End of Life Care: Current Knowledge and Future Research

Mary R Brennan, RN MBA CWON

Objectives

- Describe potential causes of skin failure
- List two choices of odor management techniques/dressings

End of life

"End-of-life care is the term used to describe the support and medical care given during the time surrounding death. Such care does not happen only in the moments before breathing ceases and the heart stops beating. Older people often live with one or more chronic illnesses and need a lot of care for days, weeks, and even months before death."

https://www.nia.nih.gov/health/what-end-life-care

What does end of life mean to the economics of health care?

- Certain diseases no longer equate with imminent death
- People are living with chronic diseases for longer periods of time
- We are an aging population and bring more co-morbidities to the plan of care and decision making

Societal issues

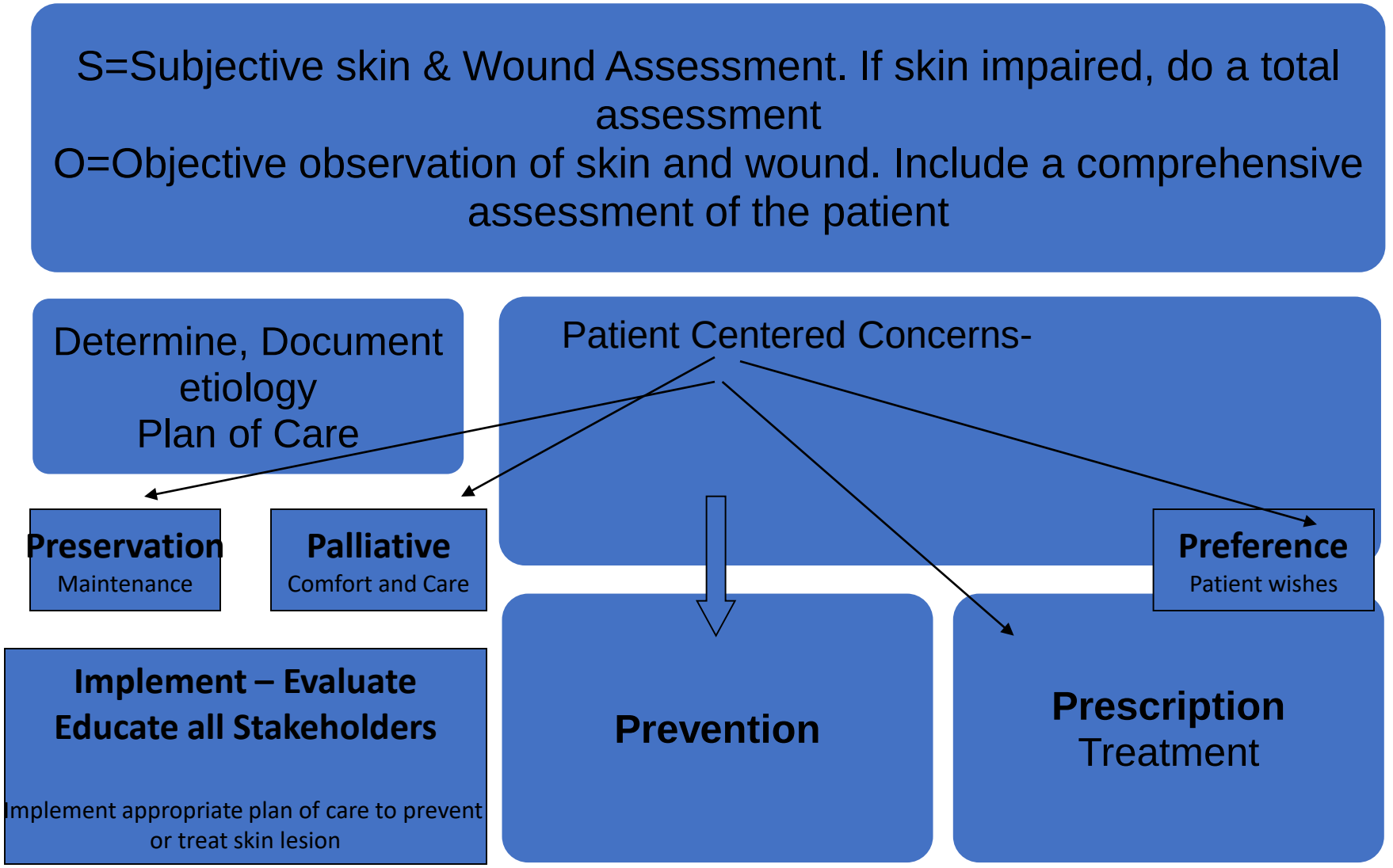
- Treatments involves more pain management, management of related co-morbidities, and/or create more health issues
- An increase in varying ages of patients
- Uneven access to care/treatment/insurance
- Shared decision making involves more participants(more medical specialists and/or more family members) to make complex choices.
- Reimbursement challenges – new therapies
- Working with patients with cancer----the stigma that cancer kills may affect work life/business opportunities/insurance options

Skin Failure

- “An event in which the skin and underlying tissue die due to hypo perfusion that occurs concurrent with severe dysfunction or failure of other organ system.”

Langemo DK, Brown G (2006) Skin fails too: acute, chronic and end stage skin failure. Adv Skin Wound Care 19(4):206-11.

Person at Risk for SCALE



*SCALE, 2009

Research since 2006

Skin Failure

- Multiorgan Failure
- Medications (pressors)
- Hypoperfusion
- Lack of nutritional intake
- Severe Anemia
- Sepsis /septic shock
- Renal failure

Acute Skin Failure

- PAD
- mechanical/ventilation greater than 72 hours
- respiratory failure
- liver failure
- severe sepsis/septic shock

Delmore, Cox et al

Types of wounds seen at the end of life

- Pressure Injury
- Venous
- Arterial
- Malignancy

Pressure Ulcers

- Hansen (1999) noted 62.5% of pressure ulcers occur in the last 2 weeks of life
- Tippert (2012) wound prevalence studies in hospice patient have rates as high as 47% with half being pressure related.

Predictors for development of PU in end of life study

Swedish study of 60,319 patients in a national registry:

- Diabetes
- Post fracture state
- Infections
- Multiple illnesses

Pressure Injury

Define an individualized plan of care

Will need to assess nutritional status to support wound healing

- Able to tolerate food/supplements, food choices to stimulate appetite, hydration

Consider usage of opioids

- May decrease ability/time to healing
- May increase constipation/bowel changes

Resources

- Access to supplies, support surfaces, mobility aids

Pain and symptom management

Paradox occurs with pressure ulcer prevention:

Do you turn every two hours and possibly cause pain and suffering

OR

Not turn and possibly allow a pressure ulcer to form?

Dressing Choices

- Consider pain management prior to dressing changes
- Silicone based dressings/adhesives
- Limit number of dressing changes
- Prep skin before adhesive application
- Consider odor control dressings
- Overall quality of life considerations

Pressure Ulcers/Skin Changes seen at the end of life

- Kennedy Terminal Ulcer
- Trombley Brennan Terminal Tissue Injury

Origin of Kennedy terminal Ulcers

- Karen Lou Kennedy an RN working at a 500 bed skilled nursing facility noted these wounding events on patients near the end of life.
- 1989 -She reported on her data collection amassed over a five year period of time at the first National Pressure Ulcer Advisory Panel meeting.

Characteristics

- It is can be shaped like a pear.
- It is usually on the sacrum.
- It can have the colors of red, yellow and black.
- The borders of the ulcer are usually irregular.
- It has a sudden onset.

www.kennedyterminalulcer.com Accessed March 23, 2011

www.kennedyterminalulcer.com

NSUH Research Work

- Questions were raised in a 10 bed Palliative Care Unit about unusual presentations noted on skin of end of life patients
- No validation of this injury/wound seen in the literature as it did not agree with definition/progression of a KTU
- Public policy concerns with HAPU
- Questioning led to literature search and IRB approved study

Terminal Tissue Injury Study

- A purple maroon discoloration that may appear suddenly on the body of a patient at the end of life
- These skin changes may appear on bony or non-bony prominences
- These injuries will never evolve into full thickness wounds with non viable tissue
- An increase in surface area may be the only change noted.
- No drainage noted
- Linear and mirror images may appear on lower extremities.
- Patient will not experience any discomfort with these skin changes

Initial presentations

Area will increase in surface area over time

TBTTI on lower extremities and trunk

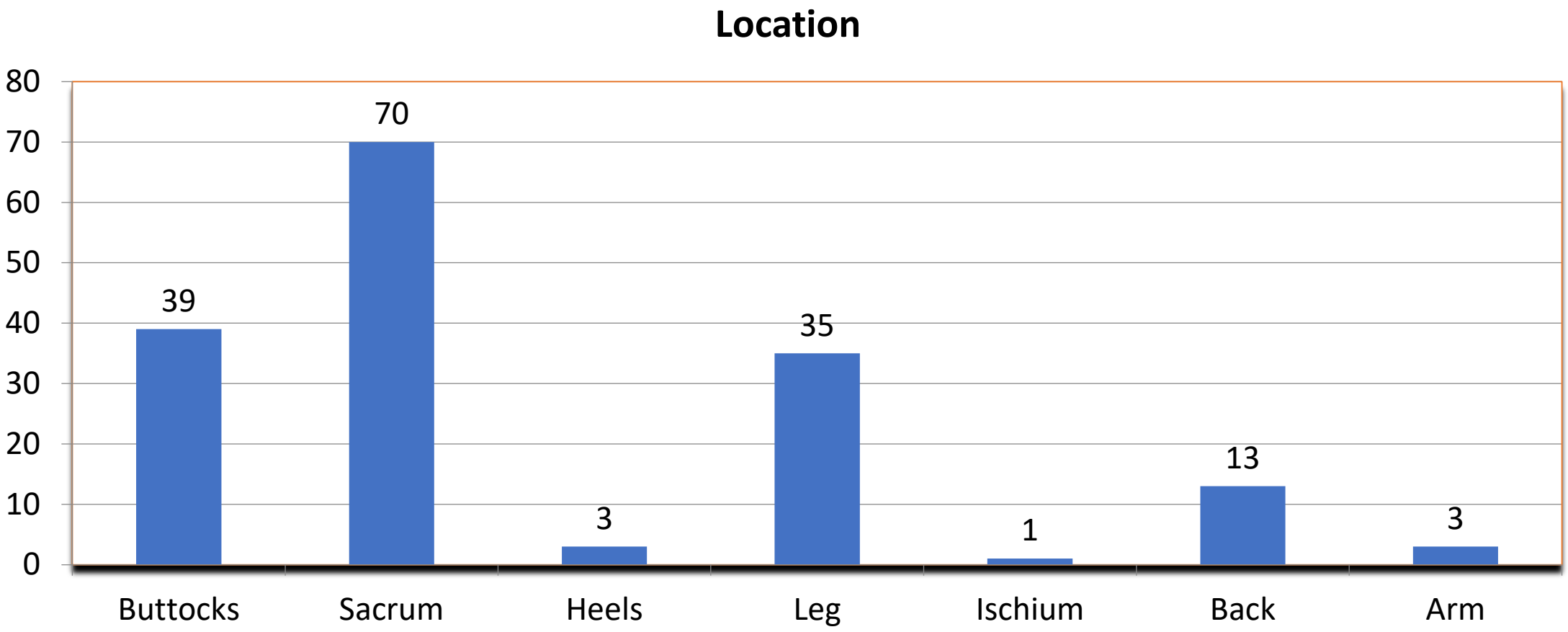
- Expansion would occur in a downward trajectory, particularly with limb lesions

- Lesions occurred in multiple patterns and shapes (no pear-shape areas as described in previous literature observed)

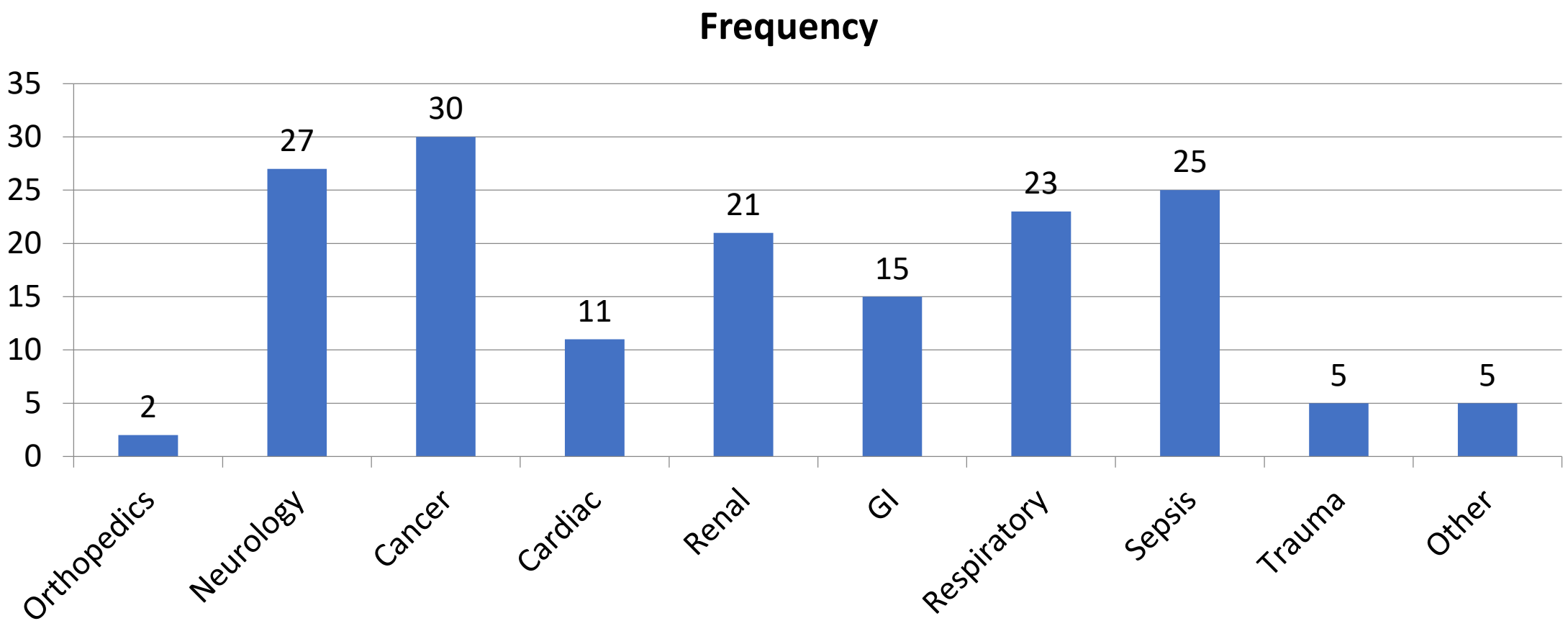
- Shapes included butterfly patterns and linear striations, with variations in color patterns in each

Lower Extremities

Location Results 186 patients



Medical Diagnosis – 186 Patients



1st study Findings

- Patient ages ranged from 35-98
- Development of terminal tissue injuries averaged approximately 55 hours prior to death
- Outliers from 1 hour to 34 days
- Gender differential negligible
- Various co-morbidities

Additional finding and potential impact

- In the original study when blanching was noted at the center of the wound death occurred within 2 hours.
- Goal in continuing studies is to seek validation of presentation and relationship of the skin changes with the time of death
- May be useful as a prognostic indicator of impending death in future work

Malignancies and fungating wound challenges

- Bleeding
- Disfigurements
- Pruritus
- Drainage
- Odor
- Social isolation
- Depression
- Pain

Symptom Management

- Bleeding – hemostatic agents in trials. Consider medications (NSAIDS).
- Pain – individual plan New agents
- Pruritus – determine cause
- Exudate – absorbent dressings, NPWT
- Odor – containment/dressings

New rseearch

Choices in Odor Management


Name
Hospital No.
Date

Odor Management Dressings

Medical grade honey

- Antimicrobial properties and serve as an alternate nutrient source for bacteria (more lactic acid production and less sulfur-containing compounds)

Cadoxmer iodine (Iodosorb) - Reducing bacterial bioburden

Dakin's solution (0.25%) - Odor reducing must limit time usage (2 weeks)

Activated Charcoal products (must be kept dry)

- Highly porous materials allow for large area of absorption

Silver - antimicrobial properties

Hospice – Metronidazole 5 Grams in 1 liter of N/S

- Reducing odor-causing pathogens

Anecdotal findings

- Green tea bags used as a secondary dressing (Yian 2005)
- Aromatherapy with essential oils (lavender and tea tree oil (Mercier and Knevitt 2005)

IRB study RGN 107

- The wound powder formulation is a natural powder extract composed of active ingredients Calendula officinalis L (International System of Units [SI] 0.1% volume/weight) and Arnica montana L (SI 0.01% volume/weight) and inactive ingredients Mentha arvenis (mint, 90 weight/weight) and Santalum album (sandalwood, SI 10% weight/weight).

Ingredients

- Calendula flower is used to prevent muscle spasms, start menstrual periods, and reduce fever. It is also used for treating sore throat and mouth, menstrual cramps, cancer, and stomach and duodenal ulcers.
- Arnica montana, also known as wolf's bane, leopard's bane, mountain tobacco and mountain arnica, is a moderately toxic ethnobotanical European flowering plant in the sunflower family Arnica montana is a natural remedy commonly used for bruising, swelling, inflammation, pain,, sore muscles, arthritis, and other conditions.

Study Design-IRB

- 50 patients enrolled with 45 completed
- 7 hospice agencies and 2 inpatient hospice units
- Aim examine wound care intervention using RGN107 to control wound pain, odor and exudate
- Applied at each dressing change and intended to form a “crust” seal barrier over the wound.

Results

- 45 participants completed study
- 21 participants scoring pain was reduced was statistically significant
- 46 participants significant decrease in odor and exudate
- Effect was consistent for various wounds including pressure and vascular ulcers.
- Well tolerated with no adverse events

Continuing issues

- Pain management choices to allow for less adverse events
- Easier access to care
- More support and referrals to palliative care earlier in disease process
- Reimbursement increases to allow for better equipment (e.g. off-loading products)
- Control of bleeding and odor
- Health care funding

BIBLIOGRAPHY

1. Shanmugam VK, Couch KS, McNish S, Amdur RL. Relationship between opioid treatment and rate of healing in chronic wounds. *Wound Repair Regen*. 2017 Jan;25(1):120-130.
2. Alvarez O, Chamberlain B, Tippett A. 2016. Palliative Wound Care (P12). *Journal of Pain and Symptom Management*, *51*(2), 311-312.
3. IDENTIFYING RESEARCH PRIORITIES TO GUIDE EVIDENCE-BASED PALLIATVE AND END-OF-LIFE CARE BECOMES INCREASINGLY IMPORTANT AS OUR POPULATION AGES. https://www.ninr.nih.gov/sites/files/docs/NINR-Building-Momentum-508.pdf
4. Hanson D, Langemo DK, Olsen B et al (1991) The prevalence and incidence of pressure ulcers in the hospice setting:two methodologies *Am J Hosp Palliat Care* 8(5):44-45
5. Tippert, A. An introduction to palliative chronic wound care. *OWM*. 2012;58(5):6-8.
6. Carlsson ME, Gunningberg L. Predictors for Development of Pressure Ulcer in End-of-Life Care: A National Quality Register Study *Journal of Palliative Medicine*. 2017 Nov;20(1):53-58.
7. Trombley K, Brennan MR, Thomas L, Kline M. Prelude to Death or Practice Failure. *Journal Hospice and Palliative Medicine* 2012;29(7):541-545.
8. Delmore B, Cox J, Rolnitzky L, Chu A, Stolfi A. Differentiating a Pressure Ulcer from Acute Skin Failure in the Adult Critical Care Patient. *Adv Skin Wound Care* 2015 Nov;28(11):514-524.

9. Emmons KR, Dale B, Crouch C. Palliative Wound Care Part 2: Application of Principles. *Home Healthcare Nurse*. 2014:32(4):210-222.
10. Kelechi, T; Prentice, M; Madisetti, M et al. *Palliative Care in the Management of Pain, Odor, and Exudate in Chronic Wounds at the End of Life: A Cohort Study* **.** Journal of Hospice & Palliative Nursing: 2017: 19(1) 17-25
11. Yian, L., Case study on the effectiveness of green tea bags as a secondary dressing to control malodour of fungating breast cancer wounds. *Singapore Nursing Journal*, 2005. **32**(2): p. 42-8.
12. Mercier, D. Knevitt, A. Using topical aromatherapy for the management of fungating wounds in a palliative care unit . *Journal of Wound Care* 2005 14:10, 497-501