are very much experts in their field.

This is a very useful reference book and should be purchased by anyone seriously interested in pressure ulcer management.

Milada Franců

Wound Care Nursing,
2nd edition
A Patient-Centered Approach
Authors: Sue Bale and Vanessa Jones,
ISBN 0723433445, Paperback,
256 Pages, 100 Illustrations
Mosby, Published November 2005
Price: £ 24.99

This is an interesting book by two renowned British nurses in the field of wound management for both acute and chronic wounds:

– It discusses an approach that focuses on the patient and his/her surroundings and not just the wound itself. It is structured according to the main nursing care processes: evaluation, diagnosis, planning, intervention and evaluation.

– This is an especially interesting book owing to the application of different theoretical nursing models to the practice of wound care. Of particular note is the assertion that the model applied to each action can be adapted.

– The inclusion of clinical cases to illustrate how to put the theory into practice makes all the processes discussed seem extremely easy to implement.

– It was a good idea to consider the different needs attributed to chronic wounds in patients from different age groups: children and teenagers, middle-aged and older patients, with distinct intervention for the treatment of pressure and leg ulcers or cancer-related wounds.

– This book is an extremely useful teaching tool as it includes practice points as basic objectives, a summary, recommended reading and an extensive and updated bibliography for each chapter. The material included is based on the latest scientific evidence available.

– Evaluation of the various different aspects (the wound itself, surroundings, assistance, quality of life, etc) is a fundamental section that is often neglected and which in this book is presented in an enjoyable and instructive way.

As the authors themselves point out, this text aims to resolve the differences between theoretical and practical/clinical nursing, and is of particular help to nursing students and general hospital/community nurses, as a guide to providing standardised wound care and basing their care on the latest evidence available.

We would like to conclude by saying that this work is a brilliant, up-to-date and instructive treatise on the care of both chronic and acute wounds, all wonderfully expressed from a nurse’s point of view.

J. Javier Soldevilla Agreda
José Verdú Soriano
Convatec
Aquacel

I mappen Annoncer
Due to increasing demands in health services around the world, continuing professional education is recognised as an expensive resource which is expected to be flexible, innovative and up-to-date. Continuing Professional Development demands the availability of quality education which prepares practitioners to achieve high standards of care, whilst enabling health care providers to achieve their strategic and operational objectives. These factors combined with shortages of appropriately experienced health care practitioners and limited educational budgets mean that clinicians are becoming increasingly restricted in their choice of professional education as they have neither the time nor resources to further their own personal development.

Health professionals are beginning to seek alternative approaches to professional development which has been the driving force behind the development of a unique model that combines attendance at the annual EWMA Conference with academic study at a university of their own choice. This model is called the University Conference Model (UCM) and has arisen from a pragmatic desire at future EWMA conferences to:

- Combine academic study with existing professional development activities
- Enable maximum utilisation of expert knowledge & skills
- Utilise excellent facilities & learning resources

The EWMA conference brings together international experts in the field of wound healing and provides a dynamic platform for disseminating ‘real world’ research, professional debate and networking opportunities and presentation of the latest practice developments. It is an ideal educational environment to present registered students with a challenging, analytical conference experience, from which they can develop personally and professionally and is one that cannot hope to be replicated by any one individual university. Making use of the educational opportunities available at the EWMA conference will allow registered students to explore the wider perspectives of wound management from an international viewpoint.

The UCM will allow universities who have wound healing courses approved by EWMA to register students undertaking those courses and to use the EWMA conference programme to deliver the main taught component of the course. This will depend on the content and outcomes of any specific university course matching the EWMA conference programme. It will be the responsibility of the university concerned to ensure that these criteria are met. The overall aim of the UCM is to provide academic recognition to wound management practitioners who wish to advance their specialist knowledge and clinical management skills to meet the complex needs of people with wounds.

This approach will provide the opportunity for various different educational institutions to participate alongside each other at the same conference as each will select different learning experiences chosen from the main EWMA conference programme to reflect the specific learning outcomes of their course (Fig 1). This has the additional benefit of making a variety of different courses available, for different professional groups or to facilitate inter-professional learning, in different languages, focusing on different topics at the same conference. For example, a leg ulcer course for nurses could be offered which may select plenary sessions, free papers, symposiums, and workshops related to venous ulcers, lymphoedema, dermatology and quality of life or a diabetic foot course for podiatrists could use the same model.

**COURSE STRUCTURE**

Students would register at the university of their choice for an existing course that the university offers and receive pre-course materials prior to commencement of the EWMA conference. Some universities may wish students to access pre-conference activities before the start of the EWMA
conference and these would provide the opportunity for students and academic staff to meet and discuss the planned conference activities. These would be specific to the particular course being studied and could comprise, for example, any number of the following learning opportunities:

- Breakfast sessions
- Poster sessions
- Plenary and free paper sessions
- Satellite symposia
- Exhibition related activities
- Workshops
- Social activities
- Miscellaneous activities e.g. EWMA AGM, interest groups

The teaching and learning styles implicit in the UCM are centred on the philosophy of adult student centred learning and include problem-based learning approaches\(^1\). As adult learners, most practitioners have a desire to be self-directed, and the UCM aims to involve students in the process of taking responsibility for negotiating learning methods most appropriate to their academic and professional development thereby becoming autonomous learners. It is intended that courses adopting the UCM will facilitate the development of a variety of professional attributes including utilisation of evidence-based knowledge, organisational, managerial and educational skills in order to facilitate implementation of best practice. Time will be allowed within the programme for informal networking, with peers and wound healing experts which can easily be facilitated during the EWMA conference.

The EWMA conference is able to provide a diverse range of learning opportunities for students limited only by the imagination of the academic staff responsible for co-ordinating each course. Lecturers will have the option of bringing together their student groups at the end of each day for a debriefing session and could opt to add some post-conference activities the day after the conference has ended. Once students return home, they should continue to be supported by the University with whom they have registered. This could be by remote access to on-line resources which typically provide course information, lecture notes, other learning resources, tutor support, discussion groups and facilities for submission of coursework.

**ASSESSMENT**

Academic study involves student assessment of course outcomes and will vary depending on the specific requirements of each participating University. However, most assessment strategies will emphasis the practice focus of the courses being offered and will reflect the broad aims of the student’s chosen programme. Specific written guidelines and tutorial support will usually be available for each assignment. Submission of coursework is normally within a 3 month period of course commencement and provides the student with time to integrate the taught component of their course with clinical practice.

**ADVANTAGES OF UCM**

Today, most university courses are designed in a modular format and delivered on a part-time basis to complement existing work commitments and help facilitate integration of theory with practice. The UCM takes full advantage of this curricula approach and could allow Universities to run several courses at the same or at subsequent EWMA conferences so that students are able to study an academic award of longer duration. The overall advantages of the UCM include:

- Combines existing conference activities with academic accredited courses
- No compromise of academic quality
- Increased student choice & participation
- University registration provides access to additional resources
- Fulfils adult learning & inter professional agendas
- Students gain a EWMA approved course & independent academic awards

On an individual level this approach will increases student choice of:

- Educational institution
- Language
- Course content & assessment
- Final award (academic/professional)
- Course fee
- Distance travelled
Students would have the opportunity to study at any university offering wound healing courses approved by EWMA as the main teaching element of the course will take place at EWMA conferences and be supported by distance learning activities. As these are planned some years in advance, students could wait until the EWMA conference was hosted in their own country or one close by saving on travel costs and minimising language barriers.

DISADVANTAGES OF UCM
The EWMA education committee believe that the advantages of the UCM far outweigh the disadvantages of this approach. However, there are some practical issues to consider for the academic staff facilitating each course such as:
- Institutional regulations
- Selection & design of learning activities in advance
- Requires effective teacher: student ratio
- Monitoring of student participation at conference
- Co-ordination of activities demanding for course leaders
- Resources and support available post conference

PILOT
The EWMA education group will pilot the practical implementation of the University Conference Model at the next EWMA conference in Glasgow in May 2007. A group of 10 students will be facilitated by the University of Hertfordshire to study an accredited course called Specialist Wound Management Practice, if successful they will then have the opportunity to study a further module at the following year's EWMA conference in Portugal and be eligible for the academic award: Postgraduate Certificate in Specialist Wound Management. This award will provide academic recognition to specialist practitioners in wound management who wish to advance their specialist knowledge and clinical management skills to meet the complex needs of people with wounds. In this instance students have a maximum of 5 years from initial registration in which to gain sufficient credits for the Post Graduate Certificate.

CONCLUSION
Education has a responsibility to facilitate change in clinical practice. The UCM aims to achieve this by encouraging exchange of ideas from practitioners in different clinical environments to enhance understanding of other professional roles, and promote inter-professional team working within a multi-cultural context. Health professionals are not students in the traditional sense and have a wealth of professional and life skills that need to be shared and acknowledged, EWMA believes that the UCM provides a unique approach to achieve this by recognising that students want to be active participants in their learning rather than passive recipients of knowledge.

The philosophy of contemporary professional education is constructed around the student’s desire to develop critical thinking skills and to enhance clinical decision-making. This model has evolved in response to this and to also reflect EWMA’s vision that education for health professionals should be practice led, patient focused and student centred.

Whilst some students will prefer the interaction available from traditionally taught courses we firmly believe that others will rise to the challenge of studying using the UCM as innovative, flexible, dynamic and exciting approach to professional education.

Applications are now invited for students to participate in a pilot of the UCM at the next EWMA Conference in Glasgow on May 2nd - 4th 2007.

EWMA would like to thank Coloplast for their contribution to this project.

Further details and entry criteria available from Madeleine Flanagan, m.flanagan@herts.ac.uk

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**EWMA Journal Previous Issues**

Volume 6, no 1, Spring 2006

Focus on silver
Jean-Yves Muilland, Stephen P Denyer

Factors that influence the frequency of rebandaging
Una Adderley

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Stephen Britland, Anne Smith

Wound Care in Anatolia
Ali Barutcu

Implementation of a Leg Ulcer Strategy in Central & Eastern Europe
Peter J. Franks

Abstracts of Recent Cochrane Reviews
Sally Bell-Syer

Post Graduate Wound Healing Course Modena, Italy
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From The Laboratory to the Patient: Future Organisation and Care of Problem Wounds: A New Experience
Finn Gottrup

Extended Abstracts Stuttgart 2005

Volume 5, no 2, Fall 2005

Retrospective analysis of topical application of factor XIII in patients with chronic leg ulcers
Mirjana Ziemer, Claudia Scheumann, Martin Kaatz, Johannes Norgauer

An overview of surgical site infections: aetiology, incidence and risk factors
Finn Gottrup, Andrew Meling, Dirk A. Hollander

Regulating research and associated activity in the UK
Sue Balf

Article Review – The effectiveness of a hyperoxygenated fatty acid compound in preventing pressure ulcers
Joan-Enric Torra i Bou, T. Segovia Gómez, J. Verdu Soniano, A. Nolasco Bonmati, J. Rueda López, M. Arboix i Perejamo

Article Review – Extended commentary on a trial
E. Andrea Nelson

UK Lymphoedema Framework Project
Philip A. Morgan, Christine J. Moffatt, Debra C. Doherty, Peter J. Franks

German Wound Surgeons 1450-1750
Carol Dealey

**International Journals**

**Finnish**

Haava, vol. no 3, 2006

Mechanical Debridement and Evidence Based Nursing
Pia Eronen, Ulla-Mari Kinnunen, Tanja Lankinen, Minna Pullinen

Resin of Spruce in Wound Management
Jouni Lohi, Arno Sipponen, Janne Jokinen, Kyösti Vanha

Maggots in Debridement of Wound Bed
Pia Volmanen

Identifying Criteria for Wound Infection
Salla Seppanen

**Spanish**

Helcos 2006, vol 17, no 3

The use of Allevyn(r) hydroocellular dressing range in acute wounds - AURIGA-04 study in primary care
J Verdu, A Nolasco, P Lopez Casanova, JE Torra i Bou

2nd National Study of Pressure Ulcer Prevalence in Spain, 2005. Epidemiology and definitory wound and patient variables
JJ Soldevilla, JE Torra i Bou, JE J Verdu, F Martinez Cuervo, P Lopez Casanova, J Rueda, JM Mayá

**English**


www.blackwellpublishing.com

Surgical treatment of hidradenitis suppurativa: case series and review of the literature
S Ather, DSY Chan, DJ Leaper, KG Harding

Multiple bacterial species reside in chronic wounds: a longitudinal study
M Streit, Z Belczyn, LR Braathen

The use of an acellular dermal regenerative tissue matrix in the treatment of lower extremity wounds: a prospective 16-week pilot study
SA Brigido

Diabetic foot screening: why is it neglected?
M2 Abu-Qamar

Altered skin blood perfusion in areas with non blanchable erythema: an exploratory study
M Lindgren, LA Malmeqvist, F Sjöberg, AC Ek

Epidermal growth factor intrallesional infiltrations can prevent amputation in patients with advanced diabetic foot wounds
JB Acosta, W Savigne, C Valdez, N Franco, JSA Alba, A del Rio, P Lopez-Saura, G Guíllen, E Lopez, L Herrera, J Fernandez-Montequin

Validation of a diabetic foot surgery classification
DG Armstrong, LA Lawry, RG Frykberg, SC Wu, AUM Boulton

Healing of large midline wounds in infants: unlike in adults, does conservative approach give better results? Two case reports and review of the literature
MT Sulman

Previous issues can be acquired for €7.50 per copy. Please contact: Congress Consultants, Tel: +45 7020 0305, Fax: +45 7020 0315, ewma@ewma.org
The EWMA Journals can also be downloaded free of charge from www.ewma.org
The section on International Journals is part of EWMA’s attempt to exchange information on wound healing in a broad perspective.

**English**

The International Journal of Lower Extremity Wounds
Vol. 5, no 5, 2006
http://ljew.sagepub.com

Microcirculation – a Blarney Stone to Wound Healing
Marco Romanelli, Raj Mani
Growing Corn and Skin in Minnesota
Thom W. Roose
Microcirculation and Wound Healing: A Historical Examination of the Meeting of Disciplines in the 1960s and 1970s
Terence J. Ryan
Effect of Centella asiatica L. (Umbehilfere) on Normal and Dexamethasone-Suppressed Wound Healing in Wistar Albino Rats
B. Somashekar Shetty, S.L. Udupa, A.L. Udupa, S.N. Somayaji
Role of the Microcirculation in Diabetic Foot Ulceration
Anna Korzon-Bukowska, Michael Edmonds
Microvascular Changes in the Diabetic Foot
Jordan C. Schramm, Thanh Dinh, Aristidis Veves
The Causes of Skin Damage and Leg Ulceration in Chronic Venous Disease
Philip Colendle Smith
A Review of the Microcirculation in Skin in Patients With Chronic Venous Insufficiency: The Problem and the Evidence Available for Therapeutic Options
Uwe Wollina, Mohamed Badawy Abdel-Naser, Raj Mani
A Review of Microvascular Measurements in Wound Healing
M.L. Iabichella, E. Melillo, G. Masti
Nonpalpable Purpura Within a Setting of Anticoagulant Therapy and Metastatic Carcinoma
Nicole Grenier, Catherine Chen-Tsai
Early Marjolin’s Ulcer in Bureau-Barrière Syndrome
Arash Momeni, G. Björn Stark
Charcot Neuroarthropathy: An Unusual Case and a Review of the Literature
Eleanor V. Salgama, Frank L. Bowling, Richard W. Whitehouse, Andrew J. M. Boulton
Clinical and Microbiological Efficacy of Collistin Therapy in Combination With Rifampin and Imipenem in Multidrug-Resistant Pseudomonas aeruginosa Diabetic Foot Infection With Osteomyelitis
Carlo Tascini, F. Menichetti, G. Gemignani, P. Palumbo, A. Leonardi, A. Tedeschi, A. Puggesi

**Scandinavian**

Wounds (SÅR) vol. 14, no 3, 2006
www.saar.dk

Follow-up prevalence examination of pressure sores/pressure ulcers at Bispebjerg Hospital
Susan Berman, Vonnie Zimmerdahl
Intermittent pneumatic compression with Flowtron Plus pump for treatment of severe venous insufficiency
Ina Kastrup
Not all wounds should heal!
Annette Frölich
Book review: ABC of Wound Healing
Bo Jørgensen
Book review: Ergonomics – Body and Burdens
Annelse Jørgensen, Tor Jørgensen

**German**

Zeitschrift für Wundheilung, no 5, 2006
www.dgfw.de

Reduction of pH Values in Chronic Leg Ulcers by Cadesorb Körber, J. Freise, S. Grabbe, J. Dissenmoed
Evaluation of a Silver-releasing Hydroalginate Dressing in Chronic Wounds with Signs of Local Infection
S. Meaume, D. Vallet, M. Nguyen Morere, L. Téot
Assessment and Interpretation of Wounds – A Critical Overview (part 1)
Artificial Wounds and other Artifacts of the Skin
F. Breier, B. Rosado-Schmidt, P. Porpáczky, U. Mossbacher
Successful treatment of a leg ulcer occurring in a rheumatoid arthritis patient under methotrexate therapy by reduction of oxidative stress and nutritional supplementation
T. Wild, A. Budzanowski, B. Velear, A. Wagner, K. Vorauer-Uni, H. Katinger

**English**


The NATVNS Scotland 2006 annual general meeting
L. McMath
Variations with age in the mechanical properties of human skin in vivo
H. Alexander, T. Cook
The pathogenesis of skin wounds due to pressure
AA Barton
Microvascular function at reduced flow rates
P.J. Bränenmark
Microcirculatory reactions to controlled tissue ischaemia and temperature: a vital microscopic study on the hamster’s cheek pouch
EM Romanus
A new instrument for predicting pressure ulcer risk in an intensive care unit

**German**

European Dermatology Review 2006 will bring together leading industry experts in each specialized sector within the dermatological field, in order to create a market-leading platform to provide the most comprehensive information on the latest innovations and developments within dermatology.

**English**

Touch Briefing: European Dermatology Review

Zeitschrift für Wundheilung, no 5, 2006
www.dgfw.de

Reduction of pH Values in Chronic Leg Ulcers by Cadesorb Körber, J. Freise, S. Grabbe, J. Dissenmoed
Evaluation of a Silver-releasing Hydroalginate Dressing in Chronic Wounds with Signs of Local Infection
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Deadline for advertising in the next issue is 15 December 2006.
The position documents from the European Wound Management Association arose from a perceived need for clear, practical advice on the clinical management of a specific topic area. It was agreed that, where possible, all statements should be based on the current evidence available or expert key opinion, where the literature is lacking. Now in the fifth year of publication, these documents provide a valuable resource for wound care practitioners worldwide. They draw together the current literature presented by international experts in the field and highlight questions for debate, research and practice. The aim is to share information and best practice throughout Europe, with a view to stimulating international discussion and collaboration.

The documents are concise (20 pages only) to ensure that they will be read and provide a mix of both practical and theoretical material, presented in an easy-to-read format with visuals to guide practice. They are aimed at a multiprofessional audience, with the intention of meeting the practical needs of the busy hands-on clinician, while updating the expert in the field.

The annual publication is produced using an intense and rigorous editorial process, involving key opinion leaders. All papers are published subject to peer-review by an independent, multidisciplinary, multinational editorial board, selected for their expertise and commitment to the project. In addition, the involvement of EWMA council and, in particular, Professor Christine Moffatt and Professor Peter Vowden, has been crucial in the acceptance of the EWMA position document as a highly respected publication. Professor Christine Moffatt has been involved with the position documents since their inception and is the Senior Editorial Advisor on this publication.

The papers within the documents (usually 3 or 4) collectively form an educational resource, which can be used in the following ways:

- to update clinicians on an important topic area
- to raise awareness/improve practice
- to stimulate further investigation/research
- as a platform to progress and consolidate structured clinical guidelines/consensus statements.

Each document provides common sense recommendations for safe and effective practice, which can help to move current thinking forward.

**Reaching its audience**

The original goal of EWMA was to reach a wide audience. Rather than rely on publication in English alone, the documents are available in a minimum of five European languages: English, French, German, Italian and Spanish. To set the issues in a national context and to further increase their value to the international community, each version carries an editorial written by a key opinion leader from the individual country concerned. In addition, the last two position documents, produced in 2005 and 2006, have been translated into Japanese.

Each position document is launched at the annual EWMA meeting and presented to an international audience. To help maximise dissemination, all documents, in all languages, are available online from the EWMA website (www.ewma.org) as a pdf, which can be downloaded. This allows free access to anyone, anywhere in the world.

The success of the position documents is evidenced by the number of editions produced (30 to date) and the sheer numbers printed (see Figure 1).

**Figure 1: Position documents – numbers of printed copies**
The following EWMA position documents have been published:

**Management of wound infection (2006)**
continues the theme of the 2005 document, with a focus on how to treat wound infection. Clear recommendations are provided for selecting topical antimicrobials.
- A total of 75,000 documents have been printed, including a Japanese edition.

**Identifying criteria for wound infection (2005)** critically evaluates the results of a Delphi study identifying criteria in different wound types to facilitate early recognition of infection.
- A total of 75,000 documents have been printed, including a Japanese edition. Complimentary reviews were published in the wound care press including International Wound Journal. Further requests have been received to translate the document into Arabic and Polish.

**Wound bed preparation in practice (2004)** presents an internationally applicable interpretation of the wound bed preparation model using the concept of TIME.
- A total of 60,000 documents have been printed. This document was recently translated and reprinted in Czech and as a supplement to the Polish wound care society journal.

**Understanding compression therapy (2003)** highlights the need for the development of a pan-European standard for classifying compression bandages. It incorporates the treatment pathway developed by the International Leg Ulcer Advisory Panel and provides recommendations for optimum management.
- A total of 60,000 copies printed and disseminated to wound care societies throughout Europe. This document is frequently cited in the literature and was recently distributed as part of an educational programme for nurses in Australia.

**Pain at wound dressing changes (2002).**
This was the first position document, which arose from a growing acknowledgement that pain is a frequent symptom in patients with a wide range of wounds.
- Following an initial print run of 60,000, a further 30,000 documents have been re-printed. This is in addition to the large number of documents downloaded from the internet.

**EWMA Position documents – an overview**
- Consist of a collection of papers on a particular topic area
- Provide practical focus on an area where clear guidance is currently lacking
- Written by experts, reviewed by experts, critically appraised by experts
- Aimed at a multiprofessional, multinational audience
- Widely disseminated – available in different languages and online
- Provide an essential, referenced resource
- Indexed on CINHAL
EWMA's commitment to publication in a number of key European languages has enabled a wide dissemination around the globe, including Europe, North and South Americas, Australia and the Far East. This has been complemented by the additional requests from local wound care societies to translate and reprint the documents in full or in part in a number of wound care journals and publications. This reflects the huge international appeal of these documents and the need for clear, practical advice on the clinical management of wounds.

The documents are frequently cited in other publications, indicating their relevance to wound care practice. This is also evidenced by their inclusion on a number of searchable databases. This includes CINAHL – The Cumulative Index of Nursing and Allied Health Literature. In addition, EWMA launched a new series of focus documents in 2005. These documents were developed as a practical guide to management in the absence of sufficient evidence to create a full position statement. The first document was on the topic of ‘Lymphoedema bandaging in practice’, which received endorsement from a number of key organisations involved in lymphoedema management. A total of 40,000 documents were produced. Once again, these are available online via the EWMA website.

Support from companies in the form of unrestricted educational grants has given EWMA the opportunity to develop these important initiatives. EWMA is currently identifying poorly understood areas of practice where there is a need for clinical guidance and clear recommendations for practice. The EWMA position documents aim to disseminate this work to help bring about improved understanding amongst clinicians and real benefits to patients and carers.

All EWMA position documents are available online. To download a pdf copy, please visit the EWMA website (www.ewma.org).

Kathy Day

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eewma@ewma.org
www.ewma.org

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The 16th EWMA Conference took place in Prague in the Czech Republic in May 2006. This was an important development for EWMA as it is the first time the conference has been held in Central-Eastern Europe.

As a result, a record number of participants from this region attended the conference, which was held in cooperation with the local national organisation, the Czech Wound Management Society, CSLR.

The aim of the conference was to increase focus on the vital areas of innovation, education and implementation within wound healing and wound management. This theme was chosen in order to develop systems of care that incorporate all three concepts into clinical practice. The congress has without doubt brought the wound treatment and care in Europe a major step forward in these respects.

The scientific programme was arranged by the Scientific Committee: EWMA recorder Finn Gottrup (Chair), Sue Bale, Milada Franců (CSLR), Peter Franks, Deborah Hoffman, Patricia Price, Marco Romanelli and Zbigniew Rybak.

In order to attract more participants from the Czech Republic, EWMA 2006 was a bilingual conference and all oral presentations were conducted in both English and Czech using simultaneous translation. Almost 300 participants from the Czech Republic attended.

In total there were 2000 participants at the meeting, with more than 300 abstracts submitted for inclusion on the programme, we were pleased to welcome 50 international speakers as our guests. There were 12 company sponsored satellite symposia and with many project meetings during the three days, the conference was a hive of activity.

Three plenary sessions described the general theme of the conference. These were “Innovation– what is new?”, “Education”, and “Implementation”. In addition, key sessions were undertaken which described some of the clinical and holistic aspects of wound care. These were entitled “Change theory”, “working as a team”, “Diabetic foot ulcers”, “pressure ulcers”, “Dermatology” and “Leg ulcers”.
Some participants found the time to enjoy the beautiful city of Prague

A very interested audience

Young patient on the couch

Conference dinner in medieval surroundings

The new EWMA position document on the management of wound infection was also presented at one of these key sessions. These plenary and key sessions combined a degree of theoretical understanding of issues in wound care, together with more practical approach to the “state of the art” of particular wound types.

As with all EWMA conferences there is a great emphasis on allowing participants the opportunity to present their own work, either as oral presentations, or as posters. In total there were 13 free paper sessions (73 oral presentations), and 197 poster presentations. A further seven workshops examined more practical approaches to specific wound management issues.

Conclusion
The broad spectrum of topics covered in this conference provides an extended knowledge of how to perform optimal basic and clinical research as well as providing information on how to deal with clinical challenges. This is evident, when you read the papers and abstracts from EWMA 2006 some of which are published in this issue.

The programme and full text of all accepted abstracts are available from the EWMA website (www.ewma.org) which can be downloaded free of charge.

This meeting was an important step in further integrating countries from central and eastern Europe into a common European wound management organisation. We hope and expect that this will be the first of many in this part of Europe, to learn from each other the best way of managing wounds in all countries of Europe.

Next year will see us return to the UK for the first time since 2000. We look forward to working with the British wound care societies (TVS, TVNA, Leg Ulcer Forum & NATVNS) to produce a conference that will further enhance international collaboration and understanding of wound care issues in Europe.

We hope to see you all in Glasgow at the EWMA 2007 Conference.

Peter Franks, EWMA President
Finn Gottrup, EWMA Recorder
Follow up Prevalence Investigation
Pressure Signs/Pressure Ulcers

Background
Previously a prevalence investigation of pressure signs/ulcers has been undertaken in November 2002 at the hospital. Results showed a prevalence of 33.5%.

Efforts in prevention and treatment of pressure ulcers have since been taken:
- Education
- Introduction of guidelines for prevention of pressure ulcers
- Purchase of new standard mattresses (viscoelastic foam)

Results
Prevalence in 2002 – 33.5%
Prevalence in 2005 – 41.5%
There is no significance in the results of the 2 prevalences.

Pressure relieving mattresses 92% of patients had optimal pressure relieving mattresses.

Aim
- Number of hospitalised patients with pressure signs/ulcers?
- Which types of pressure relieving materials were used?
- Were the pressure relieving materials optimal?
- Were the pressure signs/ulcers documented?

Method
The investigation was undertaken in the somatic departments. The design was unique. 4 wound specialist nurses collected the data. Each included patient was clinical examined on pressure points, and a standardized registration form was filled in.

Discussion
The increase in pressure signs and pressure ulcer grade 1, and the decrease in the more severe pressure ulcers is presumably the outcome of the prevention strategy undertaken in the hospital.

- Purchase of mattresses of a higher standard.
- Implementation of clinical guidelines/clinical assessment.
- Leasing of alternating mattresses on the background of individual assessment.
- The relieving material for heels and pressure-relieving cushions, were not optimal and could be due to a diminished focus in this area.

Vision
Patients should not develop pressure ulcers during their stay at Bispebjerg Hospital.

- Education in prevention of pressure ulcers will continue with a greater impact on the multidisciplinary approach.
- Implementation of optimized clinical guidelines with specific focus on pressure-relieving materials for heals and pressure-relieving cushions.

Prevention of pressure ulcer is still an issue at Bispebjerg Hospital!

Figure: Documentation during stay in hospital

Example of one of the five winner posters

Susan Bermark and Vonnie Zimmerdahl

Copenhagen Wound Healing Centre
Bispebjerg Hospital
Conferences

Poster Prizes

The following posters won poster prizes at the EWMA 2006 in Prague:

Susan Bermark and Vonnie Zimmerdahl, Bispebjerg Hospital, Denmark for their poster entitled:
“Follow up Prevalence Investigation Pressure Signs/Pressure Ulcers”

Mary O’Keeffe, Health Service Executive, Ireland for her poster entitled:
“Evaluation of a community-based wound care programme in an urban area”

Rytis Rimdeika, Arunas Setkus, Rokas Bagdonas, Daiva Seniuliene and Mindaugas Seniulis, Kaunas Medical University Hospital, Lithuania for their poster entitled:
“Advanced technology of e-nose in rapid identification of wound pathogens”

Ola Rollman and Lovisa Frenning, Uppsala Akademiska Hospital, Sweden for their poster entitled:
“Sub-bandage pressure profiles produced with elastic compression bandaging of the lower leg”

Nikki Stubbs, Nicky Whitfield, John Nathan and Juliette Lyons, North West Leeds PCT, the United Kingdom for their poster entitled:
“Developing dermatology services in a primary care trust”

Congratulations to all the poster prize winners!

First Time Presenter Award

This award is designed to encourage people who have not previously presented their work at an international conference.

At EWMA 2006, the first time presenter awards were given to the following 3 presenters:
Karoline Krause, Stefan Stremitzer and Eugene A. Gorbunov.
Read their abstracts below:

Treatment of chronic wounds with autologous and allogeneic keratinocytes: state of the art and future perspectives

Karoline Krause, Katharina Herberger, Johanna Brandner, Ingrid Moll, Matthias Augustin
Dept. of Dermatology, University Hospital Hamburg-Eppendorf, Hamburg, Germany

Background: The successful cultivation of human keratinocytes has first been described by Rheinwald and Green in 1975. Based on this method, keratinocyte transplantations (KTx) became widely available for burn injuries and chronic wounds. However, only few data from controlled clinical trials are available.

AIM: To obtain an overview about the different techniques of KTx, their clinical evidence and patient benefit.

Methods: A systematic literature research was performed including clinical studies from 1990 to 2005.

Results: We evaluated 24 studies and case reports dealing with KTx in chronic wounds of different origin like venous or diabetic ulcers and burn injuries. A variety of techniques regarding source of keratinocytes (allogeneic or autologous), carrier material (matrix or fibrin glue suspension), use of fresh or cryo-preserved keratinocytes as well as cell origin (outer root sheath or interfollicular epidermal keratinocytes) could be distinguished. Clinical efficacy was measured by comparing take rate, healing rate and time, treatment costs and quality of life with conventional therapies like wound dressings, compression and split skin grafts. The best clinical evidence and benefit were shown for autologous keratinocyte fibrin suspensions. There was overall consensus that the outcome strongly depends on the pre-existing wound condition.

Conclusion: Our literature review recommends KTx as an efficient tool in the treatment of chronic wounds and burn injuries. More standardized controlled studies are necessary to confirm these data and to optimize wound healing. Future investigations should also focus on a better understanding of the underlying molecular mechanisms for generating new selective treatment options.
Woundbase – a new information system for wound care management

Eugene A. Gorbunov, Josef Vseticek
Department of Surgery, Merciful Brothers Hospital, Brno, Czech Republic

Aim. The purpose was to create information system for our wound care center. Following requirements were set:

- Objective and complex monitoring of wound healing process.
- Economic balance tracking.
- Documentation quality should allow its using for both everyday work and for research purposes.
- Statistical analysis.
- Easy use and scalability.

Methods: Our system utilizes client-server model with MySQL database. Client application works under MS Windows. Communication with database runs over the hospital network.

Client application has these main parts:
1) Patient documentation – every patient has its personal card with anamnestic data and list of treated wounds. Visit records contain text notes, future care planning, classification of various wound parameters, wound score, medication, photodocumentation and list of ordered wound products. Treatment process can be analyzed both in healthcare and economic aspects.
2) Statistical analysis – contains tools allowing creating patient groups for subsequent statistical analysis.
3) Administration – allows database administrator configuration changes to system.

Results: At present time WoundBase undergoes clinical testing in our wound care center. It allows us to have complete overview of whole treatment process of our patients with respect to health and economic aspects. Our experience proves that wound care objectivization is necessary since it stimulates physicians to act rationally.

Discussion: We believe our system is valuable and perspective. Treatment objectivization and statistical analysis are inseparable prerequisites of the evidence-based medicine. It helps improve treatment of individual patients and center functioning. Using statistical results can also help create new treatment standards.

Successful treatment of therapy refractory lymph fistulas in the groin with vac-therapy after vascular surgical operations

Stefan Stremitzer1, Thomas Wild1, Norbert Forntner2, Harald Teufelsbauer2, Andreas Selberherr1, Lars Luebke3, Igor Huk2
1Medical University Vienna, Department of General Surgery, Vienna, Austria,
2Medical University Vienna, Department of Vascular Surgery, Vienna, Austria,
3Medical University Regensburg, Department of Urology, Regensburg, Germany

Aim: Lymph fistulas develop in an incidence of 2% as a complication after surgical operations. Several methods, e.g. gluing, surgical sanitation or irradiation of fistulas, are known for prophylaxis and therapy. None of the present methods are able to assure sanitation nor wound healing and have not been efficient, conservative and causal in the treatment of lymph fistulas.

Methods: Between 01/2001 and 01/2005 patients with therapy refractory lymph fistulas after vascular surgical operations were treated with a VAC-system with continuous suction between 50 and 200 mmHg. The amount of exudate was up to 1200 ml in 24 hours. All patients were treated with the VAC-system until no exudate was collected for 24 hours. Subsequently, the Polyurethane dressing was removed and a wound drainage pouch was applied for 24-48 hours to collect possible reexudation.

Results: Lymph fistulas could be closed successfully in all patients by VAC-therapy after a mean of 29 days (4-37d). The average amount of exudate at the beginning of treatment was 153 ml/24h, which increased to 950 ml until day 15. From day 28 to day 29, it dropped from 487,5 ml to 25 ml.

Conclusion: Successful sanitation of lymph fistulas was achieved in all patients treated with the VAC-system. VAC-therapy is an effective, minimal invasive, conservative therapy option for lymph fistulas. Wound closure was achieved in combination with sanitation of lymph fistulas, as well as effective exudate- and infection management due to known factors like reduction of interstitial fluid, germ reduction, improvement of angiogenesis and granulation.
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• Maximum protection

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## Conference Calendar

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<th>Theme</th>
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<td>2006</td>
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<td>United Kingdom</td>
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<td>VI simposio nacional sobre ulceras por presión y heridas crónicas</td>
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<td>2006</td>
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<tr>
<td>NOVW, in cooperation with Elsevier Gezondheidszorg</td>
<td>Positioning of Wound Care Nurses, where do we stand and what is needed to move forward?</td>
<td>2006</td>
<td>Dec</td>
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<td></td>
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<td>DGfW 10th Annual Congress</td>
<td>Wundbehandlung – in der Schräglage?!</td>
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<td>Norwegian Wound Healing Association, NIFS</td>
<td>The diabetic foot – a challenge for the patient, the family and the health services</td>
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<td>2007</td>
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<td>17th Conference of the European Wound Management Association (EWMA 2007)</td>
<td>Evidence, Consensus and Driving the Agenda forward</td>
<td>2007</td>
<td>May</td>
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<td>Noordwijkerhout</td>
<td>The Netherlands</td>
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<td>5th international symposium on the Diabetic Foot</td>
<td>European Dermatology and Venereology – Strong Past, Stronger Future</td>
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<td>EADV 16th Congress</td>
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<td>SAFW 4th Congress</td>
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<td>12th Congress of the ESDaP</td>
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<td>Warwickshire</td>
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<td>Wounds UK summerconference</td>
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<td>Aug/Sep</td>
<td>30-01</td>
<td>Oxford</td>
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<td>EPUAP 10th European Meeting</td>
<td>Measurements in wound healing – the conduit between the laboratory and the clinic</td>
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<td>ETRS 17th Annual Meeting</td>
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<td>Buenos Aires</td>
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<td>ILDS 21st World Congress of Dermatology</td>
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<td>2007</td>
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<tr>
<td>Wounds UK</td>
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For web link please visit www.ewma.org

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**17th Conference of the European Wound Management Association**

**Evidence, Consensus and Driving the Agenda Forward**

**EWMA2007 · GLASGOW**

2-4 MAY · 2007

The 8th annual meeting of the Austrian Wound Association (AWA) which took place from April 21-22 2006 in Vienna was dedicated to "The Diabetic Foot".

For diabetic patients, the lifetime risk of developing foot ulcers amounts to 25%. It is the worst complication of diabetes followed by a high morbidity and mortality and reduced quality of life. The WHO estimates that the costs for treating diabetic foot account for 15-25% of overall diabetes treating costs. Despite these facts, diabetic foot ulcers are still an underestimated complication of diabetes. Worldwide there are over one million amputations, 80% of which are avoidable. In 50% of all cases there is loss of the contralateral extremity within 4 years after the amputation.

At the annual meeting of the AWA, numerous experts and about 140 participants were discussing these problems, presenting the latest strategies for therapy. More then ever, the diabetic foot poses an interdisciplinary challenge and requires excellent collaboration of all disciplines involved in specialized out patient departments. Moreover, professional and rigorous foot screening, patient training, foot care by the patients themselves and orthopaedic shoe support is absolutely necessary. By implementing these actions, the aim of reducing both amputation rates and the financial burden for the community and, last but not least, raising the quality of life of the affected could be accomplished.

During the meeting the honorary membership of the AWA was conferred to Prof. Dr. Finn Gottrup and to Prof. Dr. Hugo Partsch. A laudation was spoken to both of them by the president of the AWA, Doz. Dr. Gerald Zöch and the vice president Prof. Dr. Norbert Sepp.

As every year several workshops were offered to the participants dealing with the latest developments in local therapy of chronic wounds as well as presenting well established therapies with the possibility of direct communication with the experts.

The 9th annual meeting of the AWA will take place in Bregenz together with the German speaking Swiss Association for Wound healing (SAfW) from June 1-2 2007.
NOVW: Dutch Organisation of Wound Care Nurses

NOVW, founded on July 21st 2005, is the professional organisation for wound care nurses in The Netherlands. This professional organisation was established to meet the growing need for professional wound care nurses in this country. NOVW’s aim is to achieve recognition for wound care nurses at a professional and educational level. To this end, NOVW seeks to bridge the gaps between government, industry, education and the professionals that work in wound care. To raise its visibility and issues of wound care with the Dutch government, NOVW recently joined the ‘Unie Zorg & Welzijn’, a union for the care & well-being sector.

Cooperation is the key word in all of NOVW’s activities. In that light, NOVW seized with both hands the opportunity to work with a Dutch publisher to start a new wound care publication and January 2006 saw the release of the first issue of NTVW, the Dutch Journal of Wound Care. The similarity, both in name and presentation, between the Journal and the organisation has helped NOVW to become well known throughout The Netherlands in a very short period of time. Chairman Ton Lassing of NOVW, commented: “The Dutch Journal of Wound Care combines scientific content with human interest and insights in the Dutch wound care market. Working within that concept, it offered NOVW a platform from which to broadcast our mission and communicate with our members and other parties on a monthly basis. Without communication, nothing gets done. This is something I have learned from my experience as a communication specialist working for over 25 years in the Dutch healthcare market.”

Although the choice of a chairman who does not have a background in wound care might seem out of the ordinary, the NOVW board and its members benefit greatly from Ton Lassing’s expertise. “In today’s world, it is no longer enough to do a job and to do it well. It is all about marketing: how to market yourself. For Dutch wound care nurses, the answer may lie in NOVW,” Tom said.

All the Board and Supervisory Board members of NOVW were present at the most recent EWMA Meeting in Prague. They all saw the great opportunities open to NOVW in joining the EWMA network and working together with organisations outside the Netherlands.

Fabia Hooykaas, NOVW secretary and professional organizer, remarked: “Time and again, I have stressed the importance of networking. We are thrilled by this opportunity to become part of an international network of wound care organisations. Much time will have to be invested, but the potential rewards in terms of shared insights and knowledge gathering are enormous. It is an excellent step towards the further professionalisation of the wound care sector.”

To make efficient use of the contacts that NOVW hopes to get from its EWMA membership, the organisation is forming an international affairs committee. Members of this committee will participate in European initiatives aimed at professionalising wound care and the people who work in this sector.

In addition, on December 8th 2006, NOVW, in cooperation with Elsevier Gezondheidszorg (part of Reed Business Healthcare), will hold its first National Conference on the theme ‘Positioning of Wound Care Nurses, where do we stand and what is needed to move forward?’ The conference will be held in the Beatrix Theater, Utrecht, The Netherlands.

With the conference, its membership of EWMA and publication of NTVW, NOVW is becoming an active member of EWMA and both the national and international wound care community.
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<td><strong>AISLeC</strong>&lt;br&gt;Associazione Infermieristica per lo Studio Lesioni Cutanee Italian Nurse Association for the Study of Cutaneous Wounds <a href="http://www.aislec.it">www.aislec.it</a></td>
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<td><strong>AIUC</strong>&lt;br&gt;Associazione Italiana Ulcere Cutanee Italian Association for Cutaneous Ulcers <a href="http://www.aiuc.it">www.aiuc.it</a></td>
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<td><strong>APTF</strong>&lt;br&gt;Portuguese Wound Management Association <a href="http://www.aptferidas.no.sapo.pt">www.aptferidas.no.sapo.pt</a></td>
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<td><strong>AWA</strong>&lt;br&gt;Austrian Wound Association <a href="http://www.a-w-a.at">www.a-w-a.at</a></td>
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<td><strong>CNC/BFW</strong>&lt;br&gt;Wound Management Organisation <a href="http://www.befewo.org">www.befewo.org</a> <a href="http://www.wondzorg.be">www.wondzorg.be</a></td>
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<td><strong>CSLR</strong>&lt;br&gt;Czech Wound Management Society <a href="http://www.csfr.cz">www.csfr.cz</a></td>
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<td><strong>DGfW</strong>&lt;br&gt;Deutsche Gesellschaft für Wundheilung <a href="http://www.dgfw.de">www.dgfw.de</a></td>
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<td><strong>DWHS</strong>&lt;br&gt;Danish Wound Healing Society <a href="http://www.dsf.s.org">www.dsf.s.org</a></td>
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<td><strong>FWCS</strong>&lt;br&gt;Finnish Wound Care Society <a href="http://www.suomenhaavanhoitoyhdistys.fi">www.suomenhaavanhoitoyhdistys.fi</a></td>
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<td><strong>GAIF</strong>&lt;br&gt;Grupo Associativo de Investigação em Feridas <a href="http://www.gaif.net">www.gaif.net</a></td>
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<td><strong>GNEAUPP</strong>&lt;br&gt;Grupo Nacional para el Estudio y Asesoramiento en Ulceras por Presión y Heridas Crónicas <a href="http://www.gneaupp.org">www.gneaupp.org</a></td>
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<td><strong>LBA</strong>&lt;br&gt;Latvian Wound Treating Organisation</td>
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<td><strong>LUF</strong>&lt;br&gt;The Leg Ulcer Forum <a href="http://www.legulcerforum.org">www.legulcerforum.org</a></td>
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<td><strong>LWMS</strong>&lt;br&gt;Lithuanian Wound Management Society</td>
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Present your national wound management organisation or write a report about your organisation’s latest meeting.

ewma@ewma.org

Deadline for incoming material for the next issue is 15 December 2006.