



Study:  
Nascend oxygen  
Author: G. Kammerlander

## Welcome - Bem-vindo in Porto



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# nascent Oxygen <sup>1</sup>O

# Oxigênio nascente <sup>1</sup>O

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# nascent Oxygen <sup>1</sup>O

# Oxigênio nascente <sup>1</sup>O

## Study Centers

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## ActiMaris® - nascent oxygen <sup>1</sup>O

- Salt concentration from the sea 3,0%  
(in Solution for te and gel)
- Salt concentration from the sea 0,9%  
(in wound rinsing solution)
- Halogens ,  
Spurenelemente
- Alcaline pH between  
9,0 – 9,8



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## Sea water and ingredients

The salt concentration from sea water is 3,5% (im medium).

The highest concentrations are NaCl, Chlormagnesium MgCl<sub>2</sub>, Magnesiumsulfat MgSO<sub>4</sub>, Kaliumsulfat K<sub>2</sub>SO<sub>4</sub>, Calciumcarbonat CaCO<sub>3</sub>, Magnesiumbromide MgBr<sub>2</sub>.

And low concentrations from (0,05-1,5mg/l) Halogenides (Fluor, Brom, Chlor, Iodine) and in very low concentration about 70 different substances.

DR. MED. DAMIR MARINCIC, SPEZIALARZT FMH for OTORHINOLARYNGOLOGIE, HALS- and GESICHTSCHIRURGIE

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## Ingridients of sea water – base for ActiMaris®

In 1 kilogram sea salt:

<b>Natriumchloride:</b>	958,5 Gramm
<b>Water:</b>	40,9 Gramm
<b>Kalium:</b>	2,1 Gramm
<b>Calcium:</b>	2,3 Gramm
<b>Magnesium:</b>	5 Gramm
<b>Bromide:</b>	0,3 Gramm
<b>Sulfate:</b>	6,8 Gramm
<b>Iron:</b>	7,5 Milligramm
<b>Cink:</b>	0,63 Milligramm
<b>Iodine:</b>	0,63 Milligramm
<b>Mangan:</b>	1,77 Milligramm
<b>pH:</b>	8,1 – 8,5 (basiSCh)
<b>other substances:</b>	0,2 Gramm

(tradional sea salt , datas from analysis 1999 – 2004) © 2009 by Marisol)

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## ActiMaris® - nascent oxygen <sup>1</sup>O

**Halogens:** (<http://de.wikipedia.org/wiki/Halogene>)



- Simple negative loaded ions of the Halogens (F<sup>-</sup>, Cl<sup>-</sup>, Br<sup>-</sup>, I<sup>-</sup>, At<sup>-</sup>) are Halogenid-Ions (Halogenides).
- There are different types – in this case -> Halogenides from salt , ionic connections (salts).
- They have a high negative difference between the electrones of the different elements as anions and kations.
- This complex is stabilized with electrostatic interactions.

Examples are Natriumchloride (NaCl) and Kaliumbromide (KBr).

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There are **3 different types of oxygen** in the nature

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**Oxygen types and energy state**

**What is the background?**

**Singulett = active = excited = unstable**  
Deficit of one (1) electron in the outer envelope

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**Oxygen types and energy state**

## What is the background?

**Triplet = stabilized**  
No electron deficit in the outer envelope

$3\text{O} + 3\text{O}_2 = 3\text{O}_3$

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## Nascend oxygen $^1\text{O}$ on the base of sea salt – Example: ActiMaris®

**1**

Base substrate is sea salt with more than 80 trace elements, halides

**2**

Basic base with pH 9,0-9,8  
(Oxidation control; buffering agent)

**3**

NaCl with embedded  $^1\text{O}$   
Singulett

$\text{Na}^+ \quad ^1\text{O} \quad \text{Cl}^-$

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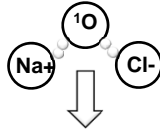
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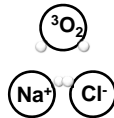
### Nascend (in the stage of birth) Oxygen<sup>1</sup>O – ActiMaris®

<sup>1</sup>O is through a special electrolysis process formed from sea salt, and between the NaCl reversibly stored in a highly alkaline environment



Contact with wound exudate, cells, bacteria, fungi, ...

The singulett oxygen <sup>1</sup>O removes electrons from the substrate and changes with different reaction stages to a triplet oxygen <sup>3</sup>O<sub>2</sub>



The end product includes triplet oxygen <sup>3</sup>O<sub>2</sub> and NaCl. The withdrawal of electrons from the cell membrane of bacteria and fungi leads to destruction of the integrity and thus to the demise of these cells.

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## ActiMaris® - nascent oxygen 1O



Especially in this case, the stability is guaranteed for 2-2 ½ years!

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## Whats the backgroand?

- active oxygen is binded and stabilized between Natrium-Chloride in water or gel
- the active oxygen has 2 rotating rings with electrones
- the rotation of the electrones are in different directions  
-> high reactive
- by contact , as for example with skin, wounds, biological material... -> the active oxygen 1O induct a reaction by binding electrones from other cells or substances
- in this case, the membranes from bacterias and fungis will be destroyed (very fast reaction in milliseconds - seconds)

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## ActiMaris® - nascent oxygen 1O

The concentration of Hypochlorides (produced with elctrolysis) depends on electrical voldays during the elctrolysis process, and the quality of the sea water.

The Solution/Gel ist alcalyne (about pH 9,0) and hypertone (just solution forte and gel).

By contact with biological material we finde for a very short time (milliseconds – seconds) very low concentrations of hypochloride acids.

They destroys the Sulfatgroups of the der bacterial membranes.

This is a positive antimicrobiological effect.

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<p><b>Prokaryonten (Microorganism)</b> with a very moderate protection for their cell membrane against IO</p>	<p><b>Eukaryonten (human)</b> with stabil protection of the cell membrane against IO</p>
<p>Bakterien: Schema des Aufbaus von Stäbchenbakterien</p>	
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**What is the background?**

**Protectless Prokaryonten**

Bakterien:  
Schema des Aufbaus von Stäbchenbakterien

1 O perfor ation –  
distruction of the  
membrane

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## What is the background?

**Human cells has a good protection against short atomare oxygen 1O attacks :**

- Cholesterin, Mucin and Ceratin, Vitamin C, Phospholipide, Proteines etc.

**Plus:**

- Human bodycells are living in 3-demonsional constructions !

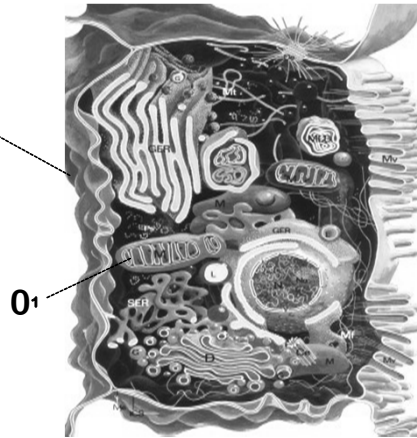
### Eukaryontic cells (Human)

Activated oxygen (1O) has the double energetic pontence than O<sub>2</sub>.

By contact with human cells - energy will be transmitted into the cells for a higher intensity of ATP-production!

The special construction of the human cell membrane protects the cell for distruction (Cholesterin, Mucin and and Keratin, Vitamin C, Phospholipide, Proteines etc.).

This type of protection is very low on bakterias and fungis - so theire membrane will be destroyed by this reaction.



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## Effects of 1O\_ActiMaris®

- antimicrobiological
- antimycotic

### Topic effects:

- wound cleansing effect
- supports wound granulation
- *odour will be neutralized in a few minutes*
- *Strong local antiantinflammatory effect (wet-dry-phase)*
- ...

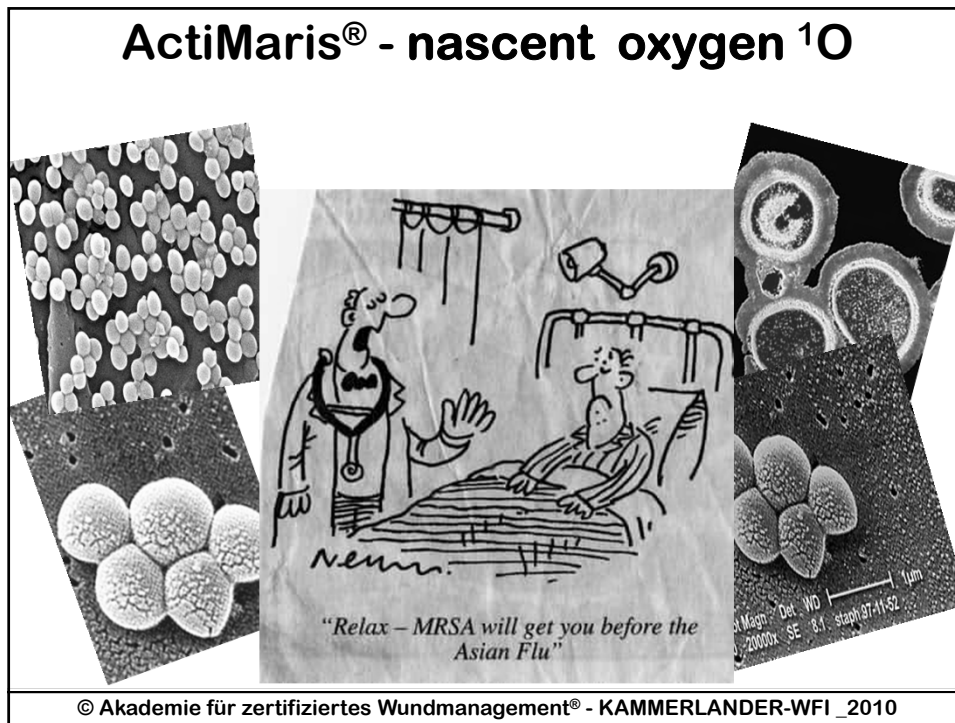
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### Antibacterial Results with <sup>10</sup>

**Results:**

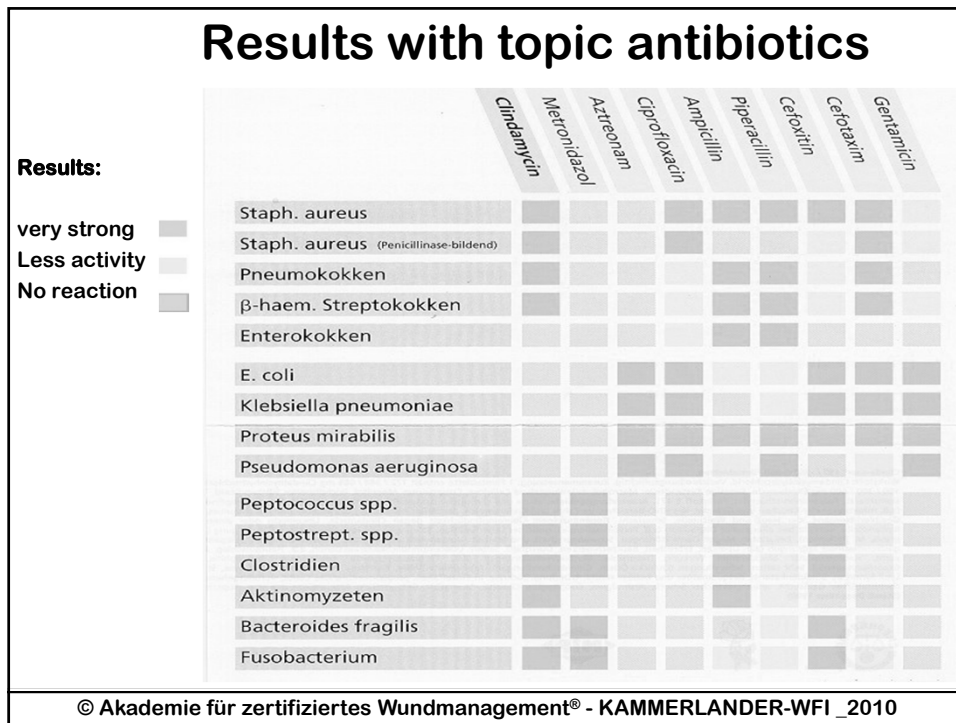
- high activity
- less activity
- no reaction

Staph. aureus																				
Staph. aureus (Penicillinase-bildend)																				
Pneumokokken																				
β-haem. Streptokokken																				
Enterokokken																				
E. coli																				
Klebsiella pneumoniae																				
Proteus mirabilis																				
Pseudomonas aeruginosa																				
Peptococcus spp.																				
Peptostrept. spp.																				
Clostridien																				
Aktinomyzeten																				
Bacteroides fragilis																				
Fusobacterium																				

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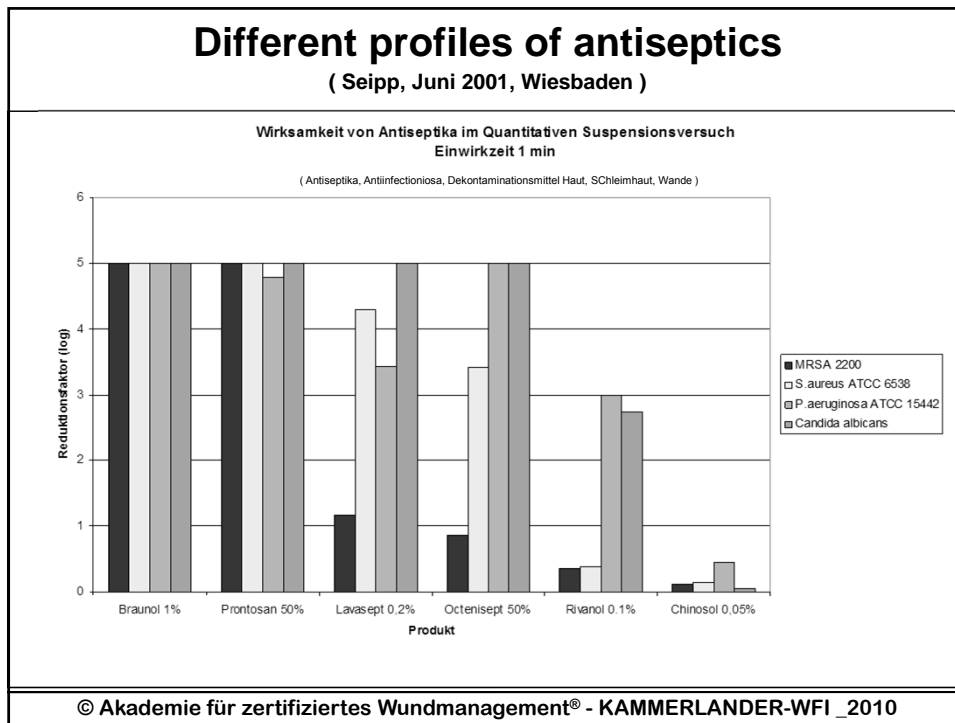
## Microbiological activity of <sup>10</sup>O

- Tests -

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## Methode

- **Tested product: ActiMaris®**
  - Ingredients:
    - *Lithium Magnesium Sodium Silicate* 10% (2,4 mg)
    - *Maris Sal* 3% (0,72 mg)
    - *Natriumhypochlorit* 0,2% (0,048 mg)
- **Test methode: EN 1040**
  - **Phase 1 Test** – Microbiological activity in-vitro with (tshc\*)
    - \*tshc = 3% Tween 80; 3% Saponin; 0,1% Histidin; 0,1% Cystein

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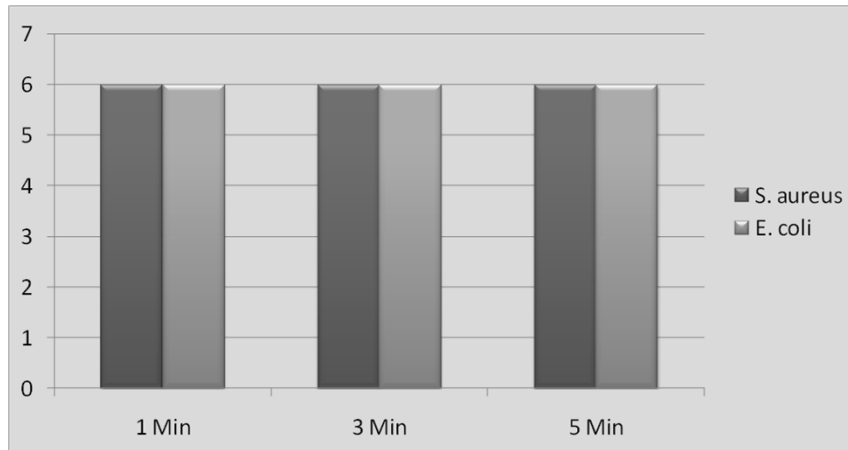
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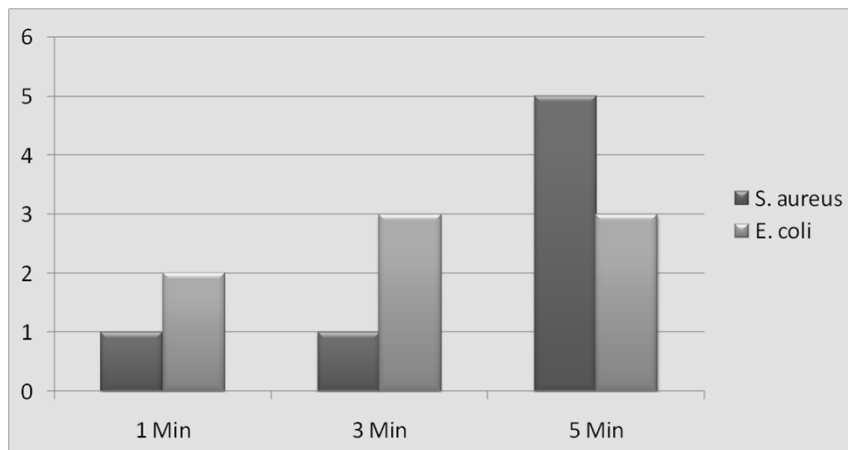
### ActiMaris® 100%



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### ActiMaris® 10%

(comparable with wound Rinsing Solution ActiMaris®)



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## Results and effects

- high cleansing activity on wounds and skin
- haemostyptic effect (gel)
- antimicrobiological effect  
(strong effects especially against gramnegativ bacterias!)
- antimycotic effect
- neutralism of odour
- high topic antiinflammatory effect

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## Standarized process

Concept - CWM®-CertifiedwoundManger

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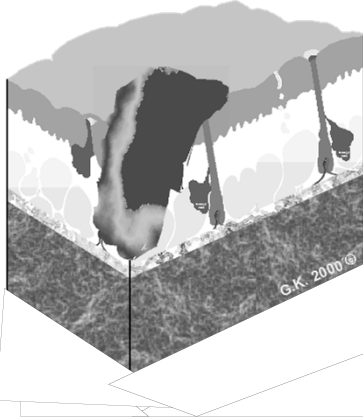
## Die „10 MUSS“ ( „10 MUST“) -

for erfolgreiches PwNdmanagement after © G.Kammerlander, T.Eberlein 1998/2008

**I. PwNddifferentialdiagnose & PwNdanamnese (inkl. Lokalthérapeutika)**

**II. Dann EntScheidung for lokale / SystemiSche treatment**

**III. Dann EntScheidung for konservative - / operative - / interventionelle treatment**



**IV. Ernährungsstatus abklären / substituieren**

**V. Mobilität fördern, ggf. durch Physiotreatment**

**VI. Fördern der Patientenressourcen / Beweglichkeit**

**VII. Alter, Gesundheitszustand, Risikofaktoren berücksichtigen**

**VIII. Soziale Situation abklären and berücksichtigen**

**IX. Mögliche Faktoren for PwNdeheilungsstörungen erkennen ( Alkohol , Durchblutungsstörungen [DBS], Diabetes mellitus, Drogen, Medikamente, Nikotin, ...)**

**X. Dokumentation**

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PwNdbeurPartung bei der AWB – nascend oxygen 10

## wound Classification









G. Kammerlander et al. - modif. 1996/2003/2009

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Wundstadien nach WCS - mod. G.Kammerlander 1996/2001 <sup>©</sup>	
Kriterium - 1 ( Interpretation der Farben )	Kriterium 2 ( Erkennen des Exsudationsgrades )
 <b>schwarz</b> ( Nekrose )	- schwarz ( nekrotisch ) trocken - schwarz ( nekrotisch ) feucht - nass - Rand der Nekrose fest verpacken - Rand der Nekrose teilweise locker
 <b>schwarz - gelb</b> ( Nekrose + Fibrinbelag )	- trocken - feucht - nass
 <b>schwarz - gelb - rot</b> ( Nekrose + Fibrinbelag + Granulation )	- trocken - feucht - nass
 <b>gelb</b> ( Fibrinbelag )	- trocken - feucht - nass
 <b>rot - gelb</b> ( Granulation + Fibrinbelag )	- trocken - feucht - nass
 <b>rot</b> ( Granulation )	- trocken - feucht - nass
 <b>rot - rosa</b> ( Granulation + Epithelisation )	- trocken - feucht - nass
 <b>rosarot</b> ( Epithelisiert )	- instabile, dünne brüchige Haut - teils ekzematisierte Haut - trockene Haut - normale Hautkonsistenz
Kriterium - 3 ( Erkennen von möglichen lokalen Infektszeichen )	
<i>Infektion ???</i>	
<small>© Urmodell after G.K. 1996/2001</small>	

## 1. Check and assess the dressing material, the wound and the wound area around

- colour ( dressing, wound,... )
- odour
- reaction of the wound filler
- reaction of the wound cover
- classificate the wound
- assess the wound area around



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## 2. wound and wound Area around - cleansing / preparing -

### Wet to Dry Phase

*Published in:*

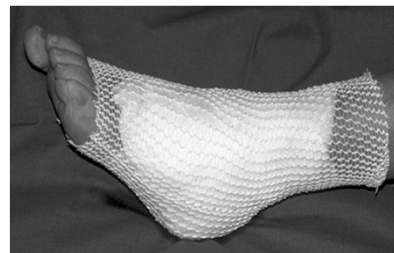
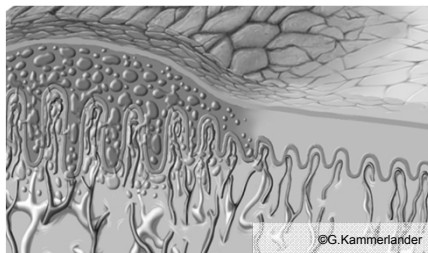
*Wet to Dry Phase, G.Kammerlander, A. Andriessen et.al, JWC 09.2005  
„Die Schwester der Pfleger“, Bibliomed 01.2006; ZfW, mSC Verlag 01.2006  
APTF, 2009*

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### WET TO DRY PHASE

*(G.Kammerlander et al. ZfW, Bibliomed, Procare, Heilberufe 2003  
G.Kammerlander, A. Andriessen et.al, Wet to Dry phase; JWC:09.2005, APTF 2009)*

- The wet to dry phase may be applied during dressing changes for reduction of bacterial burden and removal of debris and exudate.
- In cases of skin irritation the method may be soothing and cooling, calming down the inflammation.



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### 3. Choose the dressing material and apply the new system

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### InterdiSCiplinary plan 3. Choose the right material

Problem	Aim	Treatment
Maceration wound area around	Stabilized skin area around	xxxxxxxxxxxx
Irritated wound area around	normal coloured skin area around	xxxxxxxxxxxx
xxxxxxxxxx	xxxxxxxxxxxx	xxxxxxxxxxxx

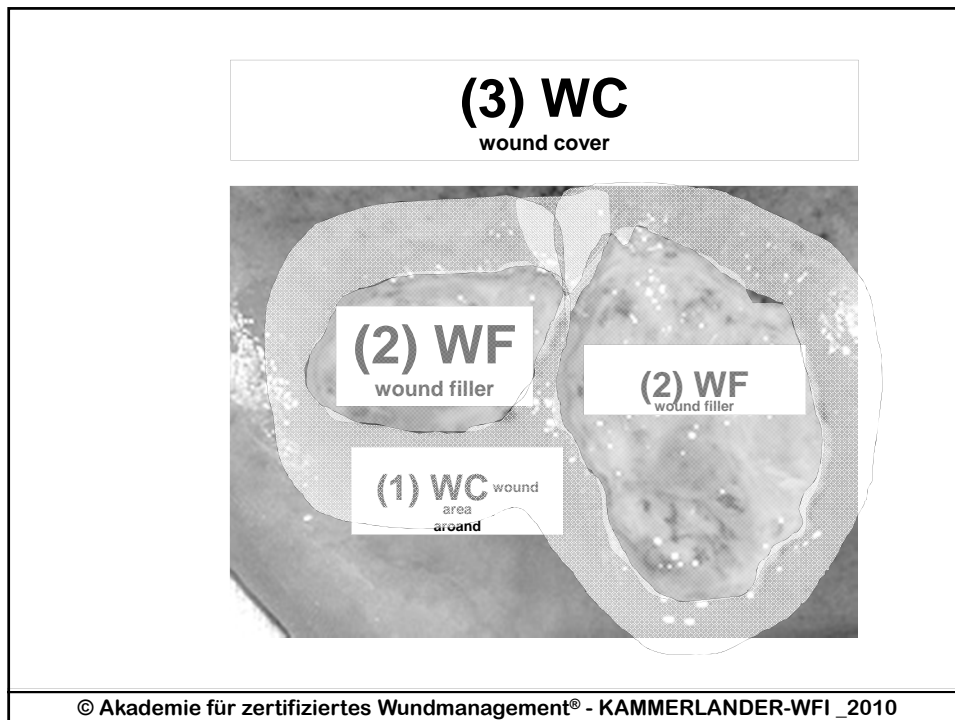
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## Multicentric study of ActiMaris®

- **Head of the study and design:** G.Kammerlander, T.Eberlein
- A) WKZ®-WundKompetenzZentrum G.Kammerlander<sup>(1)</sup>, T. Eberlein<sup>(2)</sup>, Zweimüller Petra<sup>(3)</sup>, A-4020 Linz
- B) WZ®-PWndZentrum -Locherer Esther, CH-5625 Kallern, Luchsinger Sabine<sup>(4)</sup>,
- (1) MBA/DGKP/ZWM®
- (2) Dr.med./ZWM® Facharzt for Dermatologie, Allergologe
- (3), (4) DGKS/ZWM® / Dipl. PPF HF/ZWM<sup>cert</sup>®
- Timeline: May 2008 till may 2009

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**Data and facts from the study – nascend oxygen <sup>1</sup>O**

Timline: **6 weeks** (or longer if the effect is positiv)

- critical colonized wounds
- infected wounds
- wounds with odour
- wounds with fibrin sloughes
- inflammated, irritated, moist and mazerated peri-wound areas

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**Data and facts from the study – nascend oxygen <sup>1</sup>O**

**Datas:**

**Mai 2008 – Mai 2009:**

- 73 patients
- in median: 46,04 days ( 3 days till 197 days)
  
- sex: 35 female, 38 male
- age: 68,8 yeare (Range 9 years – 95 years)
- age of the wounds before treatment: 0,5 month - 221 month

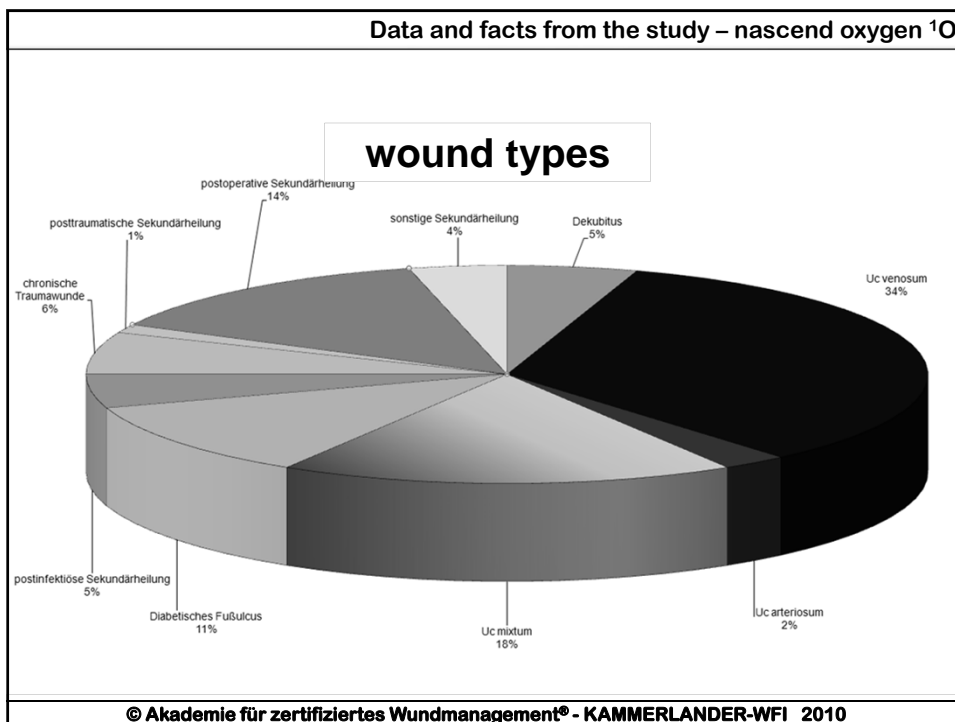
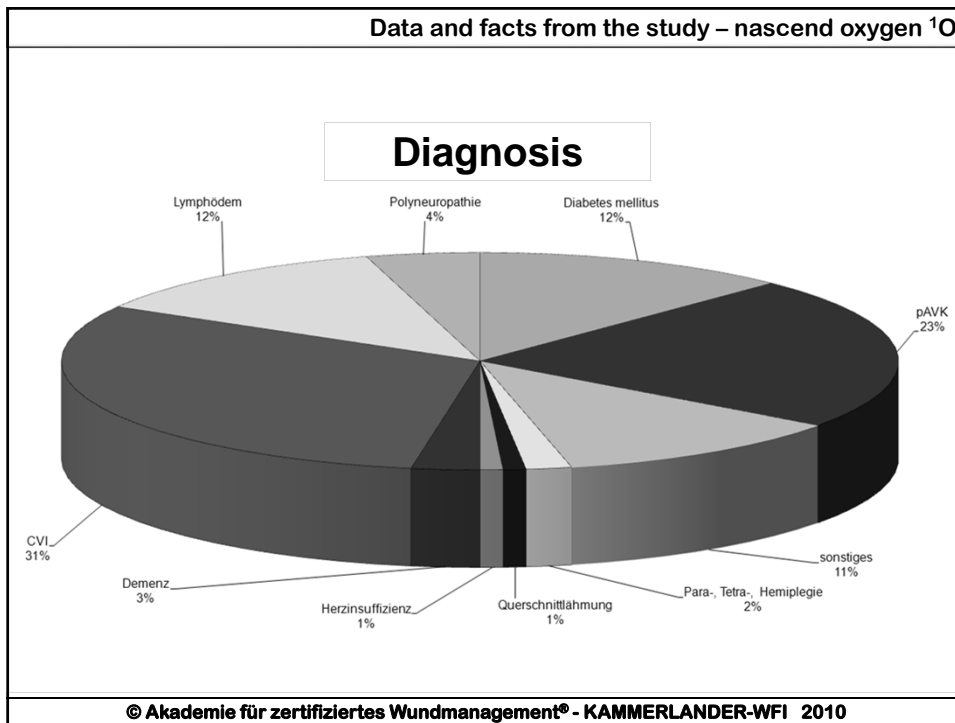
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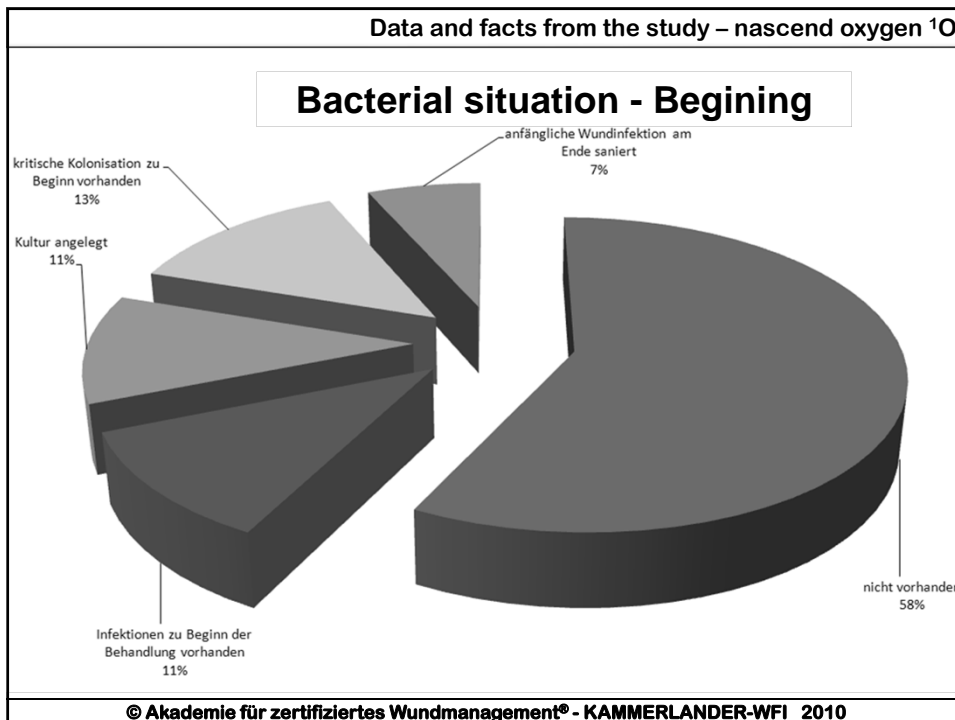
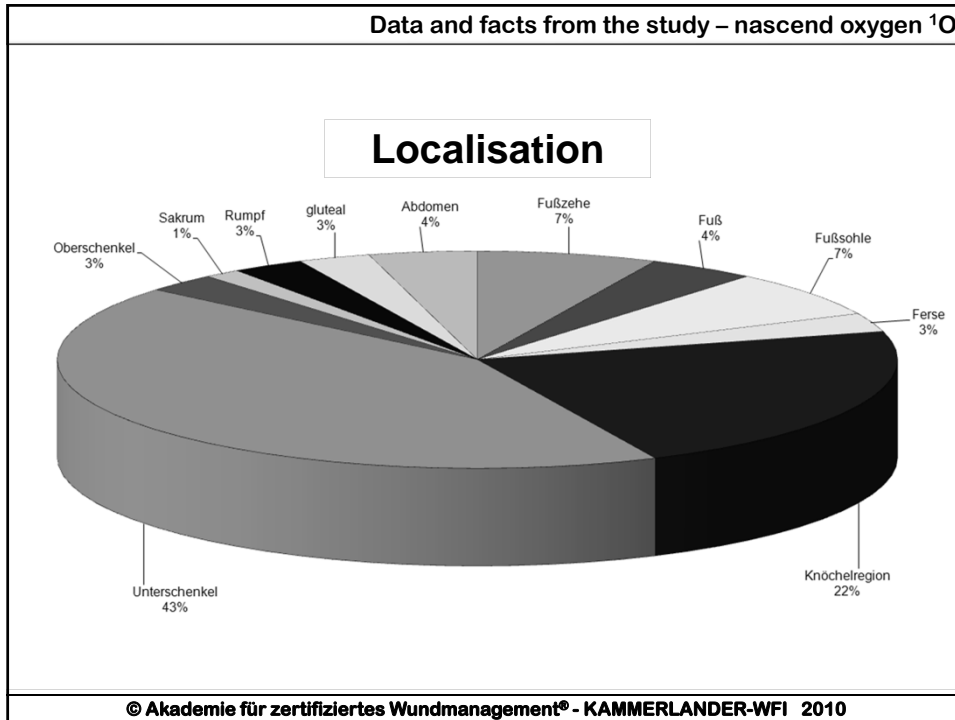


Study:  
Nascend oxygen  
Author: G. Kammerlander



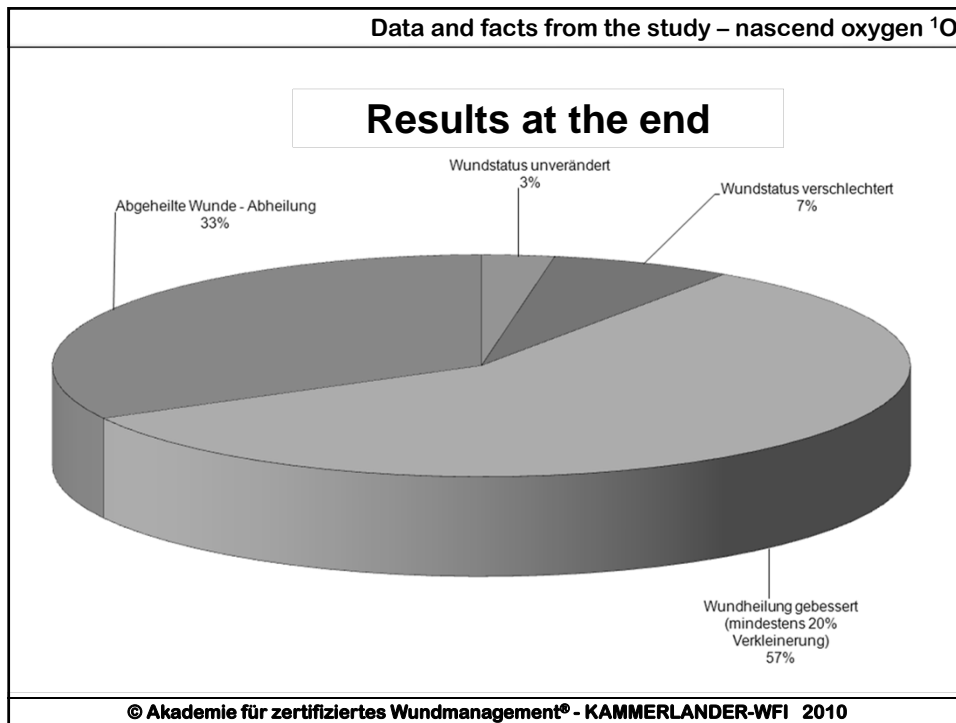
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Facts study - <sup>1</sup>O

**Question to the professionals at the end of the study:**

**In the future, do you wanna use the 1O on critical colonized or infected wounds or wounds with odour?:**

yes – 93%

---

**What is your experience in total:**

84,2% - very positiv  
14,7% - positiv  
1,1% - negativ

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Study:  
Nascend oxygen  
Author: G. Kammerlander

Facts study - 10

### Results:

- The neutralization of odour on wounds is in 100% within 10-15 minutes
- The reduction of inflammatory signs on the peri-wound skin after 15 minutes (wet to dry phase) in 30%-60%

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Facts study - 10

### Results:

- The cleansing effect in practice is comparable with Polihexanide or Octenillin
- The compatibility with products of the modern wound management (Alginate, fydofiber, foam dressings, hydrocollids and so on) is very good.

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Study:  
Nascend oxygen  
Author: G. Kammerlander

Results study - 10

# Examples:

## nascend oxygen 10

WZ® - Locherer Kallern – Switzerland  
DGKS/ZWM® Sabine Luchsinger

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Results study - 10

# Examples:

## nascend oxygen 10

### Part 1



#### Example 1: Type of exudation – moist


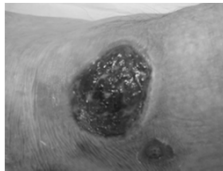
<b>WRS:</b> Wound Rinsing Solution	<b>PW:</b> Peri Wound Area	<b>WF:</b> Wound Filler
<b>WC:</b> Wound Cover	<b>SC:</b> Skin Care	<b>CT:</b> Compression Therapy

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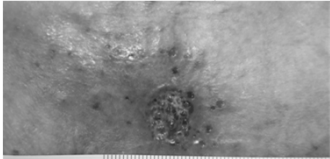
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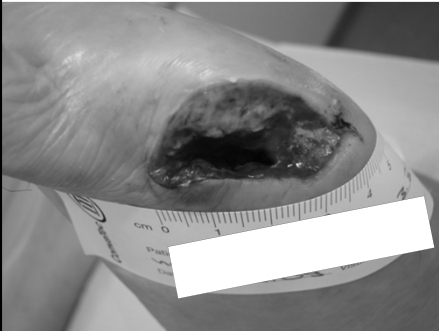

<b>Results study - 10</b>	
<b><u>Example 1:</u> Type of exudation – moist</b>	
<b><u>WRS:</u></b> ActiMaris®-10	<b><u>PW:</u></b> ZCR®-ZincCream
<b><u>WC:</u></b> Suprasorb P adhesive	<b><u>SC:</u></b> NCR®-NutrientCream
<b><u>WF:</u></b> Aquacel + 10	
Age of the wound before 10 more than 3 months	
	
M/95J./Pressure ulcer: Begin – day 1	...after 35 days and 15 changes
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<b>Results study - 10</b>	
<b><u>Example 2:</u> Type of exudation – moist</b>	
<b><u>WRS:</u></b> nascend 10	<b><u>PW:</u></b> dline ZCR®-ZincCream
<b><u>WF 2:</u></b> Aquacel	<b><u>WC:</u></b> Mepilex border
	<b><u>SC:</u></b> NCR®-NutrientCream
<b><u>WF 1:</u></b> Alginate and 10	
Age of the wound before 10 3 months	
	
M/71J./Pressure ulcer: Begin – day 1	...after 20 days and 7 changes
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Results study - 10	
<b>Example 3: Type of exudation - moist</b>	
<b>WRS:</b> nascend 10	<b>PW:</b> ZCR®-ZincCream + Aquacel
<b>WF:</b> Alginate with silver plus 10	<b>WC:</b> Mepilex <b>SC:</b> NCR®-NutrientCream
Age of the wound before 10 more than 1 month	
 <p>W/83J./Ulcer cruris venosum: Begin – day 1</p>	<p>Ende der klinischen Beobachtung</p>  <p>...after 21 days and 8 changes</p>
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Results study - 10	
<b>Example 4: Type of exudation – moist</b>	
<b>WRS:</b> nascend 10	<b>PW:</b> ZCR®-ZincCream <b>WF 1:</b> Alginate and Repithel
<b>WF 2:</b> Aquacel	<b>WC:</b> absorbent dressing <b>SC:</b> NCR®-NutrientCream
Age of the wound before 10 4 days. OP – Amputation Dig. V	Depth of the wound 0.5 cm
 <p>M/77J./Diabetic foot: Begin – day 1</p>	 <p>...after 21 days and 7 changes</p>
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Results study - 10

**Example 5: Type of exudation - moist**


**WRS:** nascend 10 **PW:** ZCR®-ZincCream **WF:** Alginate plus 10

**WC:** Mepilex Border

Age of the wound before nascend 10  
more than 4 months



W/87J./Ulcus cruris venosum: Begin –day 1



...after 48 days and 16 changes

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Results study - 10

**Example 5: Type of exudation - moist**


**WRS:** nascend 10 **PW:** ZCR®-ZincCream **WF:** Hydrofiber plus 10

**WC:** Mepilex B.

Age of the wound before nascend 10  
more than 4 months



W/87J./Ulcus cruris venosum: Begin –day 1


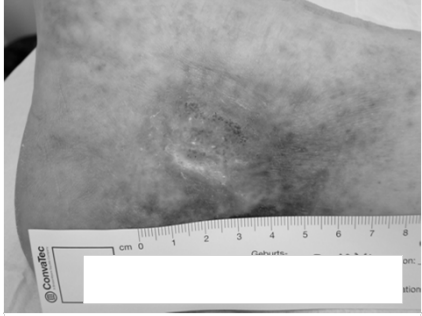



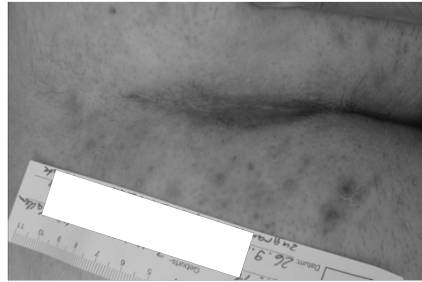
...after 96 days and 42 changes

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<b>Results study - 10</b>	
<b><u>Example 6:</u> Type of exudation – moist</b>	
<b><u>WRS:</u></b> ActiMaris®-10	<b><u>PW:</u></b> ZCR®-ZincCream <b><u>WF:</u></b> Hydrofiber plus 10
<b><u>WC:</u></b> Mepilex Border lite	<b><u>SC:</u></b> NCR®-NutrientCream
	
W/74J./Ulcus cruris venosum: Begin – day 1	...after 14 days and 4 changes
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<b>Results study - 10</b>	
<b><u>Example 7:</u> Type of exudation – moderate moist-dry</b>	
<b><u>WRS:</u></b> ActiMaris®-10	<b><u>PW:</u></b> ZCR®-ZincCream <b><u>WF:</u></b> Alginate plus 10
<b><u>WC:</u></b> Mepilex Border lite	<b><u>SC:</u></b> NCR®-NutrientCream
Age of the wound before 10 more than 12 months	
	
M/22J./Ulcus postoperative sekundär Wunde: Begin – day 1	...after 14days and 5 changes
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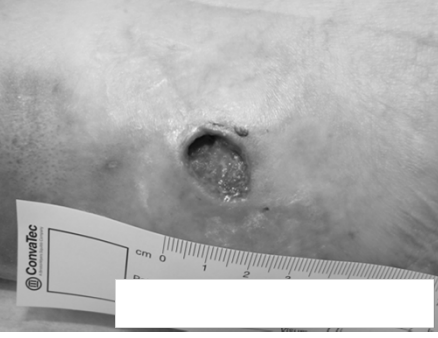
**Results study - 10**

**Example 8: Type of exudation – moist**

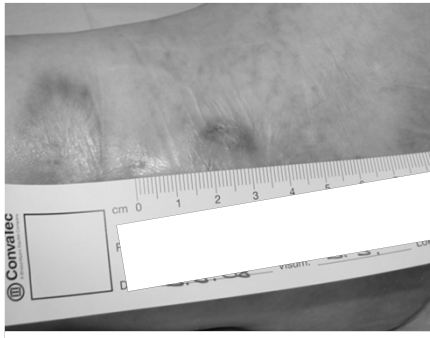
**WRS:** nascend 10   **WF:** Alginate plus 10   **WC:** Mepilex   **SC:** NCR®-NutrientCream

Age of the wound before 10 more than 4 months

Ab jetzt nur noch SC-NCR®-NutrientCream



W/67J./Ulcus secondary healing leg: Begin – day 1



...after 50 days and 15 changes


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**Results study - 10**

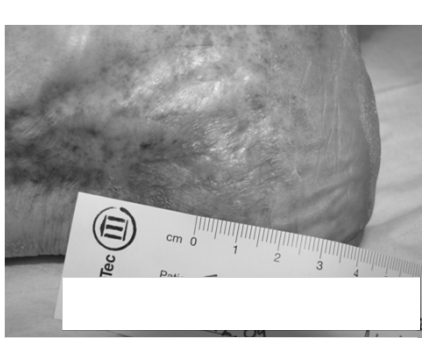
**Example 9: Type of exudation – moist**

**WRS:** nascend 10   **PW:** dline ZCR®-ZincCream  
**WF:** Aquacel + 10   **WC:** Mepilex   **SC:** NCR®-NutrientCream

Age of the wound before 10 ½ month



W/81J./Ulcus cruris venosum: Begin – day 1





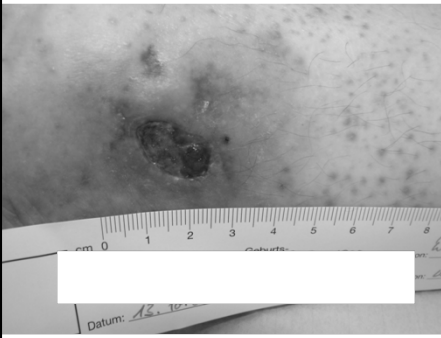
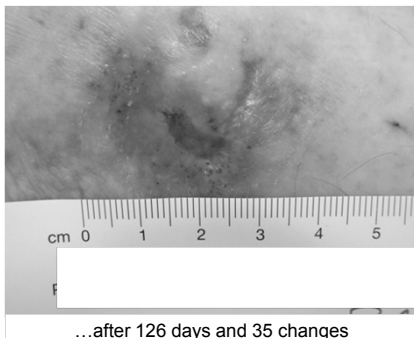
...after 56 days and 14 changes

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Results study - 10	
<b>Example 10: Type of exudation – moist</b>	
<b>WRS:</b> nascend 10	<b>PW:</b> dline ZCR®-ZincCream
<b>WF 2:</b> Aquacel Ag	<b>WC:</b> Mepilex
	<b>WF 1:</b> Hydrogel
	<b>SC:</b> NCR®-NutrientCream
Age of the wound before 10 ½ month	
 M/38J./Ulcus cruris venosum: Begin – day 1	 ...after 28 days and 7 changes
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Results study - 10	
<b>Example 11: Type of exudation – moderate moist-dry</b>	
<b>WRS:</b> nascend 10	<b>PW:</b> dline ZCR®-ZincCream
<b>WC:</b> Mepilex	<b>SC:</b> NCR®-NutrientCream
	<b>WF:</b> Alginate and 10
Age of the wound before 10 more than 7 months	
 W/46J./Ulcus cruris venosum: Begin – day 1	 ...after 126 days and 35 changes
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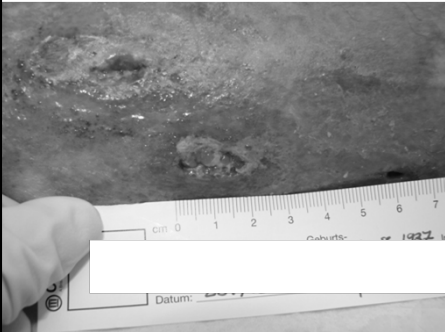
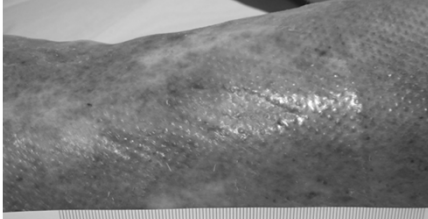
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Study:  
Nascend oxygen  
Author: G. Kammerlander

<b>Results study - 10</b>	
<b><u>Example 12:</u> Type of exudation – moderate moist-dry</b>	
<b>WRS:</b> nascend 10	<b>PW:</b> dline ZCR®-ZincCream
<b>WC:</b> Mepilex	<b>WF:</b> Alginate and 10
	<b>SC:</b> NCR®-NutrientCream
Age of the wound before 10 10 months	
	
M/71J./Ulcus cruris venosum: Begin – day 1	...after 49 days and 9 changes
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<b>Results study - 10</b>
<h1>Examples:</h1> <p><b>nascend oxygen</b></p> <p><b>DGKS/ZWM® Petra Zweimüller</b></p> <p><b>WKZ® - LINZ - Austria</b></p>
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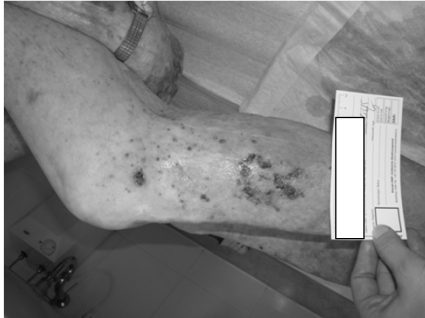
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Results study - 10

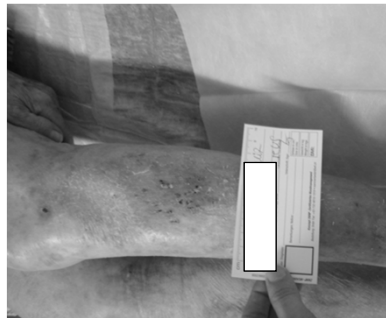
**Example 13: Type of exudation – leichte Exsudation**

**Ulcus cruris venosum – Stauungsdermatitis –  
age before treatment 3 weeks**

WRS: ActiMaris, WR: ZCR® -ZincCream, WF: Polihexanidgel, WC: Mepilex lite,  
SC: NCR® Cream, CT: KSSTR CII



before treatment



after 2 weeks treatment

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Results study - 10

**Example 14: Type of exudation – leichte Exsudation**

**Ulcus cruris venosum – Dermatitis –  
age before treatment 3 weeks**

WRS: ActiMaris, WR: ZCR®-ZincCream, WF: Medihoney antibakteriell + Aquacel, WC:  
Zetuvit, SC: CCR-Cream, CT: cotton+vlies+short stretch bandage, AB: Avelox 400mg1x1  
for 7 days



before treatment



after 3 weeks treatment

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Results study - 10


**Example 15: closed**

**Neuropathic foot ulcer– infection – since 1 year before treatment**

WRS: ActiMarisWR: ZCR®-ZincCream, WF: Hyiodine + Aquacel, WC: Mepilex, SC: NCR®-Cream + cotton + vlies, O: orthopedic shoe



before treatment



Healing without Re-Infection after 16 weeks treatment


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Results study - 10


**Example 16: Type of exudation – wet**

**Ulcus cruris venosum left; second. lymphedema, PAVK II**

WRS: ActiMaris WR: ZCR®-ZincCream, WF: Medihoney + Aquacel,  
WC: Sorbion, SC: NCR®-Cream CT: cotton + synthetic Vlies, short stretch bandage



before treatment



after 3 weeks treatment

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Study:  
Nascend oxygen  
Author: G. Kammerlander

Results study - <sup>1</sup>O

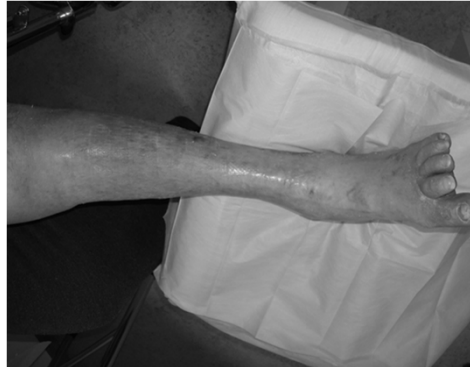
**Example 17:** Type of exudation – moist

**CVI III, second. lymphedema, Ulcus cruris left lower limb**

**WRS:** ActiMaris, SC: LL, **CT:** Cincbandage + cotton



before treatment



after 30 min. wet-dry-phase mit <sup>1</sup>O

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