

h e d s

Haute école de santé
Genève

Sinn und Unsinn in der palliativen Wundpflege

SASRO Kongress 2018

Prof. Dr. Sebastian Probst, Professor für Wundpflege
HES-SO Fachhochschule Westschweiz, Genf, Schweiz
sebastian.probst@hesge.ch



Deklaration Interessenskonflikt

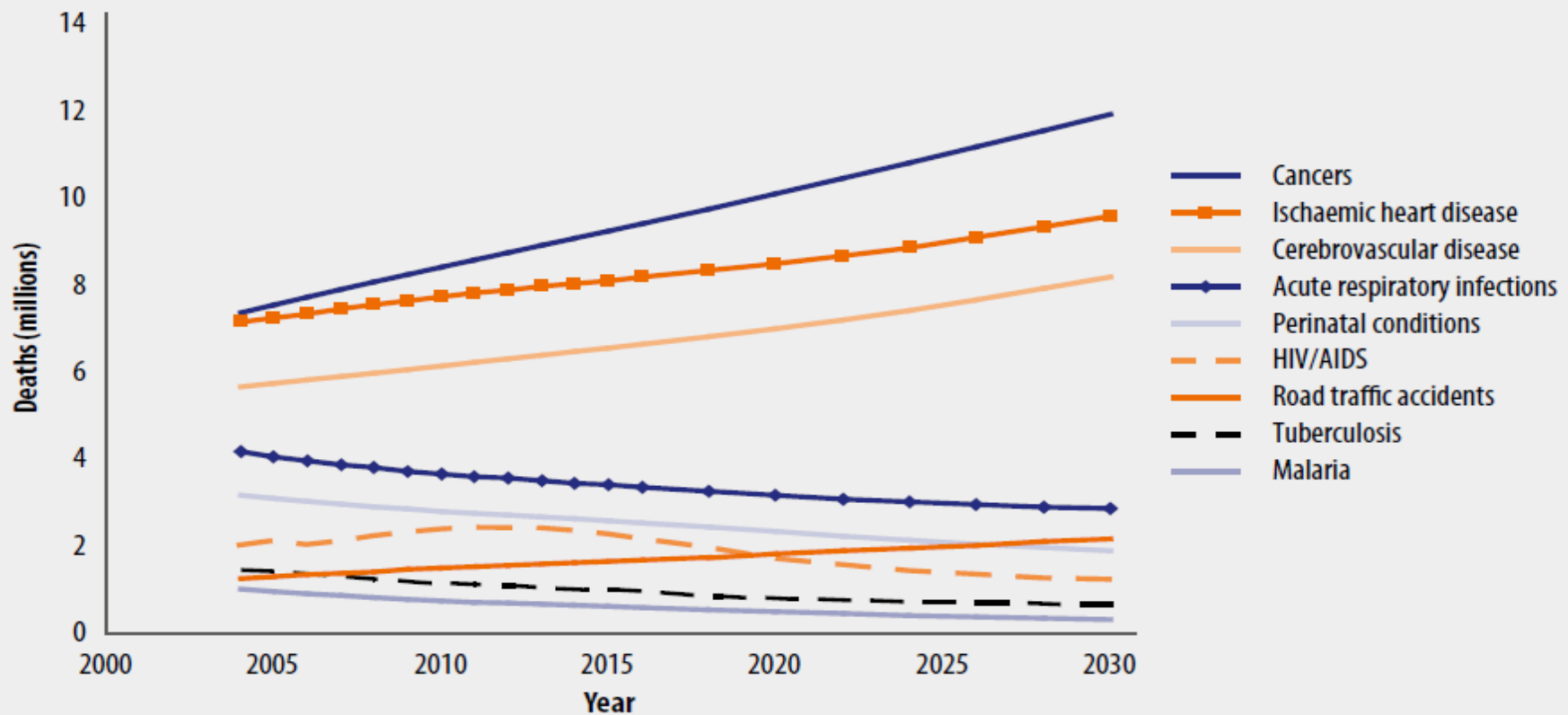
Für diese Präsentation deklariere ich keinen
Intressenskonflikt

Hintergrund

- Palliative Wundpflege wird meist als Pflege am Ende des Lebens wahrgenommen.
- Palliative Wundpflege erfolgt über das ganze Pflegekontinuum
- Verwandte Konzepte sind: Wundpflege am Ende des Lebens, Hospizpflege und Symptommanagement
- Ziel der palliativen Wundpflege ist das lindern oder verhindern von Leiden von wundspezifischen Symptomen, um die Lebensqualität zu erhalten oder zu verbessern.

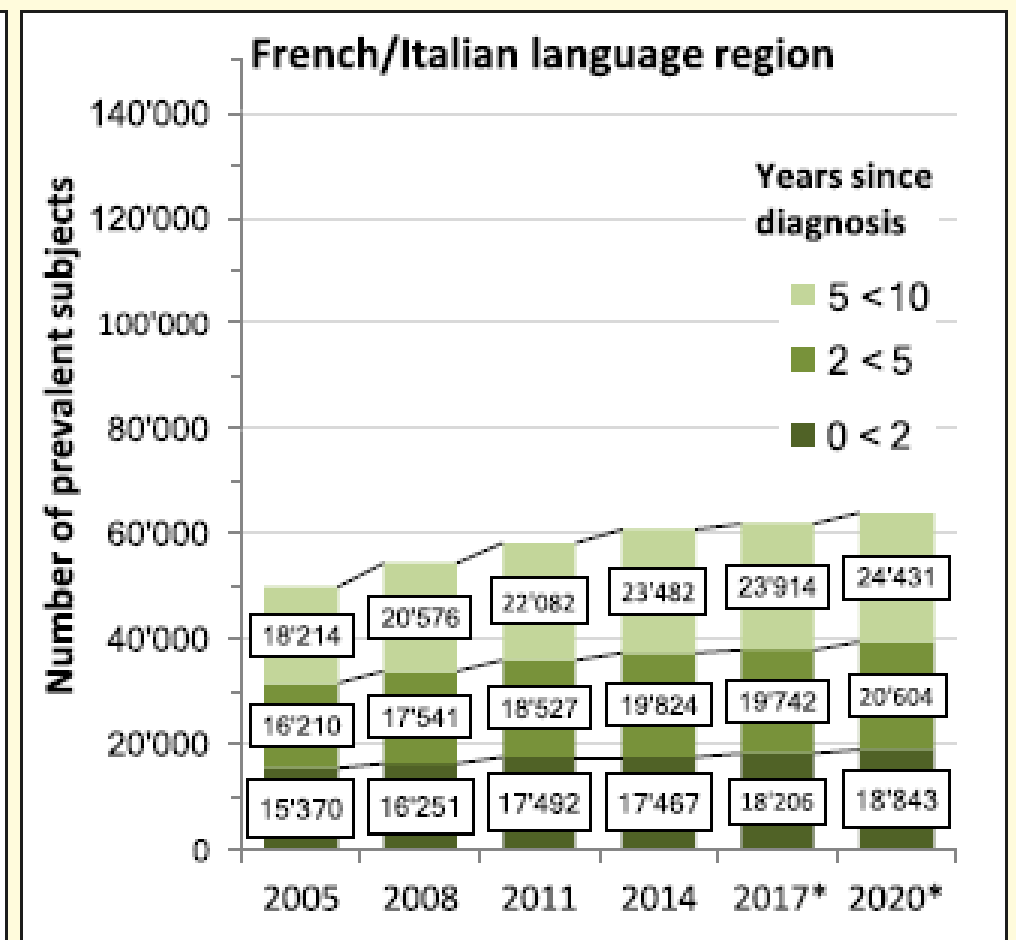
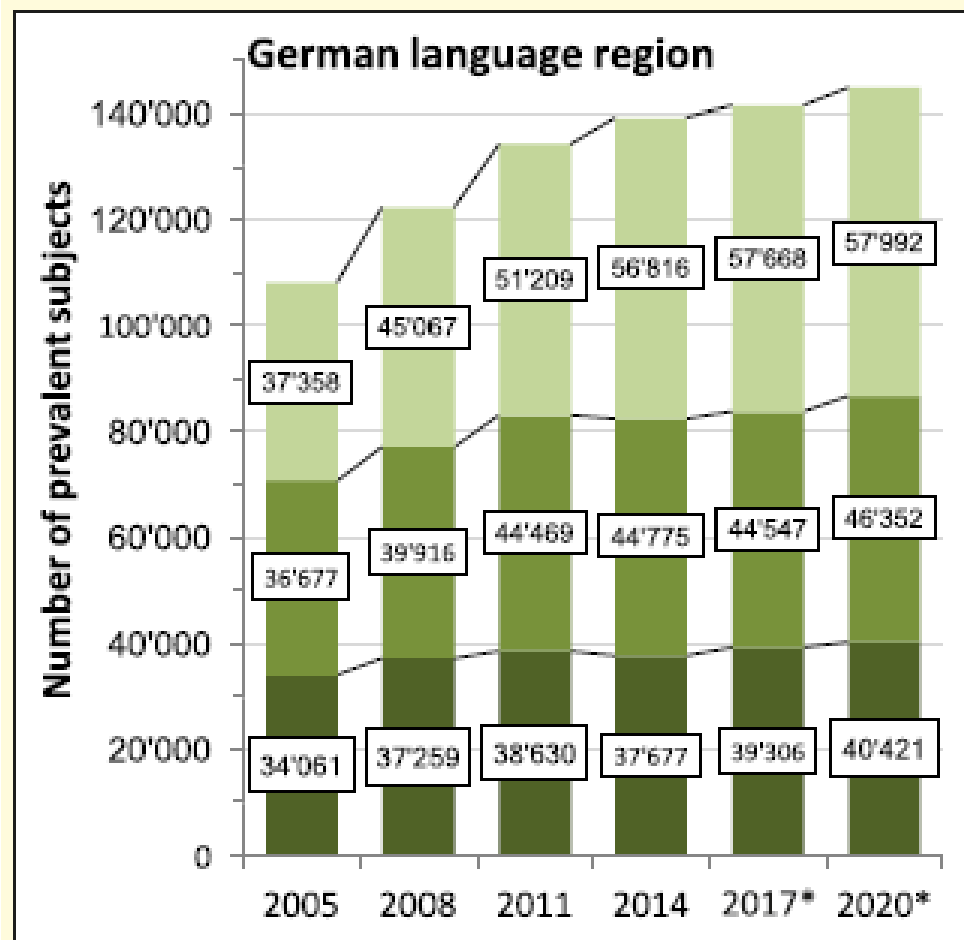
Mortalität 2004-2030

Figure 16: Projected global deaths for selected causes, 2004–2030



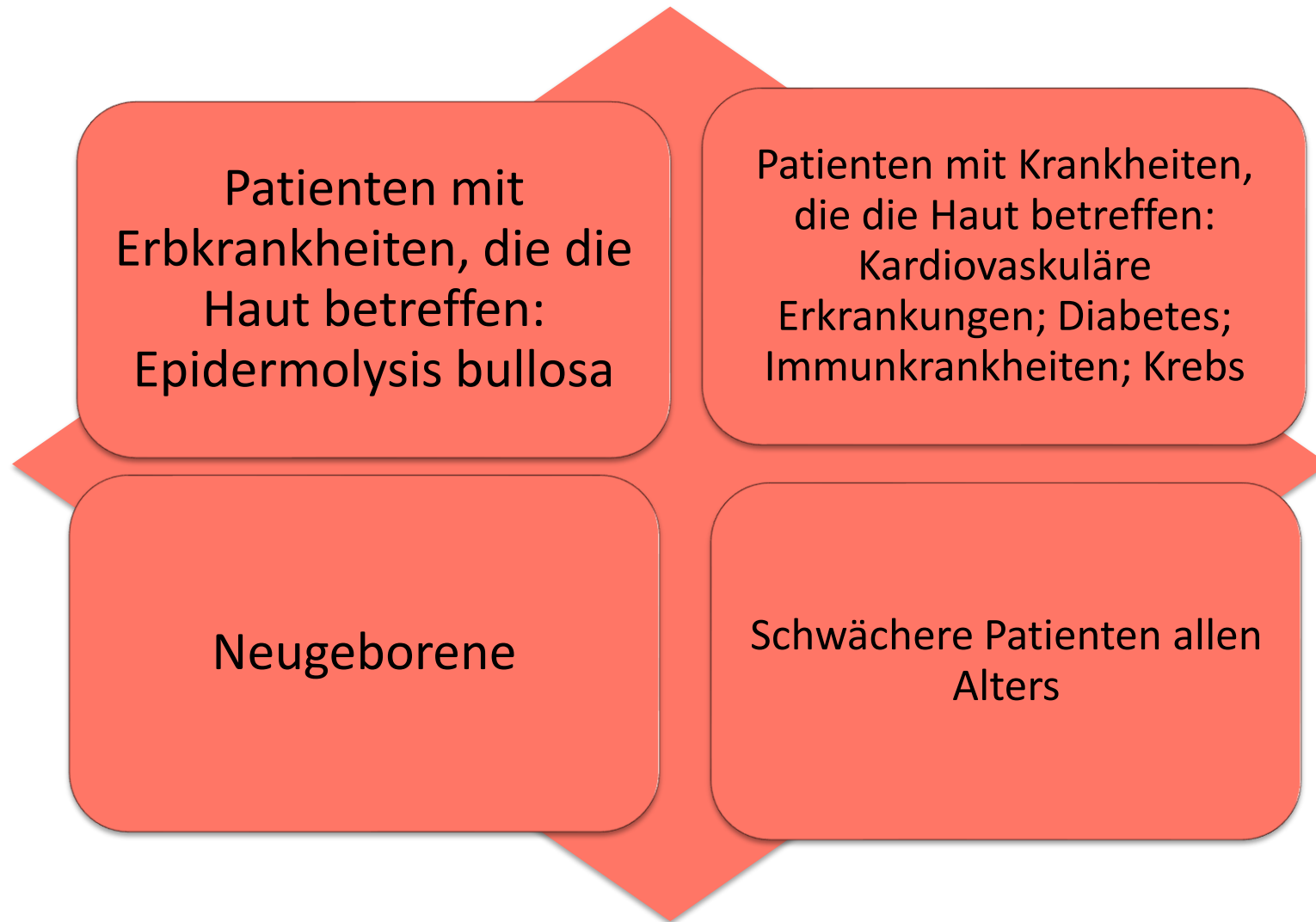
WHO (2012). The global burden of disease: 2004 update. Accessed 28.07.2018 under http://www.who.int/healthinfo/global_burden_disease/GlobalHealthRisks_report_part2.pdf

Prävalenz der Krebserkrankungen CH

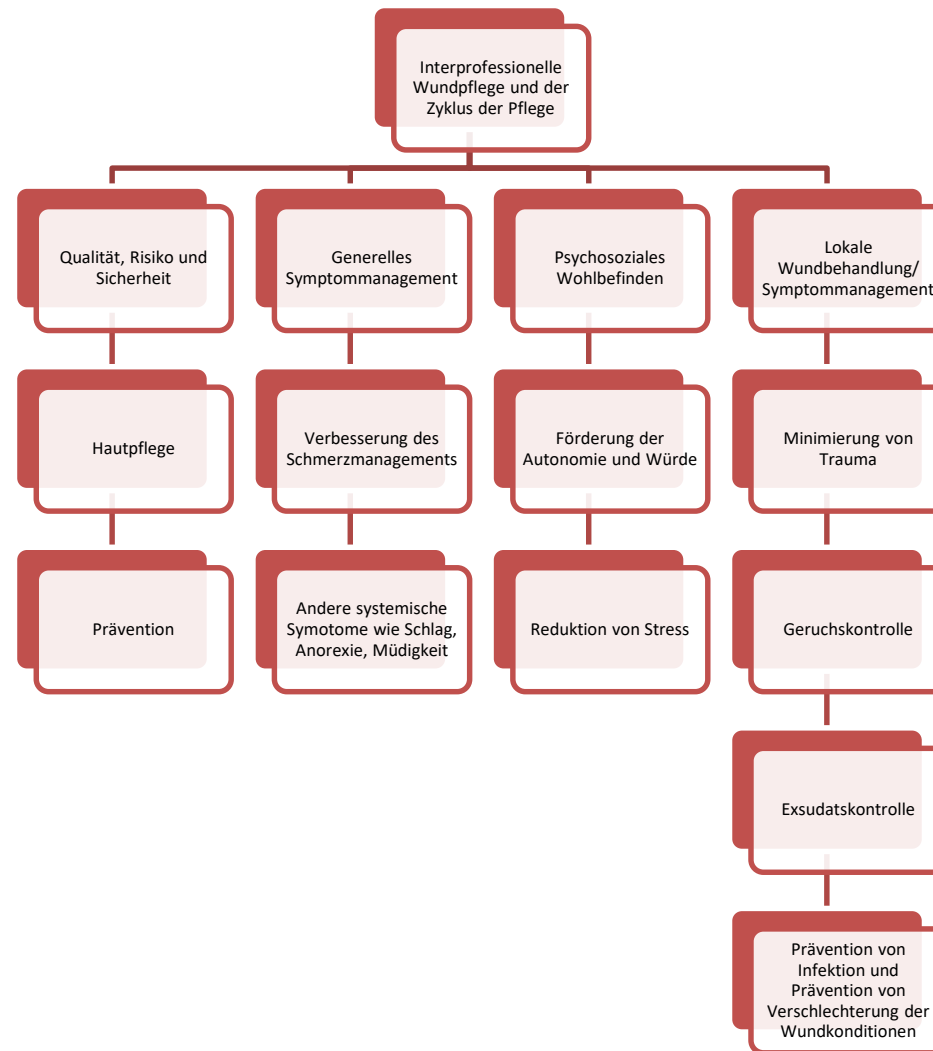


Nicer (2018). Prevalence of all cancer sites in Switzerland. Accessed 29.08.2018 under:
http://www.nicer.org/assets/files/publications/others/skb_01_2018_swiss_cancer_prevalence_and_language_region.pdf

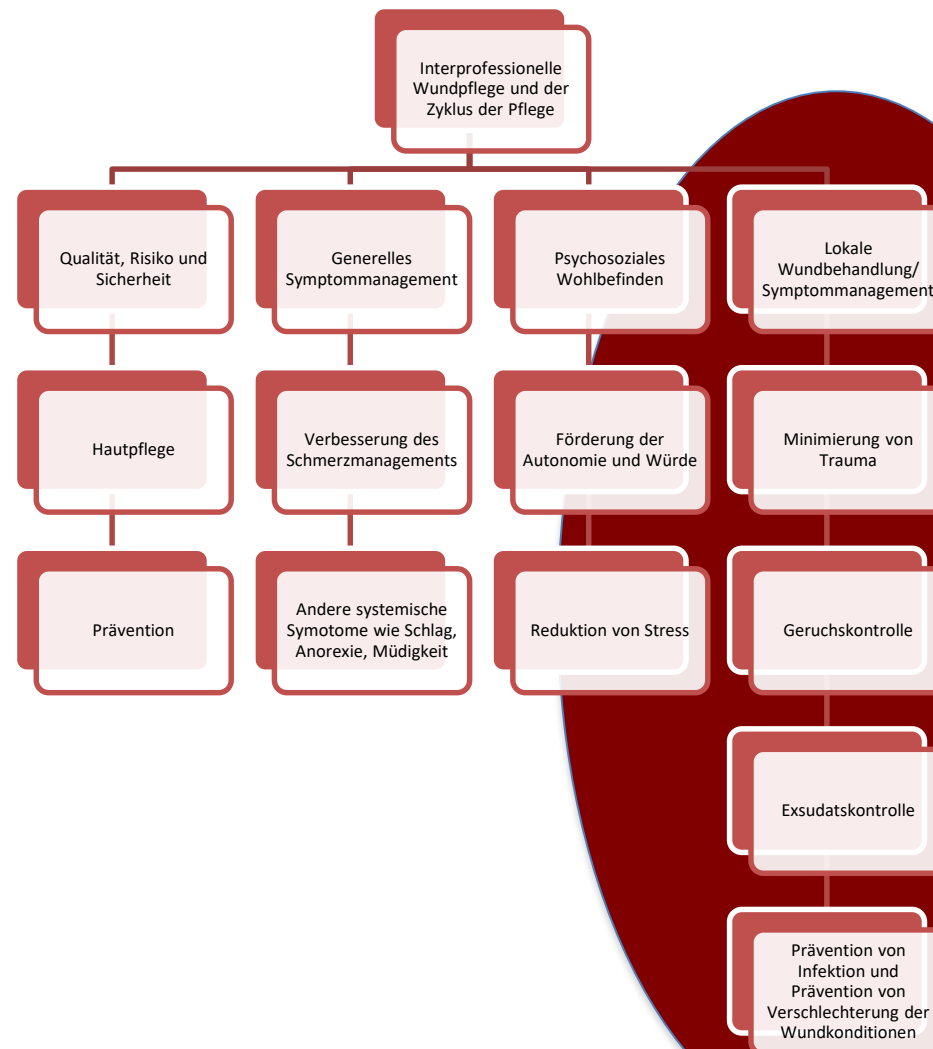
Welche Population leidet unter einer palliativen Wunde?



Schlüsselkomponenten für die interprofessionelle Wundbehandlung



Schlüsselkomponenten für die interprofessionelle Wundbehandlung



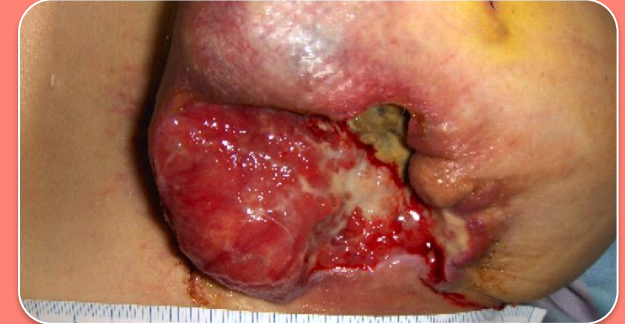
Sinn oder Unsinn - Verhinderung von Blutungen



Fragile kapilläre
und vaskuläre
Gefäße



Komorbidityäten
und Medikamente



Nicht-adhäsive
Wundverbände

Sinn oder Unsinn - Verhinderung von Blutungen: Topische haemostatische Stoffe

Kategorie	Beispiel	Kommentar
Natürliche Hämostase	<ul style="list-style-type: none"> - Kalziumalginat - Kollagene - Oxidierte Zellulose 	<ul style="list-style-type: none"> - Zur Kontrolle von kleineren Blutungen - Als Wundverband verfügbar
Koagulantien	<ul style="list-style-type: none"> - Gelatine-Schwämme - Thrombin 	<ul style="list-style-type: none"> - Teure Produkte - Risiko von Embolien
Sklersodierende Stoffe	<ul style="list-style-type: none"> - Trichloressigsäure - Silbernitrat 	<ul style="list-style-type: none"> - Kann bei der Applikation brennen - Hinterlässt ein Koagulum, das als proinflammatorischer Stimulus wirkt
Fibrinolytische Antagonisten	<ul style="list-style-type: none"> - Tranexamsäure 	<ul style="list-style-type: none"> - Orale Applikation - Gastrointestinale Nebenwirkung (Nausea/Emesis)
Adstringente Stoffe	<ul style="list-style-type: none"> - Alaun - Surkalfat 	<ul style="list-style-type: none"> - Kann Residuen auf der Wunde zurücklassen

Sinn oder Unsinn - Verhinderung von Blutungen: andere Möglichkeiten

- Medikamentös: Benzodiazepine subkutan (Midazolam)
- Einmalige Radiotherapie



- Op-Tücher bei grossen Blutmengen



Sinn oder Unsinn - Wundgeruch

Eine Kombination von Faktoren wie Bakterien, nekrotisches Gewebe starke Exsudation und schlecht vaskularisiertes Gewebe.

Durch eine Kombination von Aminen und Diaminen wie Kadaverin und Putreszin mittels des metabolischen Prozesses von anderen proteolytischen Bakterien produziert werden.

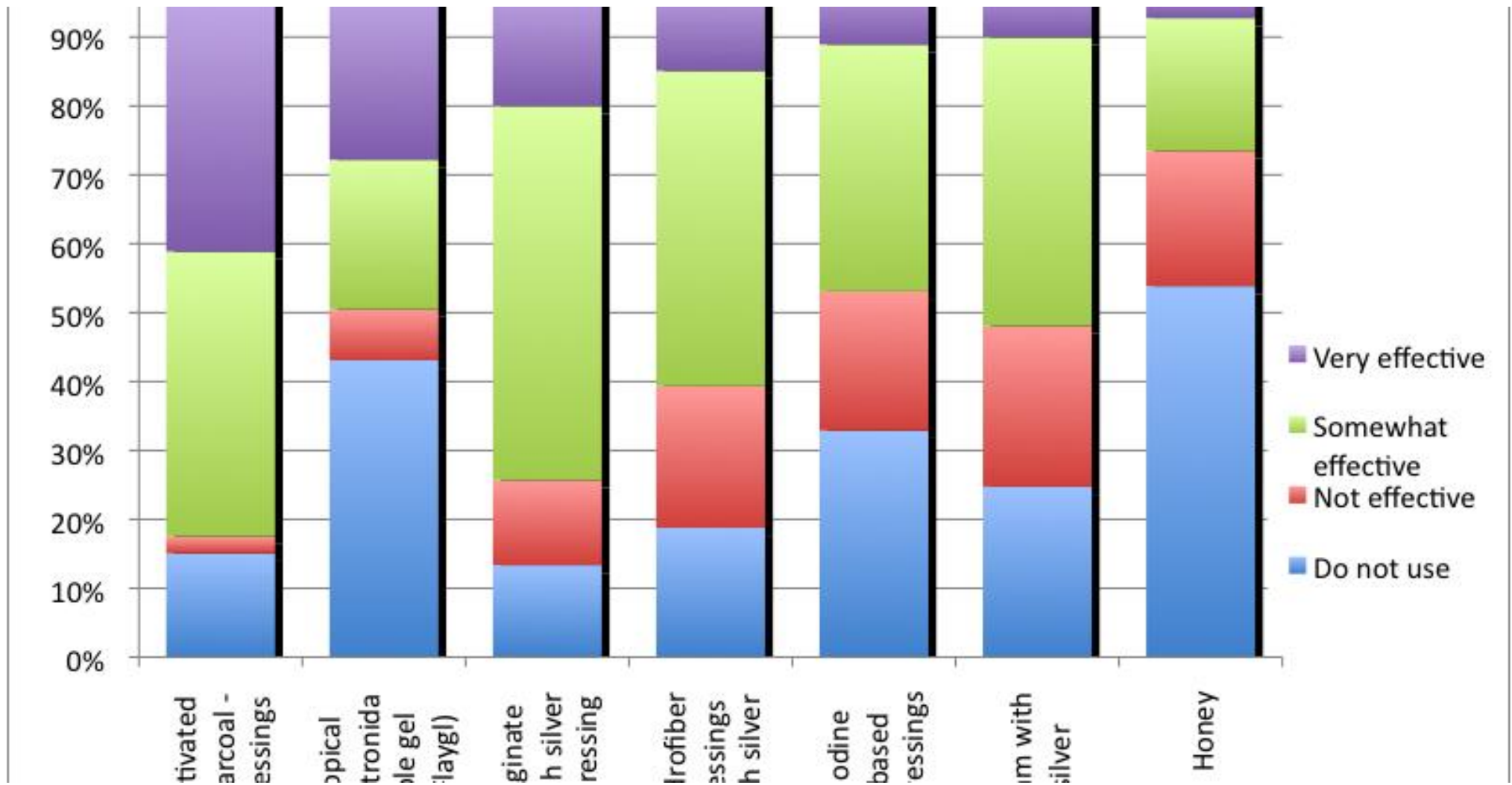
→ *Dieser Geruch wird mit dem Geruch von verwesendem Fleisch verbunden.*

Sinn oder Unsinn – Wundgeruch - Assessment

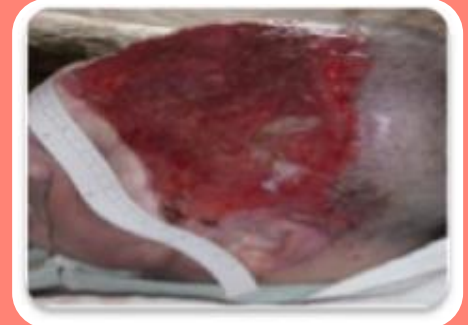
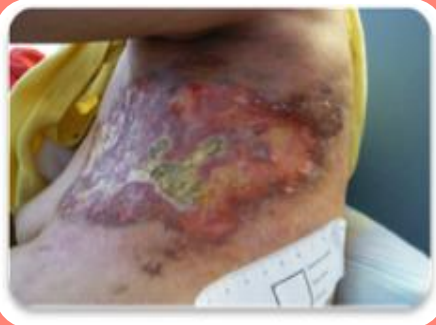
(12% des Gesundheitspersonals führen ein Assessment durch)

	N
Skalen (Typ wurde nicht genannt)	10
Vorkommen von Geruch	29
3 Punkte Skala	11
4 Punkte Skala	10
10 Punkte Skala	2
TELER Skala	4
Distanz zu Geruch (Raum – Wunde geschlossen – Wunde offen)	6
Beschreibung in Worten	63
Andere	49

Sinn oder Unsinn – Wundgeruch



Sinn oder Unsinn - Wundgeruch



Antiseptika

Systematische oder topische Antibiose (Metronidazol-gel (0.75%) oder the Metronidazol-infusionslösung (500 mg))

Silberverbände

Aktivkohle-verbände

Sinn oder Unsinn - Wundgeruch

SUMMARY OF FINDINGS FOR THE MAIN COMPARISON *[Explanation]*

Metronidazole compared to Placebo for treating malignant wounds

Patient or population: treating malignant wounds

Setting: hospital

Intervention: metronidazole

Comparison: placebo

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	No. of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with Placebo	Risk with Metronidazole				
Malodour (smell score measured on a scale of 0 to 3 with higher scores indicating a more offensive smell)	The mean malodour (smell score) was 3.33 (range 2.0 to 4.0)	MD 2.16 lower (3.60 to 0.72 lower)	-	6 (1 RCT)	⊕○○○ very low ¹	It is uncertain whether metronidazole leads to a reduction in malodour because the quality of the evidence is very low
Adverse effects	Study population		not estimable	6 (1 RCT)	NA	
	0 per 1000	0 per 1000 (0 to 0)				

*The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI). CI: confidence interval; RR: risk ratio; MD: mean difference.

GRADE Working Group grades of evidence

High quality: we are very confident that the true effect lies close to that of the estimate of the effect.

Moderate quality: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

Low quality: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.

Very low quality: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect

Sinn oder Unsinn - Wundgeruch



Polyhexanide Versus Metronidazole for Odor Management in Malignant (Fungating) Wounds

A Double-Blinded, Randomized, Clinical Trial

Diana Lima Villela-Castro ♦ Vera Lucia Conceição de Gouveia Santos ♦ Kevin Woo

ABSTRACT

PURPOSE: The aim of this study was to compare the effects of 0.2% polyhexamethylene biguanide (PHMB) to 0.8% metronidazole on malignant wound (MW) odor, health-related quality of life (HRQOL), and pain upon application.

DESIGN: A double-blinded, randomized, clinical trial.

SUBJECTS AND SETTING: Twenty-four patients with malodorous MWs hospitalized in a referral cancer center in Sao Paulo, Brazil, participated in the trial.

METHODS: Participants were randomly allocated to treatment with 0.8% metronidazole solution (control group) or 0.2% PHMB (experimental group). Study outcomes were measured at baseline (day 0), 4 days, and 8 days. The primary end point was the odor that was measured in terms of its intensity, quality, and impact on participants during the study period. Health-related quality of life was measured with the Ferrans and Powers Quality of Life Index–Wounds Version (FPQLI-WV) on day 0 and on the day when odor was completely eliminated as per evaluation by the investigators. Pain intensity related to application of the control and experimental solutions was measured as a secondary outcome using a scale of 0 to 10.

RESULTS: Twenty patients (83.3%) were classified as having “no wound odor” at 4 days, and 100% achieved no wound odor by day 8 ($P < .001$). Odor control in patients with MW significantly influenced their general HRQOL ($P = .002$). We found no difference in odor elimination, or HRQOL, when patients managed with PHMB were compared to those managed with metronidazole. There were no statistically significant differences over time in pain measurement between the 2 groups.

CONCLUSIONS: Both PHMB and metronidazole significantly reduced odor in malodorous MWs within 4 days. Neither solution was found to be more effective than the other in the magnitude of odor reduction or its effect on condition-specific HRQOL.

KEY WORDS: Fungating wounds, Local anti-infective agents, Metronidazole, Polymeric polyhexanide biguanide, Skin neoplasms, Wounds and injuries.

INTRODUCTION

Malignant wounds (MWs), sometimes referred to as fungating, ulcerating cancerous, or malignant cutaneous wounds, occur when a malignancy infiltrates the skin and surrounding blood and lymphatic vessels via direct invasion from a primary lesion or via metastasis from a distant primary tumor. Metastatic MWs are most commonly associated with cancer of the breast and head and neck. Malignant wounds are caused by

ranges between 0.6% and 9.0%; they usually occur in patients with advanced stages of cancer receiving palliative or end-of-life care.¹ Bleeding, foul odor, pain, profuse exudate, and local infection are frequent and distressing aspects of MWs.²⁻⁶ In a survey study of 269 nurses exploring difficulties associated with the care of MWs,⁶ 48% identified management of odor as a challenge, followed by pain control (46%), containment of exudate (30%), bleeding (27%), and problems with the

24 Patienten (12 Metronidazol, 12 PHMB) Wund wurde bei verschlossenem Verband bereits gerochen.

Sinn oder Unsinn - Wundgeruch

TABLE 2.
Intensity, Quality, and Impact of Wound Odor

Items	Group	Day 0, Mean (SD)	Day 4, Mean (SD)	<i>P</i> ^a
Odor rating				
Researcher B	1	2.67 (0.98)	0.33 (0.65)	<.001
	2	2.58 (0.51)	0.08 (0.29)	
Nurse	1	2.42 (1.00)	0.25 (0.62)	<.001
	2	2.58 (0.79)	0.08 (0.29)	
Other	1	2.67 (0.89)	0.33 (0.65)	<.001
	2	2.83 (0.58)	0.00 (0.00)	
Odor quality				
Researcher B	1	2.83 (1.03)	0.33 (0.89)	<.001
	2	3.17 (0.72)	0.17 (0.58)	
Nurse	1	2.83 (0.94)	0.50 (1.00)	<.001
	2	2.92 (0.67)	0.08 (0.29)	
Other	1	3.33 (0.98)	0.50 (0.90)	<.001
	2	3.50 (0.80)	0.00 (0.00)	
Patient	1	2.83 (1.03)	0.58 (1.08)	<.001
	2	3.17 (0.94)	0.17 (0.58)	
Odor impact				
Patient	1	2.25 (1.14)	0.42 (0.79)	<.001
	2	2.58 (1.44)	0.83 (1.75)	

^aFisher's exact test.

Resultate:

Kein signifikanter
Unterschied zwischen PHMB
und Metronidazol

Autoren empfehlen PHMB

Sinn oder Unsinn - Wundgeruch

recherche/innovation

innovation

Traitement des plaies malodorantes par un dispositif médical aux épices

L'odeur est une perception qui peut apparaître au décours de l'évolution d'une plaie ou en l'absence de soins (d'hygiène et/ou de plaies). Dans la plupart des situations, les odeurs nauséabondes des plaies peuvent être traitées, mais ce symptôme reste parfois incontrôlable, pouvant aller jusqu'à l'isolement ou la répudiation. L'objectif de cette étude est de développer une solution topique à base de cannelle pour le traitement des plaies malodorantes.

© 2017 Elsevier Masson SAS. Tous droits réservés

Mots clés - cannelle ; COV ; curcuma ; odeur ; pansement ; plaie

Treatment of malodorous wounds by a spice medical device. Odor is a perception that can appear on necrotic, abscessed, infected, malignant wounds or in the absence of care (hygiene and / or wounds). In most situations, foul-smelling wounds can be treated, but this symptom sometimes remains uncontrollable, including isolation or repudiation. The objective of this study is to develop a topical cinnamon solution for the treatment of malodorous wounds.

© 2017 Elsevier Masson SAS. All rights reserved

Keywords - cinnamon; curcuma; dressing; odour; turmeric; VOC; wound

Aurélien THULEAU^{a,*}
Ingénieur

José DUGAY^b
Maître de conférences

Vincent SEMETEY^c
Chargé de recherche

Isabelle FROMANTIN^a
Infirmière

^aUnité Plaies et cicatrisation, département Anesthésie-réanimation, Institut Curie, 26, rue d'Ulm, 75005 Paris, France

^bLaboratoire sciences analytiques bioanalytiques et miniaturisation, École supérieure de physique et chimie industrielles de Paris, CNRS UMR 8231 chimie

Sinn oder Unsinn - Wundgeruch



CE Symptom Management Series
1.0 ANCC Contact Hour

Palliative Care in the Management of Pain, Odor, and Exudate in Chronic Wounds at the End of Life

A Cohort Study

Teresa J. Kelechi, PhD, RN ○ Margie Prentice, MBA ○ Mohan Madiseti, MS ○ Glenda Brunette, MSN, RN, CWON ○ Martina Mueller, PhD

Palliative care approaches that effectively manage distressful symptoms associated with wounds at the end of life remain elusive. This 4-week study examined a topical wound powder RGN107 for reducing pain, odor, and exudate in 50 patients with pressure ulcers, skin tears, and malignant/fungating and vascular wounds receiving hospice or palliative care and explored quality of life for the caregiver. Through an observational design, the outcomes were measured with visual analog scales, 2 pain questionnaires, and a caregiver quality-of-life instrument. Intent-to-treat analyses were used. Statistically significant reductions in pain ($P = .001$), odor ($P = .04$), and exudate ($P = .00003$) were observed. Caregiver quality of life remained unchanged ($P = .28$); however, improvements were noted in 3 subscales. Findings suggest topical RGN107 reduced pain, odor, and exudate in a highly challenged

population with wounds at the end of life. A larger comparative effectiveness trial should be conducted with other wound powder comparators and usual care approaches and should include cost benefits.

KEY WORDS

comfort care, end of life, malignant wounds, pain, palliative wound care

Symptom management approaches for palliative wound care are in critical need as few options exist for individuals at the end of life with wounds. There is a lack of research of wound therapeutics that effectively manage physically distressing symptoms such as pain, odor, or excessive drainage (exudate). These symptoms negatively affect quality of life for both the individual who experiences them and the caregiver who provides wound care. Wounds such as pressure ulcers, skin tears, and vascular lesions develop because of a host of factors including physiological changes associated with comorbid medical conditions, lack of movement, skin fragility, and poor nutrition.¹ Wound prevalence studies of the hospice population have shown wound rates as high as 47%; half are pressure related.² Even when life expectancy is merely a few weeks, palliative wound care options should emphasize symptom management to preserve dignity and well-being and promote quality of life of the individual and caregivers.

Pain

Pain is an extremely burdensome symptom, affecting 60% of individuals within the last 4 months of life.³ Patients and caregivers report wound pain as one of the worst aspects of having a wound because it disturbs sleep, mobility, mood, and relationships,⁴ all factors that reduce quality of life.⁵ Wound pain during dressing changes and wound cleansing is reported to be the time of greatest pain.¹ Dressing materials adhere to the fragile wound surface because of the glue-like nature of dehydrated

Teresa J. Kelechi, PhD, RN, is professor and David and Margaret Clare Endowed Chair, College of Nursing, Medical University of South Carolina, Charleston.

Margie Prentice, MBA, is research manager, College of Nursing, Medical University of South Carolina, Charleston.

Mohan Madiseti, MS, is project director, College of Nursing, Medical University of South Carolina, Charleston.

Glenda Brunette, MSN, RN, CWON, is board-certified wound and ostomy nurse, Department of Specialty Nursing, Medical University of South Carolina, Charleston.

Martina Mueller, PhD, is biostatistician, College of Nursing, Medical University of South Carolina, Charleston.

Address correspondence to Teresa J. Kelechi, PhD, RN, College of Nursing, Medical University of South Carolina, 99 Jonathan Lucas St, MSC 160, Charleston SC 29425 (kelechit@muscedu).

This work was funded by the National Institute of Nursing Research (NINR) (award 1R21NR014310-01). The use of REDCap was supported by the National Institutes of Health/National Center for Advancing Translational Sciences (UL1TR000062).

The ideas and opinions expressed herein are those of the authors and not necessarily reflective of the NINR.

The authors have no conflicts of interest to disclose.

Copyright © 2017 by The Hospice and Palliative Nurses Association. All rights reserved.

DOI: 10.1097/NH.0000000000000306

Journal of Hospice & Palliative Nursing

www.jhpn.com 17

“RGN107 was designed to fill and cover the wound to prevent exposure to contaminants and air and reduce frequent cleansing and dressing changes. The wound powder formulation is a natural powder extract composed of active ingredients **Calendula officinalis L (1)** (International System of Units [SI] 0.1% volume/weight) and **Arnica montana L (2)** (SI 0.01% volume/weight) and inactive ingredients **Mentha arvensis (3)** (mint, 90 weight/weight) and Santalum album (sandalwood, SI 10% weight/weight).»



Kelechi, T.J., Prentice, M. Madiseti, M.- Brunette, G. & Mueller, M. (2017). Palliative Care in the Management of Pain, Odor, and Exudate in Chronic Wounds at the End of Life. *Journal of Hospice & Palliative Nursing*, 19(1). 17-25.

Sinn oder Unsinn – Wundgeruch/Exsudat

20 Patienten mit einem exulzierenden Mammaca

Participant ID	WBC (/μl)	Bacterial Species	PUT	CAD (pmol/mg protein)	SPD	SPM
No MAD						
04	4,500		1.6	N.D.	N.D.	152.0
06	3,000		138.0	N.D.	N.D.	38.6
07	6,300	<i>Pseudomonas spp.</i> (2+), gram-positive rods (1+)	63.1	N.D.	2.9	4.5
11	1,800		Insufficient sample			
14	2,800	<i>Pseudomonas aeruginosa</i> (3+), methicillin-sensitive <i>Staphylococcus aureus</i> (3+), anaerobic bacteria (–)	N.D.	N.D.	N.D.	6.3
20	10,300	<i>S. aureus</i> (2+), coagulase-negative staphylococci (1+)	N.D.	N.D.	N.D.	13.0
MAD						
01	1,500		199.7	885.4	N.D.	13.6
02	7,900	<i>Morganella morganii</i> (3+), <i>Enterococcus faecalis</i> (3+), <i>S. aureus</i> (1+), anaerobic bacteria (–)	7,467.0	14,201.0	26.8	N.D.
03	2,000	<i>P. aeruginosa</i> (3+), <i>E. faecalis</i> (3+), anaerobic bacteria (–)	267.0	477.0	N.D.	N.D.
08	6,800	<i>S. aureus</i> (3+), anaerobic bacteria (–)	28.8	N.D.	N.D.	3.3
09	2,700	<i>β-hemolytic streptococci</i> (3+), anaerobic gram-negative rods (3+), <i>Pasteurella multocida</i> (2+), <i>Enterobacteria</i> (1+)	6,208.4	18,382.6	32.7	112.8
12	5,200		Insufficient sample			
13	12,800	<i>Proteus mirabilis</i> (2+), <i>Klebsiella spp.</i> (1+), <i>E. faecalis</i> (1+)	3,408.0	3,208.0	10.0	N.D.
15	5,700	<i>Staphylococcus aureus</i> (2+)	442.0	2,102.0	10.5	33.9
16	6,700		276.0	N.D.	11.2	68.4
18		<i>P. aeruginosa</i> (3+), anaerobic bacteria (–)	Insufficient sample			
19	3,100		Insufficient sample			
24	4,300	<i>E. faecalis</i> (2+), anaerobic bacteria (–)	Insufficient sample			
26	7,100	<i>P. aeruginosa</i> (3+), <i>Bacteroides fragilis group</i> (3+)	41,066.8	57,285.0	130.9	253.0
27	6,500		Insufficient sample			

Sinn oder Unsinn - Wundgeruch

clinic

Common problems in wound care: malodorous wounds

William Haughton, Trudie Young

Malodour is a problem for patients with various types of wounds. The problem has a physical and psychological component. Accurate assessment of the cause will facilitate treatment with wound management products that are designed to alleviate the odour.

William Haughton is Clinical Nurse Specialist—Tissue Viability, Wirral Hospital NHS Trust, Wirral, Merseyside, and Trudie Young is Lecturer in Nursing Studies—Tissue Viability, Department of Post Registration Studies, School of Nursing and Midwifery Studies, Glan Clwyd Hospital, Boddeleyddan, Rhyl, Clwyd. Series Editor: Carol Dealey, Specialist in Tissue Viability, Queen Elizabeth Hospital and Community Hospitals Division

Malodorous wounds pose one of the most challenging problems for nurses in the hospital and community setting. For patients, the effect of living with a foul-smelling, discharging wound is devastating.

Most people's body image is affected by something as small as a blemish on their face, yet we expect patients to live normally with the continual presence of a putrid odour around their person. This is unacceptable; the nurse has to use his/her skill in wound assessment and knowledge of wound management products to assist the patient in coping with the pervading legacy of a malodorous wound.

Malodours that are emitted from wounds are derived from diamines such as putrescine and cadaverine. With increasing age most people experience an average loss in olfactory ability of 20%. People also become accustomed to odours, but unfortunately this does not include the odour produced by putrescine and cadaverine (Van Toller, 1994).

All wounds produce an odour. Healthy wounds have:

"...a faint but not unpleasant odour akin to fresh blood" (Cutting and Harding, 1994).

The key to successful management of the odour is therefore accurate wound assessment.

Malodorous wounds are not confined to a certain type of wound. Pressure sores, leg ulcers, surgical wounds and fungating wounds can all produce an offensive odour.

The type of tissue present within the wound is often the cause of the odour. The main culprit is slough (Figure 1), which according to Thomas (1990):

"...may be composed of necrotic tissue or a mixture of fibrin and pus."

This is essentially dead tissue and the smell it produces can be equated to the smell of rotting flesh, e.g. when a piece of meat is left to decompose in the sun. The meat would be discarded from our homes; the patient with a malodorous wound can also feel discarded and socially isolated as a result of the smell that his/her wound produces.

The presence of necrotic tissue/slough predisposes the wound to secondary bacterial infection. It provides an ideal medium in which many bacterial species can multiply and thrive. *Bacteroides* and *Clostridium welchii* are anaerobic organisms that produce distinctive acid odours. Aerobic organisms such as *Proteus*, *Klebsiella* and *Pseudomonas* can also produce repulsive odours (Thomas, 1990). Non-haemolytic *Streptococcus* was identified as the cause of a foul smell in a patient's radical vulvectomy wound (Roberts et al, 1992).

The most frequently documented malodorous wound is the fungating wound (Grocott, 1992; Woodhouse, 1992; Fear, 1993; Carville, 1995; Grocott, 1995). Fungating wounds are prime examples of



Figure 1. A sloughy wound.

- Joghurt
- Buttermilch



Sinn oder Unsinn - Wundgeruch - Umgebung

“Wirkstoff”	Wirkung
Aktivkohle Katzenstreu Rasierschaum Aceto Balsamico	Geruchsabsorption
Raumerfrischer	Geruchsabsorption und/oder Maskierung des Geruchs
Ätherische Öle	Maskierung des Geruchs

Sinn oder Unsinn - Exsudat



abnormale
Kapillarenpermeabilität
(hoher
Permeabilitätsfaktor)

- Abgabe von Sekret durch Tumor
- Wirkung von bakteriellen Enzymen (Proteasen)
- Entzündungsprozess → Infektion



Haftung der
Wundverbände auf
dehydriertem Gewebe

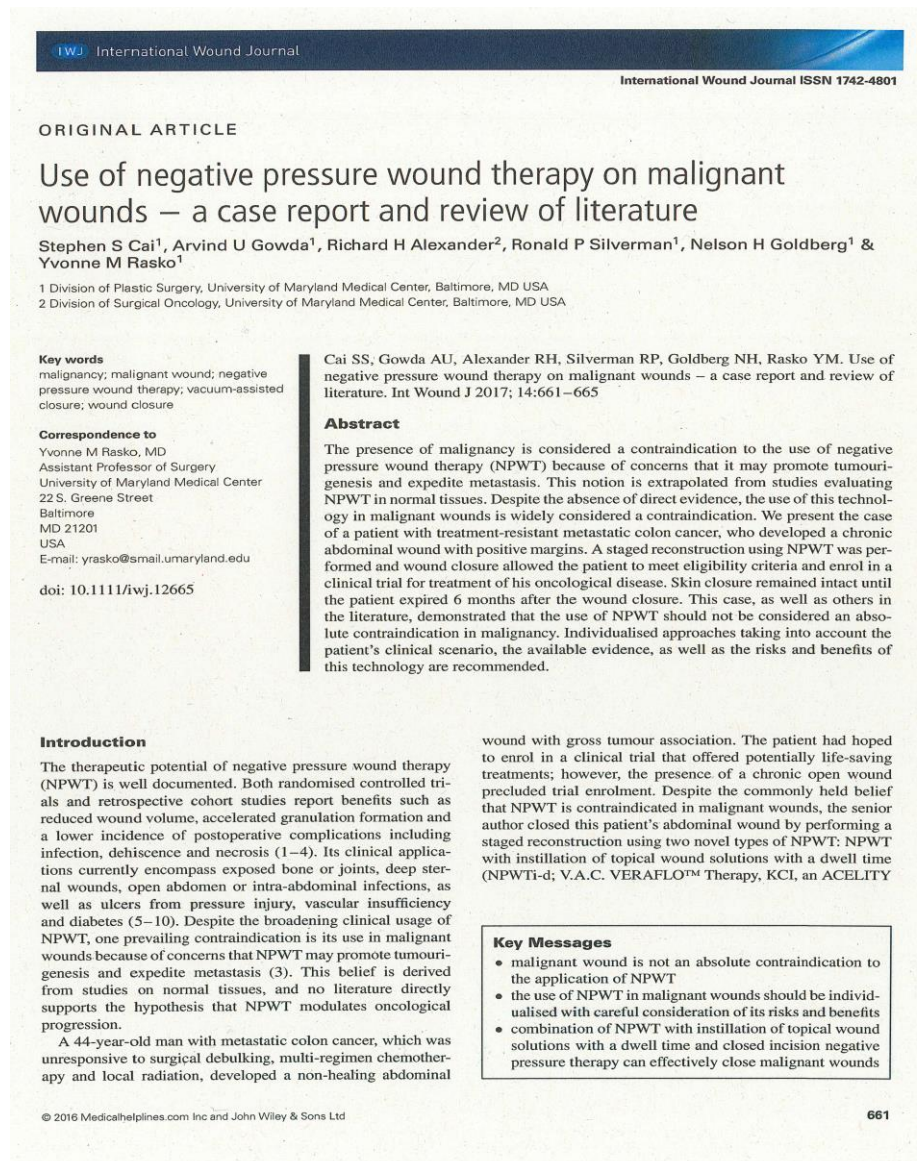
- Auslaufen und Durchdrücken
- Mazeration



Stoma- oder Fistelbeutel

- Alginate und Schaumstoffverbände mit oder ohne Ag+
- Schutz des Wundrandes
- Palliative Situation: ev. Vakuumtherapie (!Neonagiogenese!, Fisteln!)

Sinn oder Unsinn - Exsudat und NPWT



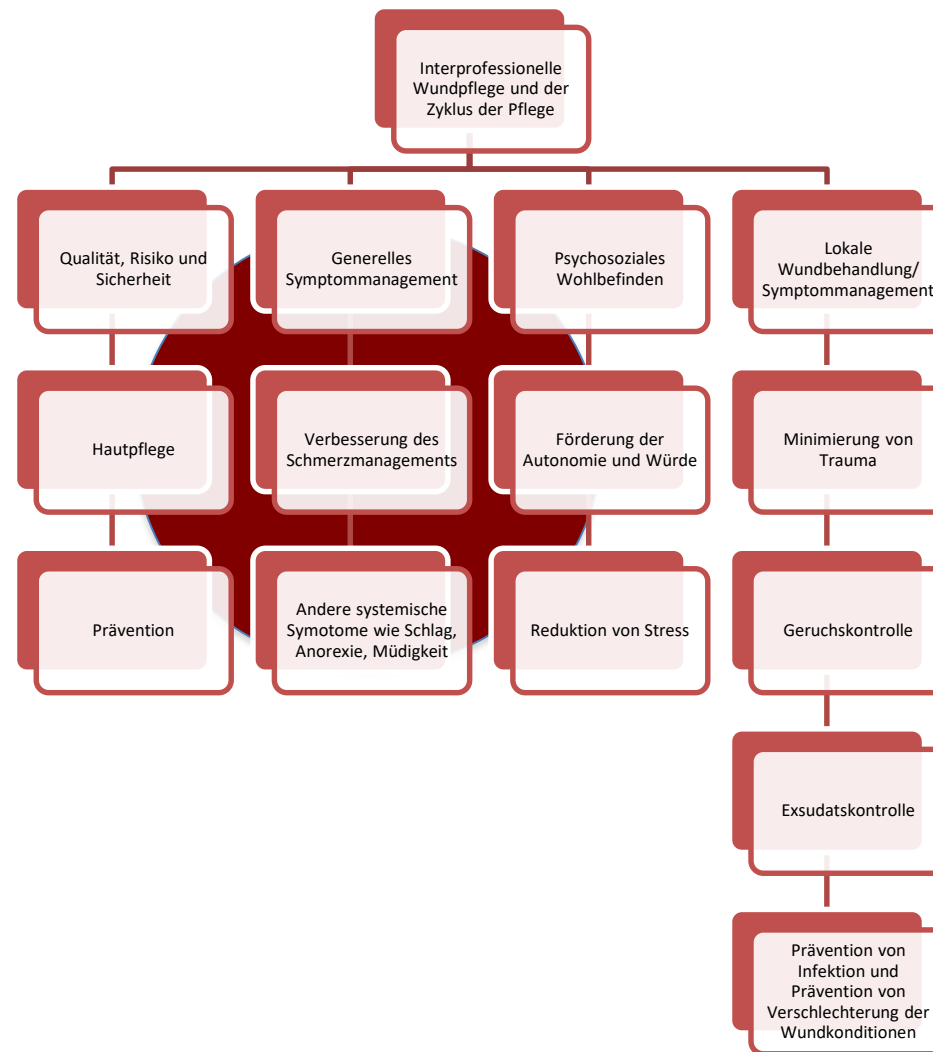
- Case report
- Resultate
 - Keine Kontraindikation
 - Neoangiogenese
 - Individueller Ansatz

Sinn oder Unsinn – Exsudat - Wundrandschutz

Type	Description	Application	Comments
Silicone	Polymers that include silicone together with carbon, hydrogen, oxygen	Apply to peri-wound skin	Allergy is rare: certain types of silicone product are tacky, facilitating dressing adherence to the skin without any adhesive
Zinc oxide/petrolatum Acrylates	Inorganic compounds that are insoluble in water. Film-forming liquid skin preparation to form a protective interface on skin attachment sites.	Apply a generous quantity to skin. Spray or wipe on skin sparingly	May interfere with activity of ionic silver. Allergy is uncommon; facilitates visualization of peri-wound skin
Hydrocolloid or adhesive film dressing	A hydrocolloid wafer consists of a backing with carboxymethylcellulose as the filler, water-absorptive components, such as gelatin and pectin (commercial gelatin desserts), and an adhesive.	Window frame the wound margin to prevent recurrent stripping of skin	Allergies have been reported from some colophony-related adhesives (Pentylin H) associated with some hydrocolloid dressings.



Schlüsselkomponenten für die interprofessionelle Wundbehandlung



Sinn oder Unsinn - Schmerz



Schlüsselfrage:
Welche Rezeptoren
sind involviert?



oberflächlich und
stechender Schmerz



Druck des Tumors,
Exposition der
Dermis,
Schwellungen,
Infektionen,
unsachgemässer
Verbandswechsel

Sinn oder Unsinn - Schmerz

European Journal of Oncology Nursing 24 (2016) 8–12

Contents lists available at ScienceDirect

ELSEVIER

European Journal of Oncology Nursing

journal homepage: www.elsevier.com/locate/ejon

The relationship between malignant wound status and pain in breast cancer patients

Naoy Tamai^a, Yuko Mugita^a, Mari Ikeda^b, Hiromi Sanada^{a,*}

^a Department of Gerontological Nursing/Wound Care Management, Division of Health Sciences and Nursing, Graduate School of Medicine, The University of Tokyo, 113-0033, 7-3-1 Hongo, Bunkyo-ku, Tokyo, Japan

^b Department of Nursing Administration and Advanced Clinical Nursing, Division of Health Sciences and Nursing, Graduate School of Medicine, The University of Tokyo, 113-0033, 7-3-1 Hongo, Bunkyo-ku, Tokyo, Japan

ARTICLE INFO

Article history:
Received 10 August 2015
Received in revised form 15 May 2016
Accepted 23 May 2016

Keywords:
Exudate
Granulation tissue
Malignant fungating wound
Short-form McGill pain questionnaire
Wound care

ABSTRACT

Purpose: Skin metastasis is one of the most frequent metastases in breast cancer patients. Patients with malignant wounds experience numerous symptoms, including serious wound pain. However, the features of pain related to malignant wounds have not been investigated. Nurses can experience a dilemma when treating these patients due to a lack of knowledge of the pain. The aims of this study were to examine the quality and intensity of malignant wound pain and to determine the association between wound status and pain in the patients with malignant wounds.

Methods: Cross-sectional study was conducted. Participants were recruited from a breast centre based in a general hospital. We collected the patients' demographic and wound management data and assessed wound condition. Patients evaluated wound pain intensity and quality over the preceding week using the short-form McGill Pain Questionnaire (SF-MPQ). The association between SF-MPQ results, wound condition, and the time interval for wound care was evaluated using the Spearman's correlation coefficient. The protocol was approved by the Ethical Committee of the each facilities.

Results: The median age of the 22 enrolled patients was 61.5 years, and the median time after diagnosis of malignant wound was 15.5 months. Overall, 77.3% of patients complained of pain. Malignant wound pain significantly correlated with the degradation of wound edges, granulation tissue, and the time interval for wound care.

Conclusion: We consider that it is necessary to provide pain-control care focused on the wound edge and granulation tissue of malignant wounds through the assessment of malignant wound pain and condition.

© 2016 Published by Elsevier Ltd.

1. Introduction

Breast cancer incidence increases annually worldwide, and it is a primary cancer among women (Ito et al., 2009). Breast cancer may metastasise to the lung, liver, bone, brain, and skin, with especially high rates of metastasis to skin sites (Elder et al., 2006). These skin metastases are called malignant wounds. Malignant wounds can be caused by direct invasion of the skin by cancer or by metastasis to the skin. These wounds have both ulcerative or fungating features. Patients with malignant wounds can develop numerous symptoms, including pain, exudate, infection, odour, and bleeding, which cause psychological distress (Gibson and Green, 2013; Maida et al., 2009; Merz et al., 2001; Naylor, 2002; Probst et al., 2009; Schulz et al., 2002). Therefore, comprehensive palliative care to control these symptoms is needed for patients with malignant wounds, from treatment, follow-up care, and end-of-life care.

Probst et al. reported that 50% of patients with malignant wounds needed to manage their pain. The causes of pain in breast cancer patients with malignant wounds were assumed to be the progression of cancer, infection, and peri-wound dermatitis caused by wound exudate. However, the features of pain related to malignant wounds in breast cancer patients have not been investigated. Nurses can experience a dilemma when treating these patients due to a lack of knowledge of the pain, thereby potentially providing insufficient management of wounds. Recently, a short form of the McGill Pain Questionnaire (SF-MPQ) has been used to evaluate various types of pain. A Japanese version of the SF-MPQ is available (Yamaguchi et al., 2007). It is a self-report questionnaire

* Corresponding author.
E-mail address: hsanada-ky@umin.ac.jp (H. Sanada).

<http://dx.doi.org/10.1016/j.ejon.2016.05.004>
1462-3889/© 2016 Published by Elsevier Ltd.

- Cross sectional study
– 22 Patienten
- 77.3% der Patienten
leiden unter Schmerz
- Häufigster Ort:
Wundrand

Strategie	Ziele
Patientenedukation	Web-basiertes Lernen Face-to-Face: Beratung
Pharmakologisch	Topisch: Morphin*, Lokalanästhetika, Ibuprofen (Wundverband) Systemisch: Nozizeptiver Schmerz: NSAR, Opioide,.... Neuropathischer Schmerz: Serotonin-Wiederaufnahme Hemmer (Bsp: Duloxetin (Cymbalta), Antikonvulsiva (Bsp. Benzodiazepine, ecc).
Lokale Wundbehandlung	Atraumatische Oberfläche (wie Silikon) Entfernen von Bakterien Wundrandschutz Behandlung von Infektion
Physikalische Therapie	Heiss oder kalt, Massagen,, Lagerung,...
Energietherapie	Qi gong, Reiki, healing touch
Angstreduktion	Edukation, Musiktherapie,...
Kognitive-Therapie	Problembasierte Fähigkeiten, positives Denken
Therapeutische Allianz	Kommunikationstechniken, Ziele setzten,...
Empowerment	Entscheidungen respektieren, Autonomie respektieren,..

Sinn oder Unsinn - Schmerz

Accepted Manuscript

Topical review

How are topical opioids used to manage painful cutaneous lesions in palliative care? A critical review

Tanya Graham, Patricia Grocott, Sebastian Probst, Steven Wanklyn, Jacqueline Dawson, Georgina Gethin

PII: S0304-3959(13)00322-9

DOI: <http://dx.doi.org/10.1016/j.pain.2013.06.016>

Reference: PAIN 8857

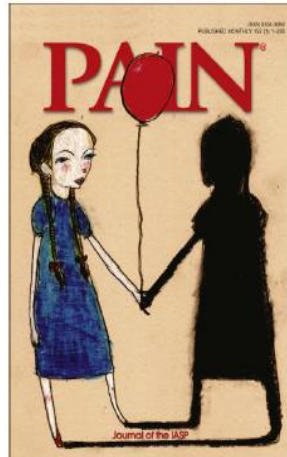
To appear in: *PAIN*

Received Date: 12 March 2013

Revised Date: 10 June 2013

Accepted Date: 11 June 2013

Please cite this article as: T. Graham, P. Grocott, S. Probst, S. Wanklyn, J. Dawson, G. Gethin, How are topical opioids used to manage painful cutaneous lesions in palliative care? A critical review, *PAIN* (2013), doi: <http://dx.doi.org/10.1016/j.pain.2013.06.016>



Die Ergebnisse zeigen, dass die Absorption von topisch applizierten Opiaten sicher und bedenkenlos ist, da die Dosis klein ist. In der Literatur werden Dosen von 1.6mg bis 15mg in verschiedenen Konzentrationen angegeben.

Die am häufigsten verwendete Konzentration ist diejenige von **10mg Morphin in 8g Hydrogel**

Graham T, Grocott P, Probst S, Wanklyn S, Dawson J, Gethin G. How are topical opioids used to manage painful cutaneous lesions in palliative care? A critical review. *Pain*. 2013;154(10):1920-8.

Sinn oder Unsinn - Schmerz

732 *Journal of Pain and Symptom Management*

Vol. 54 No. 5 November 2017

Clinical Note

Topical Medical Cannabis: A New Treatment for Wound Pain—Three Cases of Pyoderma Gangrenosum



Vincent Maida, MD, MSc, BSc, and Jason Corban, MD, CM, Hon BSc
University of Toronto (V.M.), Toronto; William Osler Health System (V.M.), Toronto; McMaster University (V.M.), Hamilton; and
Department of Family & Community Medicine (J.C.), University of Toronto, Toronto, Ontario, Canada

Abstract

Pain associated with integumentary wounds is highly prevalent, yet it remains an area of significant unmet need within health care. Currently, systemically administered opioids are the mainstay of treatment. However, recent publications are casting opioids in a negative light given their high side effect profile, inhibition of wound healing, and association with accidental overdose, incidents that are frequently fatal. Thus, novel analgesic strategies for wound-related pain need to be investigated. The ideal methods of pain relief for wound patients are modalities that are topical, lack systemic side effects, noninvasive, self-administered, and display rapid onset of analgesia. Extracts derived from the cannabis plant have been applied to wounds for thousands of years. The discovery of the human endocannabinoid system and its dominant presence throughout the integumentary system provides a valid and logical scientific platform to consider the use of topical cannabinoids for wounds. We are reporting a prospective case series of three patients with pyoderma gangrenosum that were treated with topical medical cannabis compounded in nongenetically modified organic sunflower oil. Clinically significant analgesia that was associated with reduced opioid utilization was noted in all three cases. *Topical medical cannabis has the potential to improve pain management in patients suffering from wounds of all classes.* *J Pain Symptom Manage* 2017;54:732–736. © 2017 American Academy of Hospice and Palliative Medicine. Published by Elsevier Inc. All rights reserved.

Key Words

Topical medical cannabis, pyoderma gangrenosum, wound-related pain, volitional incident pain, opioid-sparing analgesia, endocannabinoid system, THC, CBD, medical cannabis oil

Introduction

Patients with wounds experience background (baseline) pain and breakthrough pain.^{1,2} Wound-related breakthrough pain includes both volitional incident pain (procedural pain) and nonvolitional incident pain.^{1–4} Systemically administered opioids are the commonest treatment for moderate-to-severe wound-related pain.^{1,2} A wide range of topically applied agents have been studied in the wound setting including opioids (morphine, diamorphine, and methadone), ketamine, capsaicin, lidocaine, and ibuprofen.^{1,2} Morphine compounded in hydrogels is the most studied wound-related topical analgesic modality with eight randomized controlled studies published.^{5–7} Although it is theorized that topical opioids exert analgesia by interacting with peripherally

situated opioid receptors, a degree of systemic absorption has been demonstrated, suggesting that some of the observed analgesia may be on a central basis.⁷ However, the efficacy of topical morphine remains questionable as only three of the eight randomized controlled studies demonstrate analgesic efficacy.^{5–7} In those studies where significant analgesia was observed, it was generally noted to have occurred within 60 minutes of its topical application.^{6,7} Thus, topical morphine does not appear to be appropriate to deal with wound-related breakthrough pain. Opioid-induced inhibition of wound healing is an additional emerging concern as this has been reported with topical morphine in some animal models and one human study involving corneal lesions.⁷ Furthermore, a recent longitudinal observational study of 450 patients with chronic wounds has

Address correspondence to: Vincent Maida, MD, MSc, BSc, William Osler Health System, Toronto, 101 Humber College Boulevard, Toronto, Ontario, Canada M9V 1R8. E-mail: vincent.maida@utoronto.ca

Accepted for publication: June 1, 2017.

© 2017 American Academy of Hospice and Palliative Medicine. Published by Elsevier Inc. All rights reserved.

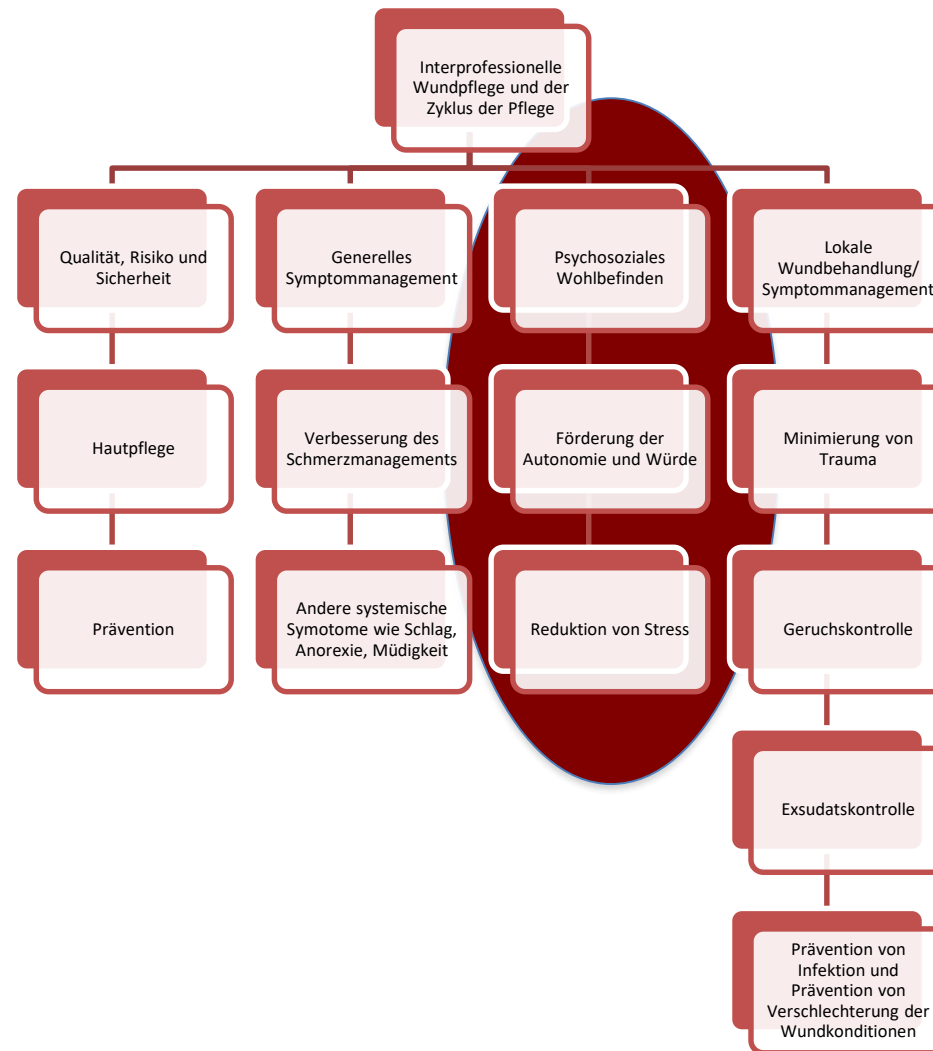
0885-3924/\$ - see front matter
<http://dx.doi.org/10.1016/j.jpainsymman.2017.06.005>

- **0.5-1.0 ml Cannabis-Öl** (THC (delta-9-etrahydrocannabinol) 7mg/ml et CBD (Cannabinol) 9mg/ml)
- **2x pro Tag auf die Wunde**
- **Mit einem nicht adhäsiven Wundverband abdecken**

Sinn oder Unsinn - Schmerz



Schlüsselkomponenten für die interprofessionelle Wundbehandlung



Sinn oder Unsinn - Psychosoziales Wohlbefinden

- Das Leben mit einer palliativen Wunde verändert das Leben der Patienten komplett.
- Maligne Wunde: Sobald der Krebs sichtbar wird, stehen die Patienten unter starker Belastung.
- Die wundbezogenen Probleme sind oft unkontrollierbar und unberechenbar, da sie zu jeder Zeit während des Tages oder der Nacht auftreten können.

Probst, S., Arber, A., Faithful, S. (2013). Malignant fungating wounds—the meaning of living in an unbounded body. *Eur J Oncol Nurs*.17: 38–45.

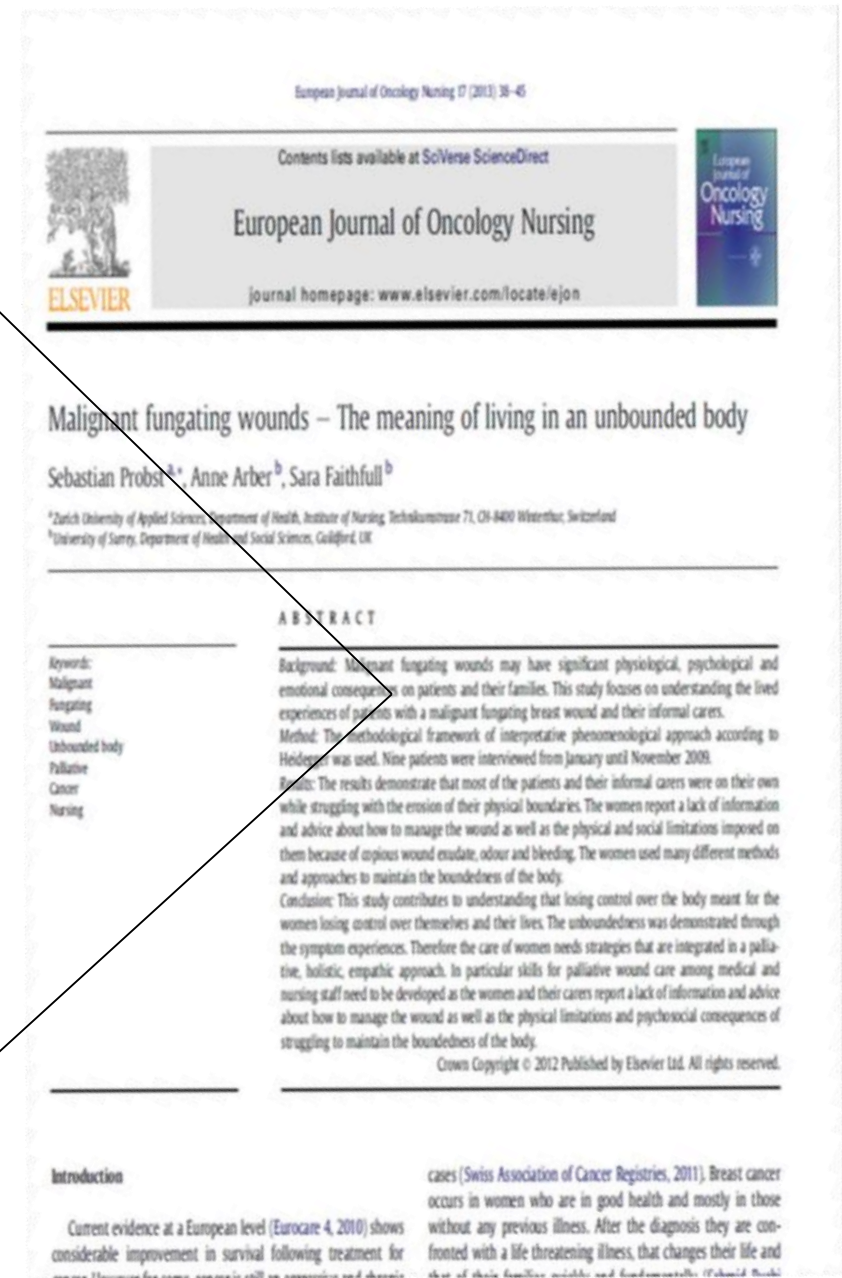
Probst, S., Arber, A., Faithful, S. Coping with an exulcerated breast carcinoma: an interpretative phenomenological study. *J Wound Care*. 2013; 22(7):352-4, 356-8, 360.

Probst, S., Arber, A., Trojan, A., Faithfull, S. (2012). Caring for a loved one with a malignant fungating wound. *Support Care Cancer*. 20: 3065–3070.

Sinn oder Unsinn - Psychosoziales Wohlbefinden

Das Leben mit einer malignen Wunde und der Umgang mit dem veränderten Körperbild als schwierig.

Die wundbezogenen Probleme, wie das auslaufende Exsudat, der Wundgeruch, die Wundschmerzen, die Blutungen und der Juckreiz sowohl als eine physische als auch als eine psychische Herausforderung erlebten.



Sinn oder Unsinn - Psychosoziales Wohlbefinden

- Schmerz hat grosse Auswirkungen auf die Lebensqualität.
- Hoffnung:
 - dass Arzt etwas gegen die Schmerzen verschreiben kann
 - dass ein rezeptfreies Schmerzmittel aus der Apotheke bezogen werden kann (meist in einem anderen Ort)
 - →ABER haben Angst, zu viele Schmerzmittel einzunehmen und davon abhängig werden.
 - → Schmerzmittel werden entweder unregelmässig eingenommen oder das Rezept wird nie eingelöst

Probst, S., Arber, A., Faithful, S. (2013). Malignant fungating wounds—the meaning of living in an unbounded body. *Eur J Oncol Nurs*.17: 38–45.

Probst, S., Arber, A., Faithful, S. Coping with an exulcerated breast carcinoma: an interpretative phenomenological study. *J Wound Care*. 2013; 22(7):352-4, 356-8, 360.

Probst, S., Arber, A., Trojan, A., Faithfull, S. (2012). Caring for a loved one with a malignant fungating wound. *Support Care Cancer*. 20: 3065–3070.

Sinn oder Unsinn - Psychosoziales Wohlbefinden

research

Coping with an exulcerated breast carcinoma: an interpretative phenomenological study

- **Objective:** To explore how women living at home with a malignant fungating wound (MFW) cope with such wounds.
- **Method:** To explore coping through the lived experiences of patients a methodological framework using Heideggerian hermeneutic phenomenology and semi-structured interviews was used. Nine patients were interviewed from January until November 2009.
- **Results:** The results are divided into two categories: 'living with a MFW' and 'feeling different'. These categories demonstrate how it is to live with the unpredictability and uncontrollability of a MFW due to symptoms such as malodour, bleeding, exudate, pain and itching. The loss of control of the body boundary due to uncontrollable symptoms led to significant levels of distress and suffering for the patients. Different coping strategies were used to live with this wound.
- **Conclusion:** This study demonstrates how difficult it is to live and cope with a malignant fungating wound. Hiding and denying or going into isolation were the used coping strategies. Strategies that are integrated in a palliative, holistic, empathic approach is needed if taking care of a patient with a MFW.
- **Declaration of interest:** There were no external sources of funding for this study. The authors have no additional conflicts of interest to declare.

malignant fungating wound; coping; experiences; palliative wound care

Malignant fungating wounds (MFW) occur through locally-advanced, metastatic or recurrent cancer that infiltrates the skin and disrupts its integrity. Around 7% of patients with cancer develop such wounds, with the breast being the most frequently affected site;¹ however, with increasing life expectancy of patients with advanced cancer, there may be an increase of those suffering from this condition.²

The average life expectancy for people with a MFW is around 6-12 months,³ so this is a palliative situation. Closure of MFWs requires the malignant cells to be treated by cancer therapy. Providing care for patients with a MFW is challenging, as coping with

the issues that create shame and embarrassment are the unpleasant odour from the wound, which is one of the worst aspects for patients, as well as concerns about leakage of exudate, pain and other fears related to being diagnosed with advanced cancer.^{5,6}

Wound-related stigma was a significant finding in one study,² whereby patients felt socially isolated because of the wound exudate and odour, which led them to lose self-confidence; some kept the wound a secret from family members, to avoid losing face. The number and burden of symptoms experienced by those with a MFW is linked to a poorer quality of life.⁹ Among the issues contributing to a poorer quality of life were the experience of pain, malodour, psychological issues and age.

S. Probst,¹ DClinPrac,
RN, Lecturer;

A. Arber,² PhD, RN,
Lecturer;

S. Faithfull,² PhD, RN,
Lecturer;

¹ Department of Health,
Zurich University of
Applied Sciences,
Winterthur, Switzerland;
² Department of Health
and Social Sciences,
University of Surrey,
Guildford, UK.
Email: sebastian.probst@
zhaw.ch

„Ja, manchmal bin ich fast wegen der schrecklichen Schmerzen die Wände hoch. Ja, es war wirklich furchtbar. Ich weinte oft. Ich nahm alle möglichen rezeptfreien Pillen, aber keine davon linderte die Schmerzen. Das Einzige, was ich tun konnte, war abzuwarten bis sie wieder vergingen. Wenn Sie zum Arzt gehen, dann bekommen Sie nämlich nur Schmerzmittel, von denen Sie abhängig werden. Und dies will ich nicht.“

Probst, S., Arber, A., Faithful, S. Coping with an exulcerated breast carcinoma: an interpretative phenomenological study. *J Wound Care*. 2013; 22(7):352-4, 356-8, 360.

Sinn oder Unsinn - Psychosoziales Wohlbefinden

- Wundgeruch verursacht viel Leid.
- Beschreibung von Patienten wie sie die Wunde riechen konnten
 - Faulender Geruch → «ich verwese»
 - Unternehmen alles Mögliche, um diesen Geruch zu bekämpfen → ist schwierig den Wundgeruch zu

Probst, S., Arber, A., Faithful, S. (2013). Malignant fungating wounds—the meaning of living in an unbounded body. *Eur J Oncol Nurs*.17: 38–45.

Probst, S., Arber, A., Faithful, S. Coping with an exulcerated breast carcinoma: an interpretative phenomenological study. *J Wound Care*. 2013; 22(7):352-4, 356-8, 360.

Probst, S., Arber, A., Trojan, A., Faithfull, S. (2012). Caring for a loved one with a malignant fungating wound. *Support Care Cancer*. 20: 3065–3070.

Sinn oder Unsinn - Psychosoziales Wohlbefinden

- Blutungen schränken das tägliche Leben ein
- Blutungen bringen Patienten oft zur Verzweiflung



Sinn oder Unsinn - Psychosoziales Wohlbefinden

- Auslaufendes Wundexsudat = Kontrolle über den eigenen Körper verlieren
- Die Unsicherheit, ob der Verband aufgrund des ständigen Nässens richtig angewandt wird
- Befürchtung, dass das auslaufende Exsudat von aussen sichtbar ist → emotionales Wohlbefinden

Probst, S., Arber, A., Faithful, S. (2013). Malignant fungating wounds—the meaning of living in an unbounded body. *Eur J Oncol Nurs*.17: 38–45.

Probst, S., Arber, A., Faithful, S. Coping with an exulcerated breast carcinoma: an interpretative phenomenological study. *J Wound Care*. 2013; 22(7):352-4, 356-8, 360.

Probst, S., Arber, A., Trojan, A., Faithfull, S. (2012). Caring for a loved one with a malignant fungating wound. *Support Care Cancer*. 20: 3065–3070.

Sinn oder Unsinn - Psychosoziales Wohlbefinden

- Die Anwendung von CAM ist für viele Patienten eine positive Strategie, um die Wunde und somit ihr Leben unter Kontrolle zu bekommen.



Probst, S., Arber, A., Faithful, S. (2013). Malignant fungating wounds—the meaning of living in an unbounded body. *Eur J Oncol Nurs*.17: 38–45.

Probst, S., Arber, A., Faithful, S. Coping with an exulcerated breast carcinoma: an interpretative phenomenological study. *J Wound Care*. 2013; 22(7):352-4, 356-8, 360.

Probst, S., Arber, A., Trojan, A., Faithfull, S. (2012). Caring for a loved one with a malignant fungating wound. *Support Care Cancer*. 20: 3065–3070.

Schlussfolgerungen

- Es sollte ein palliativ, ganzheitlicher, empathischer Ansatz gewählt werden.
- Die Wundsymptome (Wundgeruch, Exsudat, Blutung, Schmerzen und Juckreiz), sollten wirksam behandelt werden, indem angemessene Wundverbände gewählt werden.
- Es ist für alle Betroffenen schwierig ist mit einer palliativen Wunde zu leben.
- Das Ziel der Behandlung von Patienten und deren Angehörige mit diesen Wunden ist eine gute Lebensqualität zu ermöglichen.

Schlussfolgerungen

- Was bedeutet dies für das Gesundheitspersonal
 - Fähigkeiten eine palliative Wunde zu beurteilen,
 - Umgang und Kommunikation von sensible Themen (Patient/Familie/interdisziplinäres Team)
 - Verstehen von psychologische Auswirkungen
 - Verstehen von Konsequenzen für die Familie
 - Gute Kenntnis über Kontrolle wundbezogenen Symptome

Pflege und Behandlung der malignen Wunde

Konzept und Leitfaden für die Praxis



<https://www.onkologiepflege.ch/fachwissen/fachmaterial/aktuelles-fachmaterial/>

Referenzen

- Cai, S.S., Gowda, A. U., Alexander, R.H., Silverman, R.P., Goldberg, N.H. & Rasko, Y.M. (2016). Use of negative pressure wound therapy on malignant wounds - a case report and review of literature. *International Wound Journal*. 14, 661-665.
- Chrisman CA. (2010). Care of chronic wounds in palliative care and end-of-life patients. *International wound journal*.;7(4), 214-35.
- Gethin, G., McIntosh, C., Probst, S. (2016). Complementary and Alternative Therapies for Management of Odor in Malignant Fungating Wounds: A Critical Review. *Chronic Wound Care Management and Research*, 3, 1-7.
- Gethin, G., Grocott, P., Probst, S., & Clarke, E. (2014). Current practice in the management of wound odour: An international survey. *Int J Nurs Stud*, 51(6), 865–874.
- Graham T, Grocott P, Probst S, Wanklyn S, Dawson J, Gethin G. (2013). How are topical opioids used to manage painful cutaneous lesions in palliative care? A critical review. *Pain*.154(10), 1920-8.
- Grocott, P. (2007). Care of patients with fungating malignant wounds. *Nurs Stand*, 21 (24), 57–62.
- Kelechi, T.J., Prentice, M. Madisetti, M.- Brunette, G. & Mueller, M. (2017). Palliative Care in the Management of Pain, Odor, and Exudate in Chronic Wounds at the End of Life. *Journal of Hospice & Palliative Nursing*, 19(1). 17-25.
- Lo, S.F., Hayter, M., Hu, W.Y. et al. (2012). Symptom burden and quality of life in patients with malignant fungating wounds. *J Adv Nurs.*, 68. 1312–1321.

Referenzen

- Lund-Nielsen, B., Muller, K., Adamsen, L. (2005). Qualitative and quantitative evaluation of a new regimen for malignant wounds in women with advanced breast cancer. *J Wound Care*. 14, 69–73.
- Maida, V., Corban, J. (2017). Topical Medical Cannabis: A New Treatment for Wound Pain-Three Cases of Pyoderma Gangrenosum, *Journal of Pain and Symptom Management*, 54 (5). 732-736.
- Probst, S., Grocott, P. Graham, T. Gethin, G. (2015). Recommendation for the care of patients with malignant fungating wounds European Oncology Nursing Society (EONS), London.
- Probst S. (2015). Wounds with exudate and odour. *British Journal of Nursing*. 24 (6), S22.
- Probst, S. (2014). Vom Ekel bis zum Würgereflex. *Pflegezeitschrift*, 6, 356-3.
- Probst, S., Arber, A., Faithful, S. (2013). Malignant fungating wounds—the meaning of living in an unbounded body. *Eur J Oncol Nurs*.17, 38–45.
- Probst, S., Arber, A., Faithful, S. (2013). Coping with an exulcerated breast carcinoma: an interpretative phenomenological study. *J Wound Care.*; 22(7), 352-4, 356-8, 360.
- Probst, S., Arber, A., Trojan, A., Faithfull, S. (2012). Caring for a loved one with a malignant fungating wound. *Support Care Cancer*. 20, 3065–3070.
- Probst, S., Arber, A., & Faithfull, S. (2009). Malignant fungating wounds – A survey of nurses’ clinical practice in Switzerland. *Eur J Oncol Nurs*, 13(4), 295-298.
- Ramasubbu, DA, Smith, V., Hayden, F. et Cronin, P. (2017). Systematic antibiotics for treating malignant wounds. *Cochrane Database of Systematic Reviews*. 8. CD011609.
- Tamai, N., Mugita, Y., Ikeda, M. & Sanda, H. (2016). The relationship between malignant wound status and pain in the breast. *European Journal of Oncology Nursing*. 24, 8-12.
- Tamai, N. et al. (2016). Association Between Components of Exudates and Periwound Moisture-Associated Dermatitis in Breast Cancer Patients With Malignant Fungating Wounds. *Biological Research for Nursing*. 18(2). 199-206.
- Villela-Castro, D.L., Santos, V.L.C.G., Woo, K. (2018) Polyhexanide Versus metronidazole for odour management in malignant (fungating) wound. *J Wound Ostomy Continence Nurs*. 2018 Aug 6. doi: 10.1097/WON.0000000000000460.



photo: https://www.google.ch/search?hl=de&site=imghp&tbm=isch&source=hp&biw=1536&bih=770&q=genf&oq=genf&gs_l=img.3..0l10.1455.2283.0.2524.4.4.0.0.0.0.32.101.4.4.0..0.1ac.1.64.img..

Besten Dank für Ihre Aufmerksamkeit

sebastian.probst@hesge.ch