History of Wound Care &
Pressure Ulcers:
Past, Present & Future

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NPUAP Mission

The National Pressure Ulcer Advisory Panel (NPUAP) serves as the authoritative voice for improved patient outcomes in pressure ulcer prevention and treatment through public policy, education and research.
International Guideline

NPUAP – in collaboration with the European Pressure Ulcer Advisory Panel (EPUAP) and the Pan Pacific Pressure Injury Alliance (PPPIA) – has worked to develop a NEW pressure ulcer prevention and treatment Clinical Practice Guideline and a companion Quick Reference Guide.

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NPUAP Monograph

Released in November 2012, the 254-page, 24 chapter monograph, Pressure Ulcers: Prevalence, Incidence, and Implications for the Future was authored by 27 experts from NPUAP and invited authorities and edited by NPUAP Alumna Dr. Barbara Pieper.

The monograph focuses on pressure ulcer rates from all clinical settings and populations; rates in special populations; a review of pressure ulcer prevention programs; and a discussion of the state of pressure ulcers in America over the last decade.

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**Faculty Disclosure**

Jeffrey Levine, MD

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Objectives

- Review the history of pressure ulcers and wound care from ancient times to the present
- Review the origin of contemporary controversies and challenges
- Highlight major issues facing today’s practitioners caring for pressure ulcers
- Explain what the experts say about the future of pressure ulcers and wound care

Wound Care in Ancient Egypt

Edwin Smith Papyrus  2600 BC
Wound Care in Ancient Egypt

Imhotep
Egyptian God of Medicine

- Cooling agents to draw out inflammation
- Drying agents
- Raw meat bound to the wound
- Linen bandages
- Honey
- Incantations to the gods

Levine. JAMDA 1: 224–227; 2000
Wound Care in Ancient Egypt

Foreshadowing of palliative care principles:

- Lesion that can be treated and will most likely be cured
- Lesion that can be treated but may not be cured
- Lesion with hopeless prognosis, treatment not offered

Levine. JAMDA 1: 224–227; 2000

Wound Care in Ancient Greece
Hippocrates of Kos
460 BC

DE VULCERIBVS
(On Ulcers)

“The herb which has got the name of lagopyrus, fills up hollow and clean ulcers…”
Achilles healing the wound of Telephos

Philoctetes on the Island of Lemnos
Wound Care and the Ancient Hebrews

Babylonian Talmud

Centuries of oral tradition written in the 5th Century
“An open wound … What is the remedy? — For stopping the bleeding, cress with vinegar; for bringing on [flesh], scraped root of cynodon and the paring of the bramble, or worms from a dunghill.”

“wet for dry, dry for wet”

Avoda Zara 28b

“One who inflicts a wound on his fellow can be liable on account of him for five things - five aspects of the injury:

* for actual damage;
* for pain;
* for healing;
* for loss of employments;
* and for humiliation.”

Baba Kamma 83a

“Where the wound was healed but reopened, healed again but reopened, he would still be under obligation to heal him…”

Wound Care in the Middle Ages

Fasciculus Medicinae of Johannes de Ketham Alemanus 1491
• Uroscopy
• Astrology
• Bloodletting
• Plague
• Dissection
• Wound Treatment

A Wound-care Recipe from 1491

“For running and painful wounds wherever they are, take an oil fish and boil it. Take the fat from it and keep it in a clean container. Boil a hen and do not add any fat to it. Separate the fat from the hen, collect it, and add it to juice of sage, rue, worm-wood, horhound, and wild mint. Put that all together and smear the [wound] with it. They will heal.”
“The Wound Man”
(Der Verwundete Mann)

Germany, 1528
Ambrose Paré
1510-1590

Paré’s Pressure Ulcer Cure
(circa 1585)

- Soft pillows
- Prayer
- Nutrition
- Abscess drainage
- Pain management
- Aromas
- Pleasant sounds
- Various plasters and unguents

Levine. Decubitus 5: 23–26, 1992
“…we should put him in another bed, very soft, and give him clean shirt and sheets….”

“…we should make him a little pillow of down to keep his buttock in the air, without his being supported on it.”

Ambrose Paré
Levine. Decubitus 5: 23–26, 1992

Wound Care in the 19th Century
Charcot's Pressure Ulcer Classification

- Decubitus acutus
- Decubitus chronicus
- Decubitus ominosus

Levine. JAGS 53: 1248; 2005
Charcot’s Neurotrophic Theory of Pressure Ulcer Genesis

Decubitus wounds were unavoidable consequences of damage to the CNS

Levine. JAGS 53: 1248; 2005
“On guinea pigs… I have found that no ulceration appeared when I took care to prevent … a continued state of compression, and washing them to remove urine and feces.”

**Charles-Edouard Brown-Sequard**

1817-1894

Levine. JAGS 53: 1248; 2005

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**Florence Nightingale**

(1820-1910)

“…if [the patient] has a bed-sore, it is generally the fault not of the disease, but of the nursing. .”

Notes on Nursing

1859
Wound Care & War in the 19th Century

Picture Credit: Sons of Union Veterans of the Civil War

Picture credit: Burns Archive
Wound Care in the 20th Century

Wound Care & WWI
Carrel-Dakins Solution

Administration of Carrel-Dakins Solution

Wound Care & WWII

Improved Salvage of the Seriously Wounded Soldier

- Evacuation logistics
- Plasma transfusions
- Antibiotics
- Body casts for unstable fractures
Growth of the Elderly Population
1900 to 2030

Source: U.S. Bureau of the Census
Pressure Sores
Classification and Management

J. Darrell Shea, M.D.*

Of all the problems facing the physician responsible for the care of severely injured or disabled patients, one of the most frustrating is the prevention and management of skin breakdown known as pressure sores. In the past they have been called decubitus ulcers, bed sores, and ischemic ulcers. The problem is no less disconcerting today than it was four hundred years ago when Fabricius10 suggested that a “pneuma” resulting from nerve deficiency plus loss of blood partial list includes poultices of carrots and turnips, bread and charcoal, Dakin’s solution, antibiotics, enzymes, vitamins, cod liver oil, dried blood plasma, gold, aluminum and silver, chlorophyll, sugar and brine baths,1-3, 11-13, 17, 19 Several physical and mechanical modalities have also been devised for preventing and treating skin breakdown, including electric lamps, ultraviolet light, hyperbaric oxygen, rubber rings, and donut water beds, seated beds, and a

GRADE III PRESSURE SORE
(FIGS. 7 TO 9)

Failure to appreciate the early stages of soft tissue breakdown and to institute proper wound care as outlined will permit progres-

FIG. 7. Grade III Pressure Sore. A “typical decubitus” with a necrotic, foul smelling infected ulcer limited by the deep fascia but extensively involving the fat with undermining of the skin. Note muscle, periosteum, and joint involvement.
4 Stage System for PrU Classification

Shea 1975 + IAET (now WOCN Society) 1988

First NPUAP Consensus Conference 1989

20th Century Pioneers

Michael Kosiak MD
1942-2012


Experimental studies on the relationship of pressure to tissue damage
20th Century Pioneers

Thomas Stewart PhD

Founding member of NPUAP: 1987

20th Century Pioneers

Roberta L. Abruzzese EdD, RN, FAAN
1933–2005
Based on the comprehensive Assessment of a resident, the facility must ensure that—

(1) A resident who enters the facility without pressure sores does not develop pressure sores unless the individual's clinical condition demonstrates that they were unavoidable; and

(2) A resident having pressure sores receives necessary treatment and services to promote healing, prevent infection and prevent new sores from developing.
PrU’s & Quality

- Association of PrU with staffing levels & implementation of prevention measures

- Decubitus 2(2) May 1989. p.44-45 observations challenging the common notion that PrU reflect quality, subsequently known at the KTU
By the close of the 20th Century

- Universally recognized Quality Indicator: CMS, JCAHO, NQF, etc.
- Very limited push-back to the PU-Quality link other than KTU
- Multi-billion $$ industry
- Growing risk-management/medical-legal issue
- Incorporated into regulations & government policy
- Healthcare environment pushing for evidence based CPGs
- Healthcare environment pushing for P4P
- Numerous treatment modalities and little clinical research
- Continued collaboration of experts and the growth of professional societies
- Recognition of PrU as a “geriatric syndrome.”

The 21st Century

- International collaboration for CPGs
- Link between PrU and P4P in hospitals, i.e. HACs
- Continued proliferation of prevention & wound healing technologies
- Increased sophistication of our knowledge of pressure related injury
  - Addition of Unstageable and DTI to the staging system
- Knowledge of Biofilms
- Emergence of regenerative medicine and bioengineered skin substitutes
- Focus on special populations: Bariatric, Critically Ill, SCI, Pedes, Geri
- Proliferation of wound healing centers
- Emergence of new societies and certifications
- Emergence of concepts of skin failure and unavoidability
- Emergence of palliative strategies
- Development of dedicated EMRs and APPs
21st Century Cutting Edge Issues

- Skin failure; Skin changes and the dying process
- Unavoidable PrU’s
- Preventive dressings
- DTI pathophysiology, medical device related PrU
- Research on turning frequency
- Moisture related skin damage
- OR and ICU acquired PrU’s
- Palliative care for nonhealing wounds
- Wound bed preparation
- Public policy, reimbursement, coding, improved F-tags in LTC
- Tissue repair and molecular pathogenesis of chronic wounds
- Clinical education, bringing knowledge to the bedside
The Future…. What do NPUAP Board Members Say?

- Implementation and validation of new technologies
- Improved device approval methodology by FDA
- Define the relationship between anticoagulation and DTI
- Improved diagnostic tools: biomarkers for DTI and healing
- Early detection and diagnosis of DTI
- Better understanding of tissue tolerance
- Escalation of prevention for very high risk groups
- Modifying quality measures to account for unavoidable PrUs
- Improved evidence based research for healing modalities
- Improved organization of wound care as a multidisciplinary specialty
- Improved diagnosis of MASD vs Stage 2 PrUs
- Improved understanding of unavoidable PrUs and skin failure

The Future…. My Picks

- Prevention in critically ill/ICU settings with early detection of DTI
- Improved presence of wound care in the medical school curriculum
- More evidence for palliative care principles
- Unified theory of skin failure
QUESTIONS??
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