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GerroMed

Product information

woundEL[®]
The wound healing pacemaker.



08-2006 / Renk / 2.000 | Photo: PhotoCase.com

Synergy impulses in moist wound dressing

GerroMed is a leading and competent supplier of products and services for the professional care of patients.

GerroMed Pflege- und Medizintechnik GmbH & Co. KG is a certified corporation involved in the manufacturing, final inspection and marketing of medical products, in accordance with the Directive 93/42/EEC. In addition, GerroMed is certified by DIN EN ISO 13485.



The **woundEL**® therapy system consists of a therapy device with dressing electrodes and dispersing electrode. The therapy device generates adjustable direct current impulses which are applied through the dressing electrode to the wound and are returned to the dispersing electrode.

woundEL® therapy is a synergetic combination of moist wound treatments and controlled, physiological direct current impulses.

woundEL® therapy can be used for acute, subacute and chronic wounds and is prescribed by the attending physician.

woundEL® therapy can support the healing of patients with the following indications:

- Ulcus Cruris
- Decubitus ulcer (grades 2 to 4)
- Wound syndromes caused by diabetes mellitus
- Before and after plastic surgical interventions to the skin for wound conditioning
- Suture dehiscence
- Acute wounds (e.g. burns, abrasions)
- Chronic wounds, which are resistant to traditional therapy
- Infected wounds

Scientifically proven, **woundEL**® therapy combines the following qualities, depending on the polarity:

- Increases the transcutaneous oxygen tension in the tissue
- Increases the capillary density in the tissue
- Reduces edemas
- Works bactericidally
- Stimulates migration of macrophages, leukocytes and fibroblasts
- Increases production of collagenase
- Improves epithelialization
- Reduces the pain at the wound site
- Alkalizes or acidifies the tissue, depending on the adjustable polarity

The effectiveness of electrical stimulation in the treatment of wounds has been documented world-wide for over 35 years in more than 300 professional publications. According to the criteria of evidence-based medicine and on the basis of metaanalyses and clinical studies, **woundEL**® therapy can be classified in Evidence Class I.*

What is **woundEL**® therapy?

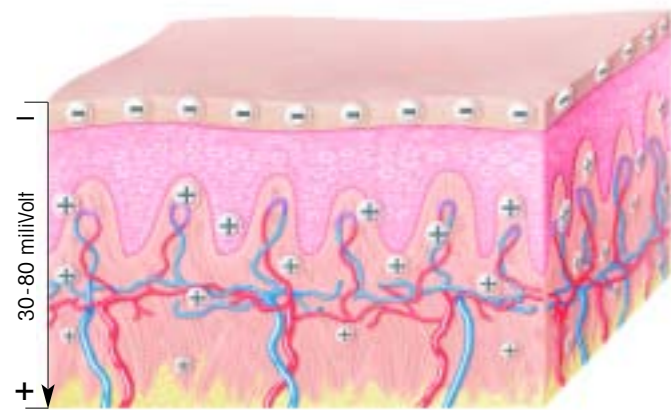
Which patients can benefit from **woundEL**® therapy?

What are the advantages of **woundEL**® therapy?

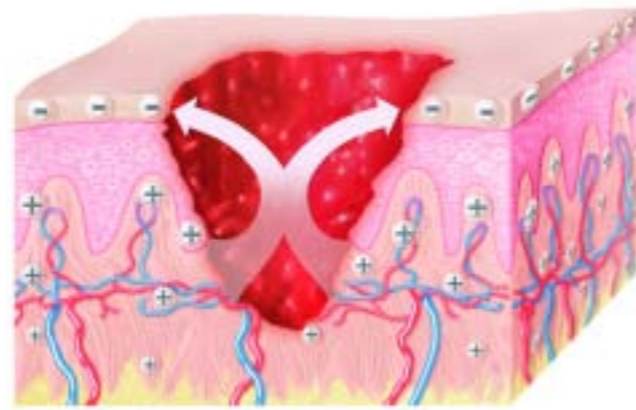
* You will find bibliographies and further details in the accompanying scientific information about **woundEL**® or on request.



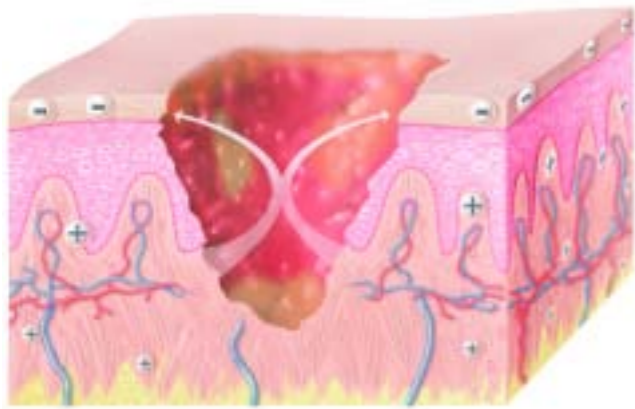
How does woundEL[®] therapy work?



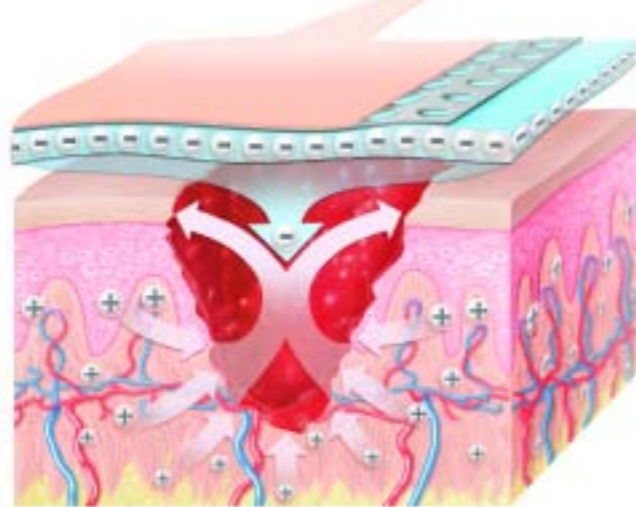
1 | Electric charge in healthy skin



2 | Healing of the wound by electrical stimulation



3 | Reduced electrical stimulation in a chronic wound



4 | Therapy with woundEL[®]

The intact skin has a natural/physiological bioelectric tension gradient of 30-80 millivolt (potential), which is caused by different concentrations of cations (Na⁺, K⁺, Ca²⁺ ...) and anions (OH⁻, Cl⁻ ...) in the electrolytes of skin cells, intercellular space and cell membranes. The electric charge of the skin passes from the negatively-charged epidermis to the positively-charged lower layers and becomes weaker with depth into the tissue. (Illustration 1)

A wound cuts through the natural membranes between the electrolytes and causes a "short" of the potentials. The resulting current flow is connected to a transport of ions (mass transport) and leads to the regeneration of the tissue. (Illustration 2)

Disturbances of the natural electric potential of the skin can interfere with or even stop the wound healing. (Illustration 3)

woundEL[®] therapy ensures the necessary electric current flow for successful healing with controlled direct current impulses. Depending on the condition of the wound, the electrical properties of healthy skin are restored in the tissue. (Illustration 4)

If controlled direct current impulses with **negative polarity** are applied to a wound, the migration of macrophages and leukocytes increases. The tissue becomes alkalized, and edemas are reduced. Useful processes for the wound healing in acute phases are initiated and promoted.

In contrast, if one applies controlled direct current impulses with **positive polarity** in regenerative phases of the wound healing, then ion exchange, amino acid incorporation, migration of fibroblasts, ATP and protein syntheses are improved and elevated. Controlled positive direct current impulses acidify the tissue. Negative and positive direct current impulses increase the capillary density in the tissue and work bactericidally.

The woundEL[®] dressing electrode (patent filed) is equipped with the new ECAP[™] technology (Electronically-Controlled Active Pulse). With this special technology, controlled direct current impulses are transferred homogeneously and safely onto the surface of the wound. Furthermore, the woundEL[®] dressing electrode combines all the qualities of a modern wound dressing: it prevents dehydration and cooling down of the wound, protects against other damaging influences, serves as a germ barrier and supports the secretion management.

Which effects do negative and positive polarity have?

How is the woundEL[®] electrode constructed?



1 | Conductive layer with silver coating transfers direct current impulses homogeneously onto the wound surface.

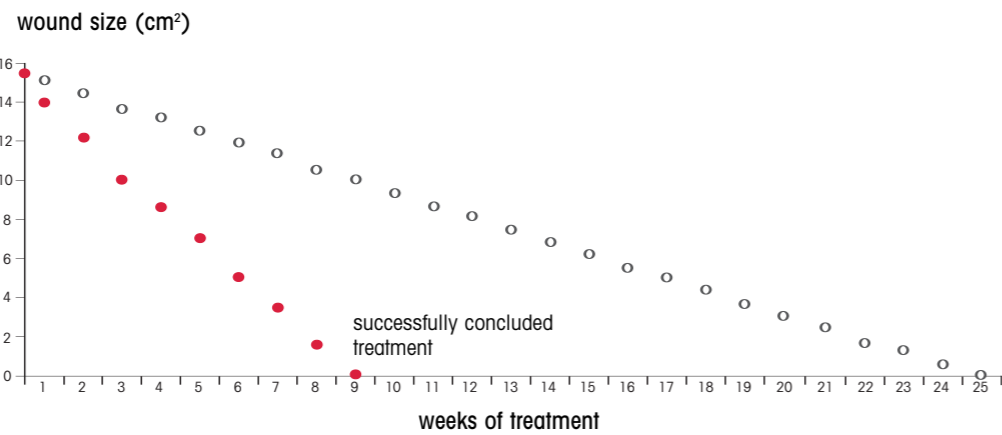
2 | Hydrogel creates the physical wound healing environment.

3 | Polyurethane foam protects the wound, is adhesive, breathable and water-repellent.

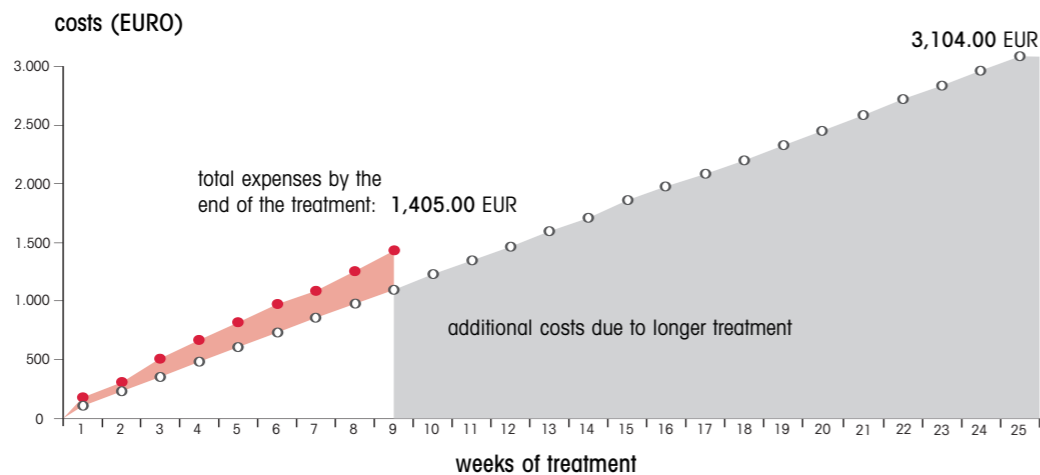
Is woundEL[®] therapy an economical treatment procedure?

Yes, the present scientific publications and many clinical experiences have shown that **woundEL[®]** therapy can achieve a faster healing up to 2.73-fold, compared to conventional treatment procedures.*

Healing process with woundEL[®] and conventional wound treatment **,**



Direct costs of materials and treatment ***



Furthermore, **woundEL[®]** therapy can also be applied by non-medical staff in a very easy, safe and quick manner. However, the healing process still requires medical supervision. In this way, the operating expenses for the nursing staff and the physician are lowered, and consequently the costs per patient will be reduced. **woundEL[®]** therapy can be used for in-patients as well as ambulant cases.

* Gardner, S. E. et al, Meta-analysis, 1999, Wound Repair and Regeneration 7, p. 495-503
 ** Philbeck, T. E. et al, 1999, Ostomy / Wound Manager, Vol. 45, No.11, p. 41-50
 *** Sellmer et al, Kostenanalyse, Die Schwester / Der Pfleger, Juni 2005, p. 476-485



What are the results of the woundEL[®] therapy?

Ulcus Cruris
Patient: 50 years old, male



decubitus ulcer, grade IV
Patient: 67 years old, male

woundEL[®] therapy is an active and very effective treatment for wounds. The following contraindications for the application should be considered:

- Necrotic tissue with a scab on the wound or in the surrounding area
- Malignant tissue in the wound or in the surrounding area
- Metal implants in direct proximity to the wound
- Patients with a heart pacemaker
- Pregnancy
- Untreated deep leg vein thrombosis and arterial occlusion in immediate wound proximity
- Untreated Osteomyelitis
- Known allergies to the components of the dressing or dispersing electrode
- Simultaneous connection of the patient to a high-frequency surgical device
- Wounds above the mamillary line and directly above the heart

Which safety instructions must the therapist follow?

Important advice:

Please read the directions for use and the accompanying extended scientific information about **woundEL[®]** therapy before starting the therapy.