PRESSURE INJURY IMPOSTERS

AND

THE UNAVOIDABLE PRESSURE INJURY

Pamela Scarborough

PT, DPT, CWS, FAAWC

Vice President Clinical Affairs
Restorix Health / AMT

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DISCLAIMER

- This information is provided for informational purposes only. Patient management decisions should be based on a number of factors, including (but not limited to) professional society guidelines and published clinical literature relevant to a patient's condition. Providers are encouraged to rely on their training and expertise, as well as any and all available information, prior to making management or treatment decisions for any individual patient."

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OBJECTIVES

At the end of this educational session participants should be able to:

- Identify etiologies that look like but are not related to pressure forces.
- Describe the proposed etiology and appearance of chronic tissue injury.
- Verbalize the description of the Unavoidable Pressure Injury aka the Kennedy Terminal Ulcer/skin failure.
- Discuss potential issues with misidentifying/misdiagnosing an etiology as pressure-related when the lesion is NOT related to pressure forces.

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HANDOUTS THAT INFORMED PRESENTATION

1. PPT presentation PDF
2. Definition and Characteristics of Chronic Tissue Injury: A Unique Form of Skin Damage
3. Practice Dilemmas: Conditions that Mimic Pressure Ulcer/Injuries-To Be or Not to Be
4. The Pathophysiology of Skin Failure vs. Pressure Injury: Conditions That Cause Integument Destruction and Their Associated Implications
5. Differentiating PU from Acute Skin Failure
6. SCALE-Final Version
7. Deep Tissue Pressure Injury or an Imposter-NPIAP Document
8. Pressure Injury Imposter on the Buttocks-Differential Recognition
9. The Pathophysiology of Skin Failure vs. Pressure Injury: Conditions That Cause Integument Destruction and Their Associated Implications

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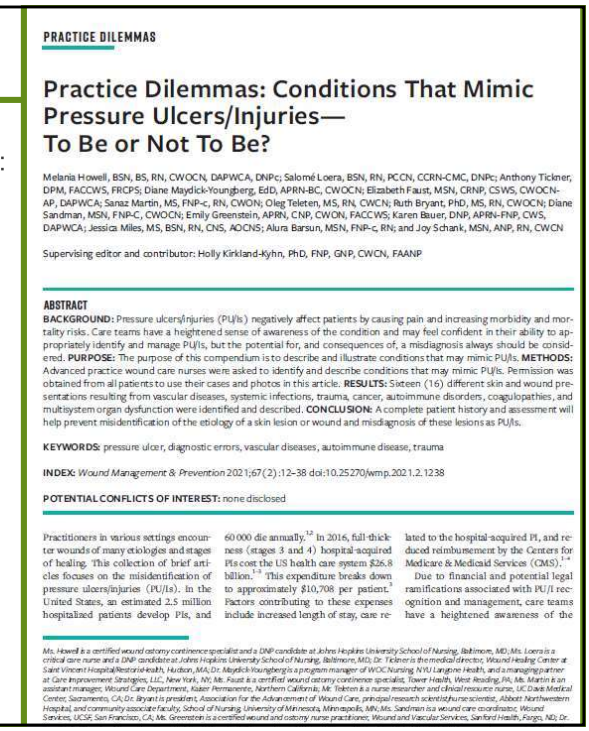

PRACTICE DILEMMAS

Practice Dilemmas: Conditions That Mimic Pressure Ulcers/Injuries— To Be or Not To Be?

Melania Howell, BSN, BS, RN, CWOCN, DAPWCA, DNPc; Salomé Loera, BSN, RN, PCCN, CCRN-CMC, DNPc; Anthony Tickner, DPM, FACCWS, FRCPS; Diane Maydick-Youngberg, EdD, APRN-BC, CWOCN; Elizabeth Faust, MSN, CRNP, CSWS, CWOCN-AP, DAPWCA; Sanaz Martin, MS, FNP-c, RN, CWON; Oleg Teleten, MS, RN, CWCN; Ruth Bryant, PhD, MS, RN, CWOCN; Diane Sandman, MSN, FNP-C, CWOCN; Emily Greenstein, APRN, CNP, CWON, FACCWS; Karen Bauer, DNP, APRN-FNP, CWS, DAPWCA; Jessica Miles, MS, BSN, RN, CNS, AOCNS; Alura Barsun, MSN, FNP-c, RN; and Joy Schank, MSN, ANP, RN, CWCN

Supervising editor and contributor: Holly Kirkland-Kyhn, PhD, FNP, GNP, CWCN, FAANP

ABSTRACT

BACKGROUND: Pressure ulcers/injuries (PU/Is) negatively affect patients by causing pain and increasing morbidity and mortality risks. Care teams have a heightened sense of awareness of the condition and may feel confident in their ability to appropriately identify and manage PU/Is, but the potential for, and consequences of, a misdiagnosis always should be considered. **PURPOSE:** The purpose of this compendium is to describe and illustrate conditions that may mimic PU/Is. **METHODS:** Advanced practice wound care nurses were asked to identify and describe conditions that may mimic PU/Is. Permission was obtained from all patients to use their cases and photos in this article. **RESULTS:** Sixteen (16) different skin and wound presentations resulting from vascular diseases, systemic infections, trauma, cancer, autoimmune disorders, coagulopathies, and multisystem organ dysfunction were identified and described. **CONCLUSION:** A complete patient history and assessment will help prevent misidentification of the etiology of a skin lesion or wound and misdiagnosis of these lesions as PU/Is.

KEYWORDS: pressure ulcer, diagnostic errors, vascular diseases, autoimmune disease, trauma

INDEX: *Wound Management & Prevention* 2021;67(2):12–38 doi:10.25270/wmp.2021.2.1238

POTENTIAL CONFLICTS OF INTEREST: none disclosed

Practitioners in various settings encounter wounds of many etiologies and stages of healing. This collection of brief articles focuses on the misidentification of pressure ulcers/injuries (PU/Is). In the United States, an estimated 2.5 million hospitalized patients develop PIs, and 60 000 die annually.[1,2] In 2016, full-thickness (stages 3 and 4) hospital-acquired PIs cost the US health care system $26.8 billion.[1,3] This expenditure breaks down to approximately $10,708 per patient.[3] Factors contributing to these expenses include increased length of stay, care related to the hospital-acquired PI, and reduced reimbursement by the Centers for Medicare & Medicaid Services (CMS).[1,4]

Due to financial and potential legal ramifications associated with PU/I recognition and management, care teams have a heightened awareness of the

Ms. Howell is a certified wound ostomy continence specialist and a DNP candidate at Johns Hopkins University School of Nursing, Baltimore, MD; Ms. Loera is a critical care nurse and a DNP candidate at Johns Hopkins University School of Nursing, Baltimore, MD; Dr. Tickner is the medical director, Wound Healing Center at Saint Vincent Hospital/RestorixHealth, Hudson, MA; Dr. Maydick-Youngberg is a program manager of WOC Nursing, NYU Langone Health, and a managing partner at Care Improvement Strategies, LLC, New York, NY; Ms. Faust is a certified wound ostomy continence specialist, Tower Health, West Reading, PA; Ms. Martin is an assistant manager, Wound Care Department, Kaiser Permanente, Northern California; Mr. Teleten is a nurse researcher and clinical resource nurse, UC Davis Medical Center, Sacramento, CA; Dr. Bryant is president, Association for the Advancement of Wound Care, principal research scientist/nurse scientist, Abbott Northwestern Hospital, and community associate faculty, School of Nursing, University of Minnesota, Minneapolis, MN; Ms. Sandman is a wound care coordinator, Wound Services, UCSF, San Francisco, CA; Ms. Greenstein is a certified wound and ostomy nurse practitioner, Wound and Vascular Services, Sanford Health, Fargo, ND; Dr.

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INTRODUCTION

- True incidence of PI misdiagnosis unknown
- There are MANY conditions that mimic PU/PIs
- Program will identify some of the confounding conditions that are reported as pressure, including chronic tissue injury
- Today's program is primarily to introduce the term chronic tissue injury and to highlight other etiologies that mimic pressure-related damage
- Please read the accompanying handouts for more in-depth information related to these issues
- Support for conversations with your clinical teams, providers, surveyors, and attorneys.

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WHY IS THIS TALK IMPORTANT

- Pressure injuries, associated stages and wound characteristics have clinical, regulatory (survey), costs, reimbursement, and legal implications
- Misidentification or misdiagnosis may lead to:
  - Inappropriate documentation,
  - Mistakes in reporting to CMS,
  - Ineffective treatments,
  - Inappropriate use of resources,
  - Issues with the survey process,
  - Complicate/negatively impact legal defense.

- **DTPI Over Sacrum**
- **Mobility impaired Resident**
- **Document & Report as PI**

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CMS SOM F684

GUIDANCE FROM F-TAG 684

REVIEW OF A RESIDENT WITH **NON PRESSURE-RELATED** SKIN ULCER/WOUND

- Residents may develop various types of skin ulceration.
- At the time of the assessment and diagnosis of a skin ulcer/wound, the clinician is **expected to document the clinical basis (e.g., underlying condition contributing to the ulceration**, ulcer edges and wound bed, location, shape, condition of surrounding tissues) which permit differentiating the ulcer type, **especially if the ulcer has characteristics consistent with a pressure ulcer, but is determined not to be one.**

Arterial

Venous

Diabetic Neuropathic

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CHRONIC TISSUE INJURY

Recognition and Definition

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WHAT IS CHRONIC TISSUE INJURY (CTI)? SENILE GLUTEAL DERMATOSIS?

- Distinct form of skin damage affecting buttocks
- Presentation:
  - Purple-maroon discoloration
  - Thinning epidermis
  - With or without open injury
  - Lichenification often present
- Location
  - Fleshy part of buttocks
  - Usually **NOT** on boney prominences

- CTI on 80 y/o male, COPD, O_2 use, ambulatory, most of day spent sitting
- Purple/maroon discoloration for 6 months with multiple partial-thickness skin disruptions that close and acquire new small lesions in different locations

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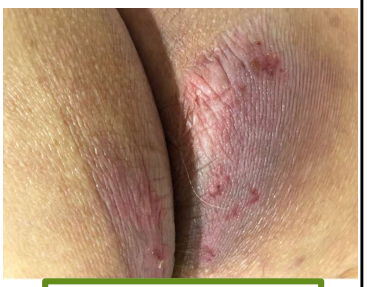
DOES THE SKIN HAVE LICHENIFICATION?

- Thickening and induration of skin
- Characterized by **exaggerated skin markings ("wrinkles")**
- Usually due to chronic trauma
- Often accompanied by hyperpigmentation
- Many clinical reasons for lichenification

Eczema induced Lichenification



Chronic tissue injury induced Lichenification

Scabies induced Lichenification

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CHRONIC TISSUE INJURY ETIOLOGY

- Etiology not well understood
- Differential diagnosis confusing
- May occur with other skin injuries/issues
- Venous pooling and engorgement possible etiology
- Hemosiderosis-reddish/purple pigmentation
  - From extravasated red blood cells and inflammation
- NOT related to pressure

Courtesy: Dot Weir, RN, CWON, CWS

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WHY DO WE NEED THIS INFORMATION?

- No recognized 'label' for chronic tissue injury
- May be misidentified as pressure injury
- Clinical teams may choose wound type most closely resembling this tissue change when tissue damage is **NOT related to pressure**
- Results in inaccurate and inconsistent classification of soft tissue damage
- **Code for CTI/senile dermatosis: L98.8 / L98.9-discuss with your billing expert!!!**

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DISCUSS USING ONE OF THESE CODES FOR CTI WITH YOUR CODING EXPERT

L98.8	Other specified disorders of the skin and subcutaneous tissue
L98.9	Disorder of the skin and subcutaneous tissue, unspecified

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ACCURATE IDENTIFICATION OF WOUND TYPES CRITICAL

- Accurate identification of wound types required to guide appropriate care planning
- Incorrect identification of wound and skin disruption etiologies causes confusion with regulatory mandates for reporting pressure and other wound etiologies
- Creates issues with the survey process
- May set facilities up for legal issues

- **Accurate identification**
- **Critical for appropriate care planning**

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IS THIS PRESSURE RELATED???

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Courtesy: Dot Weir, RN, CWON, CWS

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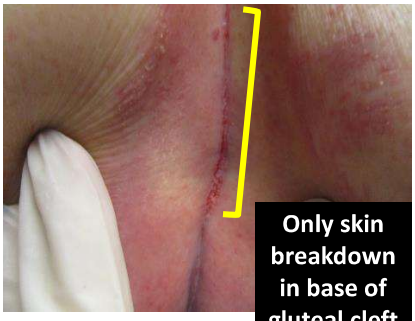
CHRONIC TISSUE INJURY VS CTI



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Courtesy: Dot Weir, RN, CWON, CWS

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ISSUES WITH DOCUMENTATION AND REPORTING OF CHRONIC TISSUE INJURY

- Lack of EMR identification
- No MDS reporting mechanism for this issue in LTC
- Usually reported as:
  - Stage 1,
  - Stage 2,
  - DTPI,
  - Skin failure (unavoidable pressure injury/KTU),
  - MASD
  - Trauma,
  - Inflammatory lesions

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DO NOT DEFAULT TO PU/PI DIAGNOSIS WHEN SKIN MANIFESTATION UNKNOWN

- Wide variety of etiologies produce wounds in vicinity of pressure-shear prone anatomical locations
- Be thorough in your assessment
- Nurses partner with providers **before** designating a wound as a PU/PI if clinical picture doesn't correlate with pressure forces as cause
- Once a PU/PI has been documented as Dx in medical record that Dx is often **maintained regardless of accuracy**
- **If you think the issue is chronic tissue injury and the provider or surveyor doesn't have this information yet, educate them.**
- **Support accurate diagnosis, reporting, and treatment**

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- **FRICTION/CTI**
- **MASD/CTI**

Differential Recognition - Diagnosis

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FRICTION INJURY VS CTI

DIFFERENTIAL RECOGNITION / DIAGNOSIS

- Superficial skin damage
- Immobility issues
- Lichenification with ridges often present
- May accompany pressure injury
- Not related to pressure
- Often identified as Stage 1 or 2 pressure injury
- Usually resolves with good repositioning techniques (no friction), and good skin care

Courtesy: Dot Weir, RN, CWON, CWS

Friction Injury Superficial Wounds

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MOISTURE ASSOCIATED SKIN DAMAGE VS CTI
DIFFERENTIAL RECOGNITION / DIAGNOSIS

- Presents with **inflammation**, erosion; **not** purple-maroon discoloration
- Associated with moisture damage
  - Incontinence
  - Perspiration
  - Wound exudate
  - Ostomy effluent
- May have denuding/erosion from friction in combination with moisture
- In addition to moisture, MASD may be associated with immobility

CTI with erosion

MASD + Erosion
Document Denuding

Document: skin erosion with denuding present and dermal tissue exposed

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CHRONIC TISSUE INJURY VS PRESSURE INJURIES

Pressure injuries occur as a result of intense and/or prolonged pressure or pressure in combination with shear.

These forces create an ischemia/reperfusion injury that may or may not result in an open wound – NPIAP 2019

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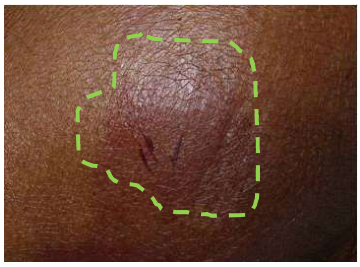
STAGE 1 PRESSURE INJURY VS CTI
DIFFERENTIAL RECOGNITION / DIAGNOSIS

- Nonblanchable erythema
- Skin intact
- NO maroon discoloration
- Associated with immobility
- Usually on or near boney prominence

Courtesy: Dot Weir, RN, CWON, CWS

Stage 1 PU/PI Light SOC



Stage 1 PU/PI Dark SOC

Stage 1 or CTI?

SOC=Skin of Color

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STAGE 2 PRESSURE INJURY VS CTI
DIFFERENTIAL RECOGNITION / DIAGNOSIS

- Partial-thickness skin loss
- Shallow open ulcer/pink red wound bed (i.e., dermal tissue exposed)
- Without slough
- Without bruising (i.e., No purple-maroon discoloration
- Usually over boney prominences
- Mobility issues
- May be confusion between CTI skin changes and stage 2 PU/PI

Stage 2 PIs

CTI

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DTPI VS CTI

DIFFERENTIAL RECOGNITION / DIAGNOSIS

- DTPIs characterized by purple discoloration of affected skin
- Discoloration of DTPI appears as deeper violet hue, which may reflect the intense tissue load believed to cause DTPIs
- DTPI follows a variable course of deterioration or healing
- Severity of CTI persists over time; often months
- DTPI often associated with pain not seen in patients with CTI

DTPI
Deep
Bone/Muscle Interface

CTI
Superficial

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MULTIPLE ORGAN DYSFUNCTION SYNDROME (MODS)

AND SKIN FAILURE

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FAILING ORGAN SYSTEMS

- Skin failure and non-healing wounds often evidence of failing organ systems
- Have you documented **EVERY failing system** in the body?
- Documentation of other systems failing will support the facility:
  - With surveyors when using unavoidable PU/PI designation
  - With attorneys when there's a lawsuit claiming negligence

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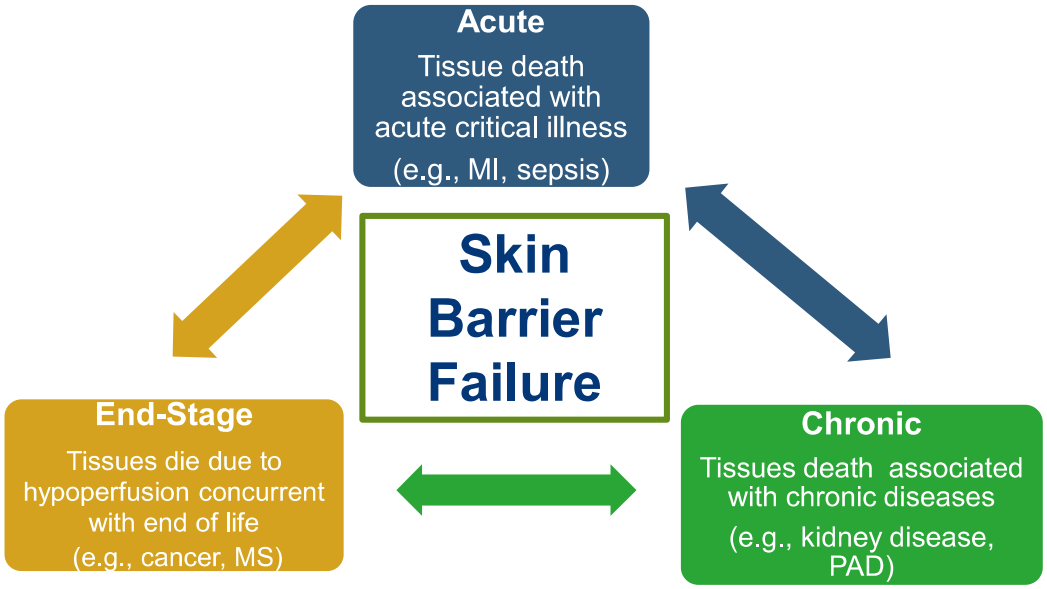
ORGAN FAILURE STRATIFICATION



Langermo DK, Brown G; Skin Fails Too: Acute, Chronic and End-Stage Skin Failure. Adv in Skin & Wound Care, Vol 19, No 4, 206-211, May 2006

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KTU/SKIN FAILURE
DIFFERENTIAL RECOGNITION / DIAGNOSIS

- Associated with organ failure
- Person in the dying process
- Usually pass within 6-weeks
- Wound usually demarcates in a short period of time, usually days
- Superficial or deep wounds
- Whereas CTI may be present for months

KTU/Skin Failure

May be Superficial
May be Deep

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ACUTE SKIN FAILURE (ASF) – SEEN MOST OFTEN IN ACUTE CARE/ICU

- Etiology = hypoperfusion, associated with acute illness
- Hemodynamic instability associated with major organ system dysfunction/failure
- Skin requires 25-33% of cardiac output
- Predictors for ASF:
  - Respiratory failure
  - Liver failure
  - Severe sepsis/septic shock
  - Mechanical ventilation greater than 72 hours
  - Renal failure
  - Low albumin in combination with renal failure, plus respiratory failure or failure of more than one organ system (not including skin)
- May be called KTU, skin failure or Skin Changes at Life's End

Acute Skin Failure in ICU patient

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HINTS FOR DIFFERENTIAL DIAGNOSIS / RECOGNITION BETWEEN KTU/SKIN FAILURE AND OTHER SIMILAR ETIOLOGIES

- Timing, timing, timing – how long between appearance of skin manifestation and death
  - Can be hours, days or weeks
  - Usually, not months
- Location – lesions appearing on non-boney prominences **not associated with pressure forces** are probably NOT related to pressure
- Patient/residents in **physical decline with multi-organ involvement** more likely to acquire unavoidable skin failure aka Kennedy Terminal Ulcers

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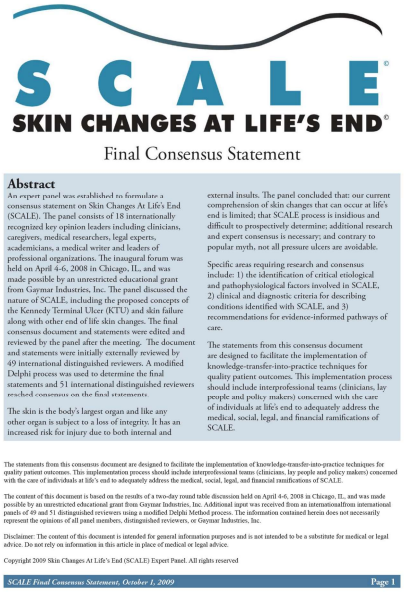
SKIN FAILURE/KTU DOCUMENTATION TIPS

- SCALE document and NPIAP position statements
- **Two conditions necessary for establishing the diagnosis of skin failure are skin hypoperfusion and severe organ dysfunction or failure**
- ICD-10 diagnosis of skin failure: L98.9 Disorders of the skin
- When it appears skin failure/KTU is involved in failing skin integrity provider should collaborate with facility staff a.s.a.p.
- Provider needs to document ICD-10 codes that **corroborate organ failure to skin failure**.



SCALE
SKIN CHANGES AT LIFE'S END
Final Consensus Statement

Abstract

An expert panel was established to formulate a consensus statement on Skin Changes At Life's End (SCALE). The panel consists of 18 internationally recognized key opinion leaders including clinicians, caregivers, medical researchers, legal experts, academicians, a medical writer and leaders of professional organizations. The inaugural forum was held on April 4-6, 2008 in Chicago, IL, and was made possible by an unrestricted educational grant from Gaymar Industries, Inc. The panel discussed the nature of SCALE, including the proposed concepts of the Kennedy Terminal Ulcer (KTU) and skin failure along with other end of life skin changes. The final consensus document and statements were edited and reviewed by the panel after the meeting. The document and statements were initially externally reviewed by 49 international distinguished reviewers. A modified Delphi process was used to determine the final statements and 51 international distinguished reviewers reached consensus on the final statements.

The skin is the body's largest organ and like any other organ is subject to a loss of integrity. It has an increased risk for injury due to both internal and external insults. The panel concluded that: our current comprehension of skin changes that can occur at life's end is limited; that SCALE process is insidious and difficult to prospectively determine; additional research and expert consensus is necessary; and contrary to popular myth, not all pressure ulcers are avoidable.

Specific areas requiring research and consensus include: 1) the identification of critical etiological and pathophysiological factors involved in SCALE, 2) clinical and diagnostic criteria for describing conditions identified with SCALE, and 3) recommendations for evidence-informed pathways of care.

The statements from this consensus document are designed to facilitate the implementation of knowledge-transfer-into-practice techniques for quality patient outcomes. This implementation process should include interprofessional teams (clinicians, lay people and policy makers) concerned with the care of individuals at life's end to adequately address the medical, social, legal, and financial ramifications of SCALE.

The statements from this consensus document are designed to facilitate the implementation of knowledge-transfer-into-practice techniques for quality patient outcomes. This implementation process should include interprofessional teams (clinicians, lay people and policy makers) concerned with the care of individuals at life's end to adequately address the medical, social, legal, and financial ramifications of SCALE.

The content of this document is based on the results of a two-day round table discussion held on April 4-6, 2008 in Chicago, IL, and was made possible by an unrestricted educational grant from Gaymar Industries, Inc. Additional input was received from an international/non international panels of 49 and 51 distinguished reviewers using a modified Delphi Method process. The information contained herein does not necessarily represent the opinions of all panel members, distinguished reviewers, or Gaymar Industries, Inc.

Disclaimer: The content of this document is intended for general information purposes and is not intended to be a substitute for medical or legal advice. Do not rely on information in this article in place of medical or legal advice.

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TROMBLEY-BRENNAN TERMINAL TISSUE INJURY (TB-TTI)

- Purple maroon discoloration
- **Patient will exhibit these skin changes on bony and non-bony prominence**
- Do not evolve into full thickness wounds with non-viable tissue
- Increase in surface area
- No drainage present
- Linear and mirror images may appear on lower extremities
- No complaints of discomfort
- Do not follow the same course as the KTU

DX: metastatic breast cancer
Large purpuric macular lesion on right leg
Appeared 8 days before death

Alvarez O, Brindle T, Langemo, D, Kennedy-Evans KL, Krasner Diane, Brennan M, Levine J. (2016). The VCU Pressure Ulcer Summit: The Search for a Clearer Understanding and More Precise Clinical Definition of the Unavoidable Pressure Injury. Journal of Wound, Ostomy and Continence Nursing. 43. 1. 10.1097/WON.

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TROMBLEY-BRENNAN TERMINAL TISSUE INJURY (TB-TTI)

- Spontaneously appearing skin alterations (rapid evolution, speed of enlargement and progression, appearance in areas of little to no pressure such as shins, thighs, and mirror imaging found in patients at the end of life.
- Trombley Brennan (TB-TTI) (2010)

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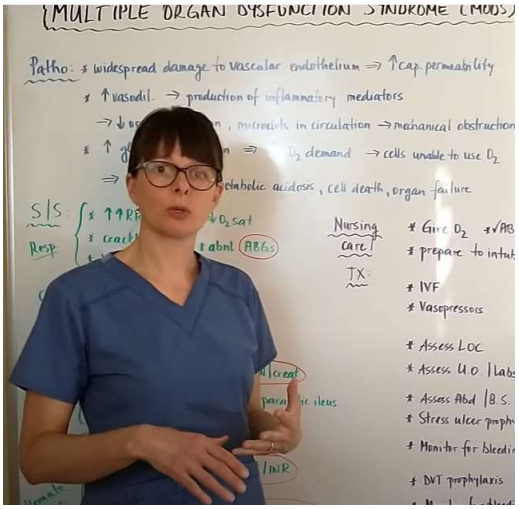
18 MINUTE MINI LECTURE ON MODS
EXCELLENT REVIEW FOR FACILITY CLINICAL TEAMS

Multiple Organ Dysfunction Syndrome (MODS)



- Defined as 2+ organ systems failing
  - 3+ failing = 80-90% mortality

https://www.youtube.com/watch?v=0o_jFKbEbTg

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OTHER PRESSURE INJURY IMPOSTERS

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VASCULAR ULCERS MIMICKING PU/PI

Arterial ulcer on lateral malleolus of bedbound patient
Initially identified as PU/PI

- Vascular compromise of iliac arteries manifesting as full-thickness lesions on the buttock
- Initially identified a PU/PI

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Howell M, Loera S, Tickner A, Maydick D, Faust E, et al. ***Conditions That Mimic Pressure Ulcer/Injuries-To Be or Not To Be.*** *Wound Management & Prevention* 2021;67(2):12–38 doi:10.25270/wmp.2021.2.1238

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OTHER ETIOLOGIES THAT MAY MIMIC PU/PI

- COVID-19 skin manifestation
- May be mistaken for DTI or KTU

- Calciphylaxis lesions on posterior torso
- Initially identified as unstageable PU/PI

- Necrotizing soft tissue infection
- May be mistaken for DTPI or KTU

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CAN YOUR TEAMS DIFFERENTIATE THESE ETIOLOGIES ON THE BUTTOCKS?

Moisture Associated Skin Damage

Deep Tissue Pressure Injury

Kennedy Terminal Ulcer (KTU) AKA Skin Failure

Chronic Tissue Injury

COVID-19 Skin Manifestation

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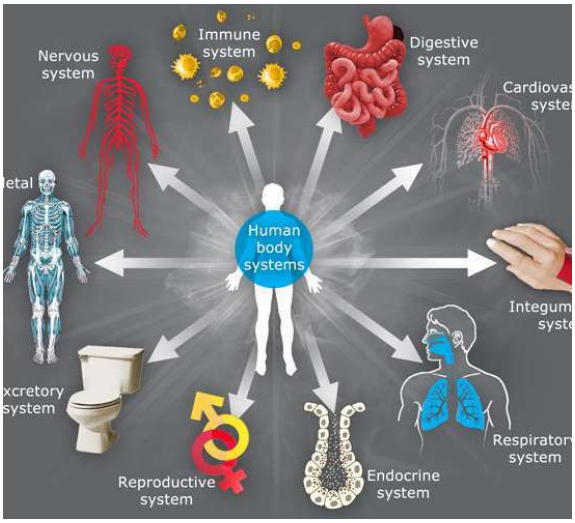
SUMMARY

- Look at **whole patient** before designating skin disruption as PU/PI
- Question PU/PI etiology when clinical picture does **not** match with a pressure etiology
- Knowledge regarding common or rare conditions that can mimic PU/PI **can reduce** inaccurate diagnosis



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SUMMARY

- Ensure accurate recognition, assessment, documentation and reporting of pressure injuries
- Complete patient/resident history review with comprehensive assessments result in :
  - Appropriate care plans
  - Improved outcomes
  - Reduced costs
  - Decreased deficiencies from surveys
  - Potentially better outcomes in lawsuits

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Pressure Injury Impostors on Buttocks

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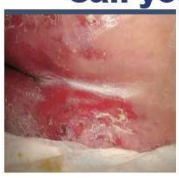
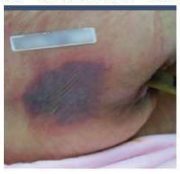
Can your teams differentiate these etiologies?



Moisture Associated Skin Damage

Prevalent in the LTC and home health settings. Due to sweating, episodes of incontinence, or wound drainage, or effluent from ostomies that leak onto the skin. **NOT** pressure etiology.



Deep Tissue Pressure Injury

Tissue and cellular damage at the bone-muscle interface creating full-thickness wounds. This **IS** pressure etiology.

Kennedy Terminal Ulcer Skin Failure

Also known as skin failure, the KTU is recognized by CMS as a form of unavoidable pressure ulcer/injury that happens when a person is experiencing organ failure and the skin, the largest organ, also begins to fail. **NOT** pressure etiology.

Chronic Tissue Injury

Believed to result from venous pooling/ engorgement. Occurs on the fleshy portion of the buttocks. Patients and residents may be somewhat mobile. May be present for months. **NOT** pressure etiology.

COVID-19 Skin Manifestations

Associated with the disease COVID-19. May occur before, during, or after the disease or may be the only symptom of COVID-19. **NOT** pressure etiology.

Why is Accurate Recognition, Diagnosis and Reporting Important?

Pressure injuries and the associated stages and wound characteristics have clinical, regulatory (survey), costs, reimbursement, and legal implications.

Misidentification or misdiagnosis can lead to inappropriate documentation, mistakes in reporting to CMS, ineffective treatments and inappropriate use of resources.

Do NOT default to a pressure ulcer/ injury diagnosis, unless all the clinical criteria point to the PU/PI etiology.

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Rev03-2022

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NPIAP DOCUMENT ON DTPI AND IMPOSTERS PROVIDED AS A HANDOUT

Some of these Pressure Injury Imposters may also look like an unavoidable pressure injury.

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- Practice Dilemmas: Conditions that Mimic Pressure Ulcer/Injuries-To Be or Not to Be
- The Pathophysiology of Skin Failure vs. Pressure Injury: Conditions That Cause Integument Destruction and Their Associated Implications
- Differentiating PU from Acute Skin Failure
- SCALE-Final Version
- Deep Tissue Pressure Injury or an Imposter-NPIAP Document
- Pressure Injury Imposter on the Buttocks-Differential Recognition

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THE UNAVOIDABLE PRESSURE ULCER/INJURY

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RESOURCES PROVIDED

- State Operations Manual. Appendix PP-Guidance to Surveyors for Long Term Care Facilities. 173, Rev. 11-22-17
- Skin Changes at Life's End: final consensus statement: October 1, 2009.
- NPIAP: Deep Tissue Pressure Injury or an Imposter. https://cdn.ymaws.com/npiap.com/resource/resmgr/online_store/posters/Feb2021_-_NPIAP_DTPI_and_Imp.pdf. Accessed 1/11/22.
- Preventing Pressure Ulcers in Hospitals: A Toolkit for Improving Quality of Care. AHRQ
- Bain M, Hara J, Carter JF. The Pathophysiology of Skin Failure vs. Pressure Injury: Conditions That Cause Integument Destruction and Their Associated Implications. Wounds 2020;32(11):319-327.

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PURPOSE OF PROGRAM

- Review different definitions for similar conditions related to end-of-life wounds
- Describe conditions associated and situations that may lead to an unavoidable pressure injury
- Describe interventions for people with skin failure
- Review documentation related to end-of-life skin failure
- Provide literature and resources for education related to Unavoidable skin failure

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An **Avoidable** Pressure Injury is a Symptom of a **Failed System**

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Major Question:

Did the facility PU/PI prevention system Fail or is the resident's BODY in Failure?

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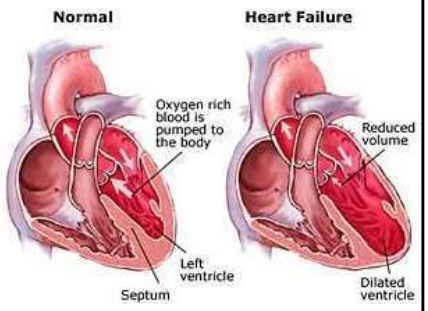
INTRODUCTION

- Skin - largest organ of the body
- Fails same as other organs: e.g. heart, kidneys, liver, etc.
- With acute and chronic illnesses body systems can fail; suddenly or slow decline
- Skin failure is an unavoidable condition
- Older adults have higher risk for skin failure due to more fragile overall organ physiology, including the skin
- When patients/residents deteriorating physically, skin failure **may NOT be preventable**



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AVOIDABILITY/UNAVOIDABILITY OF SKIN BREAKDOWN

- Terminal (end of life) ulceration is NOT new concept
- Over 100 years old and documented in historical medical literature
- Lack of complete understanding of skin failure
- Some people think, erroneously, that ALL PU/PIs are avoidable
- CMS agrees not all PU/PIs are avoidable (both F684 and F686 mention the Kennedy Terminal Ulcer (KTU)

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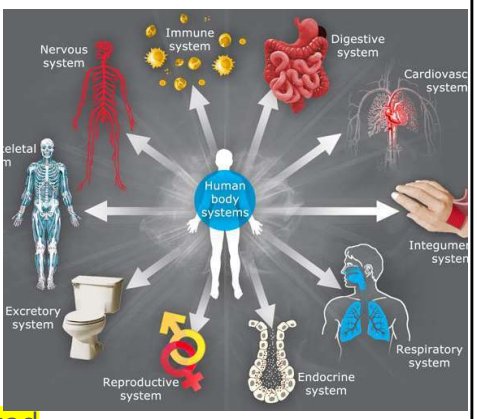
EVERYTHING IS INTERCONNECTED IN THE BODY

- Organ systems work together to maintain homeostasis with normal body functions
- Endocrine disorders such as diabetes affect glucose levels in the body
  - Altered blood glucose levels can negatively affect many organ systems
    - (e.g. elevated blood glucose impairs immune system creating increased risk of infections)
- Urinary system may experience kidney damage from elevated blood glucose or other insults
  - (e.g. kidney stones, hypertension)
- Cardiovascular system can experience damage from different diseases
  - (e.g. CAD, cardiopulmonary diseases → CHF)
- Pulmonary diseases affect tissue oxygenation
- Document ALL risk factors: Everything is interconnected



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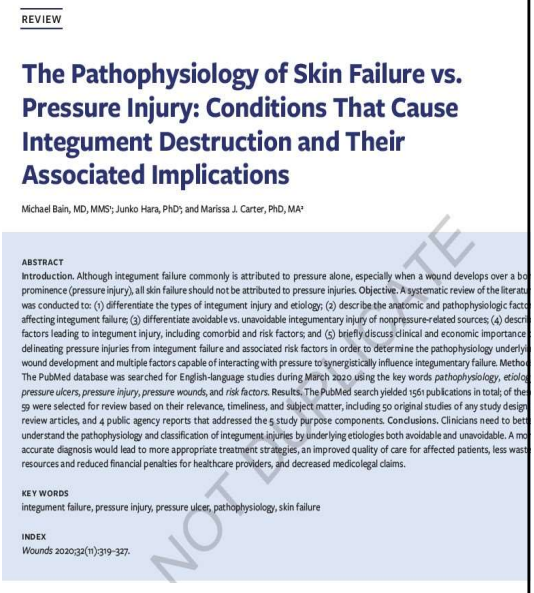
BOTTOM LINE

- Clinicians need to better understand the pathophysiology and classification of Integument injuries **by underlying etiologies both avoidable and unavoidable**.
- More accurate diagnosis would lead to:
- Appropriate treatment strategies,
- Improved quality of life for affected patients,
- Less wasted resources,
- Reduced financial penalties for healthcare providers,
- Decreased medical-legal claims.



REVIEW

The Pathophysiology of Skin Failure vs. Pressure Injury: Conditions That Cause Integument Destruction and Their Associated Implications

Michael Bain, MD, MMS[1]; Junko Hara, PhD[1]; and Marissa J. Carter, PhD, MA[2]

ABSTRACT

Introduction. Although integument failure commonly is attributed to pressure alone, especially when a wound develops over a bo prominence (pressure injury), all skin failure should not be attributed to pressure injuries. **Objective.** A systematic review of the literatu was conducted to: (1) differentiate the types of integument injury and etiology; (2) describe the anatomic and pathophysiologic facto affecting integument failure; (3) differentiate avoidable vs. unavoidable integumentary injury of nonpressure-related sources; (4) descri factors leading to integument injury, including comorbid and risk factors; and (5) briefly discuss clinical and economic importance delineating pressure injuries from integument failure and associated risk factors in order to determine the pathophysiology underly wound development and multiple factors capable of interacting with pressure to synergistically influence integumentary failure. Metho The PubMed database was searched for English-language studies during March 2020 using the key words *pathophysiology*, *etiolo pressure ulcers*, *pressure injury*, *pressure wounds*, and *risk factors*. Results. The PubMed search yielded 1561 publications in total; of the 59 were selected for review based on their relevance, timeliness, and subject matter, including 50 original studies of any study design review articles, and 4 public agency reports that addressed the 5 study purpose components. **Conclusions.** Clinicians need to bet understand the pathophysiology and classification of integument injuries by underlying etiologies both avoidable and unavoidable. A mo accurate diagnosis would lead to more appropriate treatment strategies, an improved quality of care for affected patients, less wast resources and reduced financial penalties for healthcare providers, and decreased medicolegal claims.

KEY WORDS

integument failure, pressure injury, pressure ulcer, pathophysiology, skin failure

INDEX

Wounds 2020;32(11):319–327.

NOT TO CITE

Bain M, Hara J, Carter JF. The Pathophysiology of Skin Failure vs. Pressure Injury: Conditions That Cause Integument Destruction and Their Associated Implications. Wounds 2020;32(11):319-327.

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END-OF-LIFE SKIN/INTEGUMENT FAILURE

First described in medical literature in the mid-1800s

Resurfaced in modern literature in 1989

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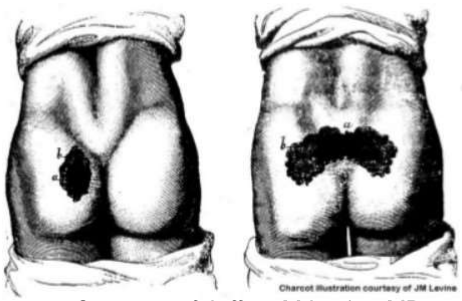
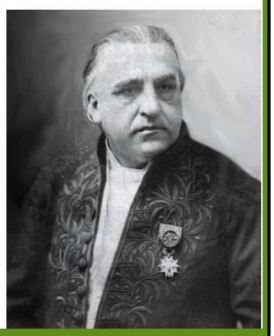
DECUBITUS OMINOSUS



Courtesy of Jeffrey M Levine MD

Jean-Martin Charcot

1825-1893



- Skin breakdown heralding impending death of patient - decubitus ominosus.
- This name was forgotten until late 20th century when Karen Kennedy recognized and published information on what became known as the Kennedy Terminal Ulcer (KTU) in 1989.

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MULTIPLE TERMS CURRENTLY USED TO DESCRIBE UNAVOIDABLE SKIN CHANGES

- Several classifications/terms for similar/overlapping clinical syndromes
  1. Kennedy Terminal Ulcer (CMS SOM-F684 and F686)
  2. Trombley-Brennan Terminal Tissue Injury
  3. Skin Changes at Life's End
  4. Skin Failure
  5. Unavoidable pressure ulcer/injuries (CMS SOM F686)
     - May be a heralding signs of organ failure where skin is failing at the same time as other body systems
     - Recognizing the resident is in organ failure is important for care planning potential end-of-life skin deterioration

SOM=State Operations Manual-Guidance for Surveyors

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Time to start conversation with family or others.

Providers and facility staff.

Its time to talk to the family about the process of dying for them to understand what to expect, including the potential for unavoidable skin changes.

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KENNEDY TERMINAL ULCER

Unavoidable skin breakdown or skin failure that occurs as part of dying process

- Not a cause of a patient's death
- Occurs in spite of good quality care
- May start out superficially as a blister or what appears to be a Stage 2
- Appears quickly and progresses rapidly to full-thickness
- May have early characteristics of a DTPI
- Many patients die within 6 weeks
- Can mimic COVID skin manifestation

KTU

COVID Skin

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CMS SOM F686

THE KENNEDY TERMINAL ULCER (KTU) PER SOM

"The facility is responsible for accurately assessing and classifying an ulcer as a KTU or other type of PU/PI and demonstrate that appropriate preventative measures were in place to prevent non-KTU pressure ulcers."

Document → Appropriate preventive measures in place to prevent **avoidable** PU/PI

PI Prevention Plan → Prevention care plan in place **BEFORE** KTU can be called Unavoidable PI

All Risk Factors Identified? → Show KTU related to organ failure or other non-modifiable risk factors **providers involved**

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CMS SOM F686

CHARACTERISTIC OF KENNEDY TERMINAL ULCERS F686

KNOW WHEN TO USE THIS DESIGNATION!!!

- "KTUs have certain characteristics which differentiate them from pressure ulcers such as the following:
  - KTUs appear suddenly and within hours;
  - Usually appear on the sacrum and coccyx but can appear on the heels, posterior calf muscles, arms and elbows;

  - Edges are usually irregular and are red, yellow, and black as the ulcer progresses, often described as pear, butterfly or horseshoe shaped; and
  - Often appear as an abrasion, blister, or darkened area and may develop rapidly to a Stage 2, Stage 3, or Stage 4 injury."

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CMS SOM F684

F684: QUALITY OF LIFE
KENNEDY'S TERMINAL ULCER: PRESSURE ULCER

- Kennedy Terminal Ulcers are considered PRESSURE ULCER/INJURY per CMS
- Pressure ulcers that generally occur at the end of life
- For concerns related to Kennedy Terminal Ulcers, refer to F686, Pressure Ulcers
- NOTE: From Presenter…**not CMS statement**, but reality.
- Skin changes from organ failure are not pressure ulcers
- Skin failure due to dying process or during multi-organ failure.
- E.g., Resident in dying process and the skin…largest organ of the body begins to fail.
- Providers can help by **documenting medical issues contributing to skin failure**
- Can document them as unavoidable pressure ulcer/injuries
- Avoid F-tag, avoid civil money penalties, give attorneys defensible documentation should a lawsuit be brought against the facility/staff

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CMS SOM F686

INTENT OF F686 RELATED TO PU/PIs

- *"The intent of this requirement is that the resident does not develop pressure ulcers/injuries (PU/PIs) unless clinically unavoidable and that the facility provides care and services consistent with professional standards of practice to:*
  - *Promote the prevention of pressure ulcer/injury development;*
  - *Promote the healing of existing pressure ulcers/injuries (including prevention of infection to the extent possible); and*
  - *Prevent development of additional pressure ulcer/injury."*

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PRESSURE ULCER/INJURY DEVELOPMENT

- More than **100 risk factors** cited in literature related to PU/PI development
- Affirms multifactorial etiology of PU/PI development
- Braden captures SOME (6) of these factors; not all
- Comorbidities listed as contributory include:
- Diabetes, infection, PAD, cardiovascular disease, anemia, hypotension, advancing age, vasopressor medications, and many more…
- The research, literature, and experience of clinicians over the decades agree that ALL pressure ulcer/injuries are NOT preventable

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CMS -SOM F686

UNAVOIDABLE PRESSURE ULCER IN STATE OPERATIONS MANUAL GUIDANCE TO SURVEYORS

- *F686*
- *Based on the comprehensive assessment of a resident, the facility must ensure that—*
- *(i) A resident receives care, consistent with professional standards of practice, to prevent pressure ulcers and does not develop pressure ulcers unless the individual's clinical condition demonstrates that they were unavoidable; and*
- *(ii) A resident with pressure ulcers receives necessary treatment and services, consistent with professional standards of practice, to promote healing, prevent infection and prevent new ulcers from developing.*

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CMS SOM F686

AVOIDABLE PRESSURE ULCER/INJURY PER CMS

- ***"Avoidable"*** *means that the resident developed a pressure ulcer/injury and that the facility did not do one or more of the following:*
  - *evaluate the resident's clinical condition and risk factors;*
  - *define and implement interventions that are consistent with resident needs, resident goals, and professional standards of practice;*
  - *monitor and evaluate the impact of the interventions; or revise the interventions as appropriate.*
  - Example of true unavoidable Pressure Ulcer/Injury

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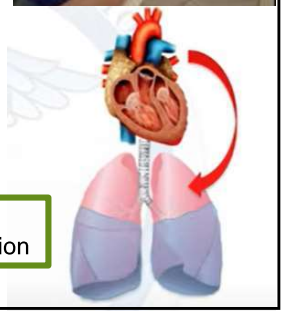
EXAMPLE OF INCREASED RISK FOR UNAVOIDABLE PRESSURE ULCER/INJURY

- Patients/residents with **feeding tubes** or **respiratory issues** often need head-of-bed elevated more than 30° degrees
- Contrary to usual pressure ulcer prevention care plans
- Care plans and documentation in the medical record will need to address why HOB with high elevation
- Ex. Resident with end-stage CHF/pulmonary edema
- Provider write order for higher elevation of HOB if needed to facilitate breathing



R-sided heart failure
Pulmonary edema/congestion

Preventing Pressure Ulcers in Hospitals: A Toolkit for Improving Quality of Care. AHRQ

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CMS SOM F686

UNAVOIDABLE PRESSURE ULCER/INJURY PER CMS

- *"**Unavoidable**" means that the resident developed a pressure ulcer/injury even though the facility had:*
  - *evaluated the resident's clinical condition and risk factors;*
  - *defined and implemented interventions that are consistent with resident needs, goals, and professional standards of practice;*
  - *monitored and evaluated the impact of the interventions; and revised the approaches as appropriate.*
  - *NOTE: Facility documentation MUST show the assessment and prevention strategies in place **before** the unavoidable PI develops.*

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TROMBLEY-BRENNAN TERMINAL TISSUE INJURY (TB-TTI)

- Spontaneously appearing skin alterations (rapid evolution, speed of enlargement and progression, appearance in areas of little to no pressure such as shins, thighs, and **mirror imaging** found in patients at the end of life.
  Trombley & Brennan (TB-TTI) (2010)
- NOTE: not the same issue as senile purpura

Right Leg

Left Leg

Attribution: Photos from presentation- End of Life Care: Current Knowledge and Future Research
Mary R Brennan, RN, MBA, WOCN

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DIFFERENTIATING TB-TTI AND SENILE PURPURA

TB-TTI

Figure 6. Trombley-Brennan terminal tissue injury. Photograph courtesy of Mary R Brennan, RN, MBA, CWON.

- Directly associate with dying process

Senile Purpura

- Associate with connective tissue damage/atrophy
- Caused by chronic sun exposure, aging and drugs

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TROMBLEY-BRENNAN TERMINAL TISSUE INJURY CHARACTERISTICS (TB-TTI)

- Purple maroon discoloration – may appear at end of life
- **Patient will exhibit these skin changes on bony and non-bony prominence**
- Do not evolve into full thickness wounds with non-viable tissue
- Increase in surface area
- No drainage present
- Linear and mirror images may appear on lower extremities
- No complaints of discomfort
- Do not follow the same course as the KTU

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DX: metastatic breast cancer
Large purpuric macular lesion on right leg
Appeared 8 days before death

Alvarez O, Brindle T, Langemo, D, Kennedy-Evans KL, Krasner Diane, Brennan M, Levine J. (2016). The VCU Pressure Ulcer Summit: The Search for a Clearer Understanding and More Precise Clinical Definition of the Unavoidable Pressure Injury. Journal of Wound, Ostomy and Continence Nursing. 43. 1. 10.1097/WON.

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SKIN FAILURE DEFINITION

- *"An event in which the skin and underlying tissue die due to **hypoperfusion** that occurs concurrent with **severe dysfunction or failure of other organ systems**" (Langemo, 2005, Langemo & Brown, 2006)*
- *"Skin Failure and pressure ulcers are 2 distinct, yet related clinical phenomena" (Delmore, Cox, Rolnitzky et al, 2015)*

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SKIN FAILURE - WORKING DEFINITION DR. JEFF LEVINE

- Skin failure is the state in which tissue tolerance is so compromised that cells can no longer survive in zones of physiological impairment that includes hypoxia, local mechanical stresses, impaired delivery of nutrients, and buildup of toxic metabolic byproducts.
- This includes pressure injuries, wounds that occur at life's end, and in the setting of multi-system organ failure.

Levine JM. Skin Failure: an emerging concept. J Am Med Dir Assoc 2016;17:666-9.

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PHYSICAL MANIFESTATIONS OF SKIN FAILURE

- Hemodynamic changes
  - **Hypoperfusion of skin** – shunting of blood to vital organs to preserve life
  - Decreased blood flow to skin organ
- Impaired t**hermoregulatory** control
  - From aging and comorbidities
- Metabolic abnormalities of **toxic metabolites from catabolism**

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Final Consensus Statement

Abstract

An expert panel was established to formulate a consensus statement on Skin Changes At Life's End (SCALE). The panel consists of 18 internationally recognized key opinion leaders including clinicians, caregivers, medical researchers, legal experts, academicians, a medical writer and leaders of professional organizations. The inaugural forum was held on April 4-6, 2008 in Chicago, IL, and was made possible by an unrestricted educational grant from Gaymar Industries, Inc. The panel discussed the nature of SCALE, including the proposed concepts of the Kennedy Terminal Ulcer (KTU) and skin failure along with other end of life skin changes. The final consensus document and statements were edited and reviewed by the panel after the meeting. The document and statements were initially externally reviewed by 49 international distinguished reviewers. A modified Delphi process was used to determine the final statements and 51 international distinguished reviewers reached consensus on the final statements.

The skin is the body's largest organ and like any other organ is subject to a loss of integrity. It has an increased risk for injury due to both internal and external insults. The panel concluded that: our current comprehension of skin changes that can occur at life's end is limited; that SCALE process is insidious and difficult to prospectively determine; additional research and expert consensus is necessary; and contrary to popular myth, not all pressure ulcers are avoidable.

Specific areas requiring research and consensus include: 1) the identification of critical etiological and pathophysiological factors involved in SCALE, 2) clinical and diagnostic criteria for describing conditions identified with SCALE, and 3) recommendations for evidence-informed pathways of care.

The statements from this consensus document are designed to facilitate the implementation of knowledge-transfer-into-practice techniques for quality patient outcomes. This implementation process should include interprofessional teams (clinicians, lay people and policy makers) concerned with the care of individuals at life's end to adequately address the medical, social, legal, and financial ramifications of SCALE.

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SCALE

SKIN CHANGES AT LIFE'S END

- ***Physiologic changes that occur as a result of the dying process (days to weeks) may affect the skin and soft tissues and may manifest as observable (objective) changes in skin color, turgor, or integrity, or as subjective symptoms such as localized pain.***
- ***These changes can be unavoidable and may occur with the application of appropriate interventions that meet or exceed the standard of care.***

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SCALE

SKIN CHANGES AT LIFE'S END

- Skin changes at life's end are a reflection of compromised skin:
- Reduced soft tissue perfusion,
- Decreased tolerance to external insults,
- Impaired removal of metabolic wastes.

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SKIN FAILURE

- Based on the SCALE document (2008) and NPUAP position statements (2011, 2014), two conditions necessary for establishing the diagnosis of skin failure are skin hypoperfusion and severe organ dysfunction or failure (White-Chu & Langemo, 2012)
- ICD-10 diagnosis of skin failure: L98.9 Disorders of the skin
- When it appears skin failure/KTU involved in failing skin integrity have provider collaboration a.s.a.p.

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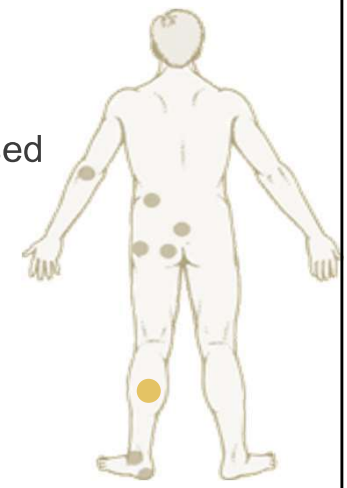
END-STAGE ORGAN DECOMPENSATION AND FAILURE

- Large and unusual presentations of skin failure
- Body shunts blood to vital organs
- Widespread and deep tissue destruction over stressed areas can appear in a matter of hours or less
  - Sacrum
  - Heels
  - Posterior calf muscles
  - Arms
  - Elbows



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SKIN FAILURE IN INDIVIDUALS WITH ADVANCED OR TERMINAL DISEASES

- These patient/residents at significant risk for KTU/Skin Failure
- Full-thickness (appearance of Stage 3 and 4 pressure injuries common; but in reality are KTUs/Skin Failure)
- Majority of skin failure in hospice occur ~2 weeks before death
- Correlates with physiological shut down of body systems 10-14 days before death

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DIFFICULT TO TELL THE DIFFERENCE BETWEEN PU/PI AND SKIN FAILURE

Pressure Ulcer/Injury

- Necrosis
- Ulceration
- Blistering
- Usually over bony prominences
- Over 100 risk factors for PIs
- Immobility, decreased nutrients/fluids, decreased oxygenation, etc.

Skin Failure

- Necrosis
- Ulceration
- Blistering
- Mottling-shunting blood from skin
- Gangrene
- Anywhere on the body
- In association with organ failure

Signs of Organ Failure

Skin Mottling. Pt. in respiratory failure and hypotension

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CMS SOM F686

PRESSURE ULCER/INJURIES AT END OF LIFE F686 GUIDANCE TO SURVEYORS

- *"It is important for surveyors to understand that when a facility **has implemented** individualized approaches for end-of-life care in accordance with the resident's wishes, the development, continuation, or worsening of a PU/PI may be considered **unavoidable**.*
- *If the facility **has implemented** appropriate efforts to stabilize the resident's condition (or indicated **why the condition cannot or should not be stabilized**) and has **provided care to prevent or treat existing PU/PIs** (including pertinent, routine, lesser aggressive approaches, such as, cleaning, turning, repositioning), the PU/PI may be considered **unavoidable and consistent with regulatory requirements."***

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GOALS FOR TREATMENT OF KTU/SKIN FAILURE WOUNDS AT END-OF-LIFE

- Prevent wound deterioration as much as possible using current evidence-based wound care practices
- Conservative interventions often more appropriate (e.g. collagenase/Santyl for debridement instead of sharp/surgical)
- Pain assessment and management – do NOT undertreat pain unless requested by resident
- Odor management
- Infection prevention/management
- Maximize ADLs to resident's tolerance and wishes
- POC should enhance QoL even though the wound may not improve or heal

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PREVENTION OF AVOIDABLE PU/PI

- Comprehensive assessment for PU/PI risk factors – beyond Braden **- Care planning for every risk factor that is modifiable**
- Documentation of non-modifiable risk factors **by providers**
- Specialty mattresses/bed surfaces for bedbound residents at high risk for PU/PI due to documented risk factors
- Heel protectors for all bedbound residents…heel-lift devices that distribute pressure over the entire calf are recommended over pillows

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PREVENTION OF AVOIDABLE PU/PI

- Nutritional supplements
- Adherence to prevention protocols by facility staff
- Timely/complete skin and risk assessments with change of condition
- Education for residents and family, where applicable
- **If all of these steps are implemented, the resident/patient may develop an unavoidable pressure injury, BUT the facility will be in compliance with the regulations**

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DOCUMENTATION: WHAT TO INCLUDE

- Accurate and timely documentation
- Adherence to facility PU/PI prevention protocols
- Consistency in care with supporting documentation of interventions
- Documentation of skin and wound assessments
- Documentation of interdisciplinary care
- Documentation of education with residents/patients and family

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CAN YOUR TEAMS DIFFERENTIATE THESE ETIOLOGIES ON THE BUTTOCKS?

Moisture Associated Skin Damage

Deep Tissue Pressure Injury

Pressure Forces

Kennedy Terminal Ulcer

Skin Failure

CMS Unavoidable PU/PI

Chronic Tissue Injury

Not Pressure Related

COVID-19 Skin Manifestation

Coagulopathy (Clots) Damage

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NPIAP DOCUMENT ON DTPI AND IMPOSTERS PROVIDED AS A HANDOUT

Some of these Pressure Injury Imposters may also look like an unavoidable pressure injury.

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SUMMARY

- Skin failure - a subset of multiple organ dysfunction syndrome (MODS) (Bone et al, 1992)
- These skin disruptions are NOT pressure ulcers (Langemo & Brown, 2006, White-Chu & Langemo, 2012, Delmore et al. 2015)
- Skin failure and PU/PI are 2 distinct phenomena, yet interrelated & may occur simultaneously *(Delmore, Cox, Rolnitzky et al, 2015)*
- Skin Failure occurs without the presence of pressure and/or shear. (White-Chu & Langemo, 2012)
- PU/PI can occur in people not chronically ill or at life's end (e.g. paraplegics /quadriplegics)
- Skin failure can occur acutely, in chronically ill residents, or at life's end (Langemo 2006)
- Respiratory failure significantly associated with skin failure (Curry et al, 2012, Levine et al, 2009)
- Curry et al also found 2 or more failed organ systems resulted in skin failure

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SUMMARY

- We need good quality studies that confirm the physiological skin changes, what we see on the skin AND what is under the skin, that validates skin failure resulting from MOF as a different mechanism of injury from pressure forces.
- In the meantime…document ALL of the patients' and residents' multiple organ pathology that may lead to skin failure/KTU aka unavoidable PU/PI
- Care plan for each identified risk factor for PU/PI
- Use the Unavoidable PI/PU designation provided by CMS to soften the survey issues when you cannot stop the overall failure of the skin that fails in tandem with the other organs at life's end.

MOF=Multi-Organ Failure

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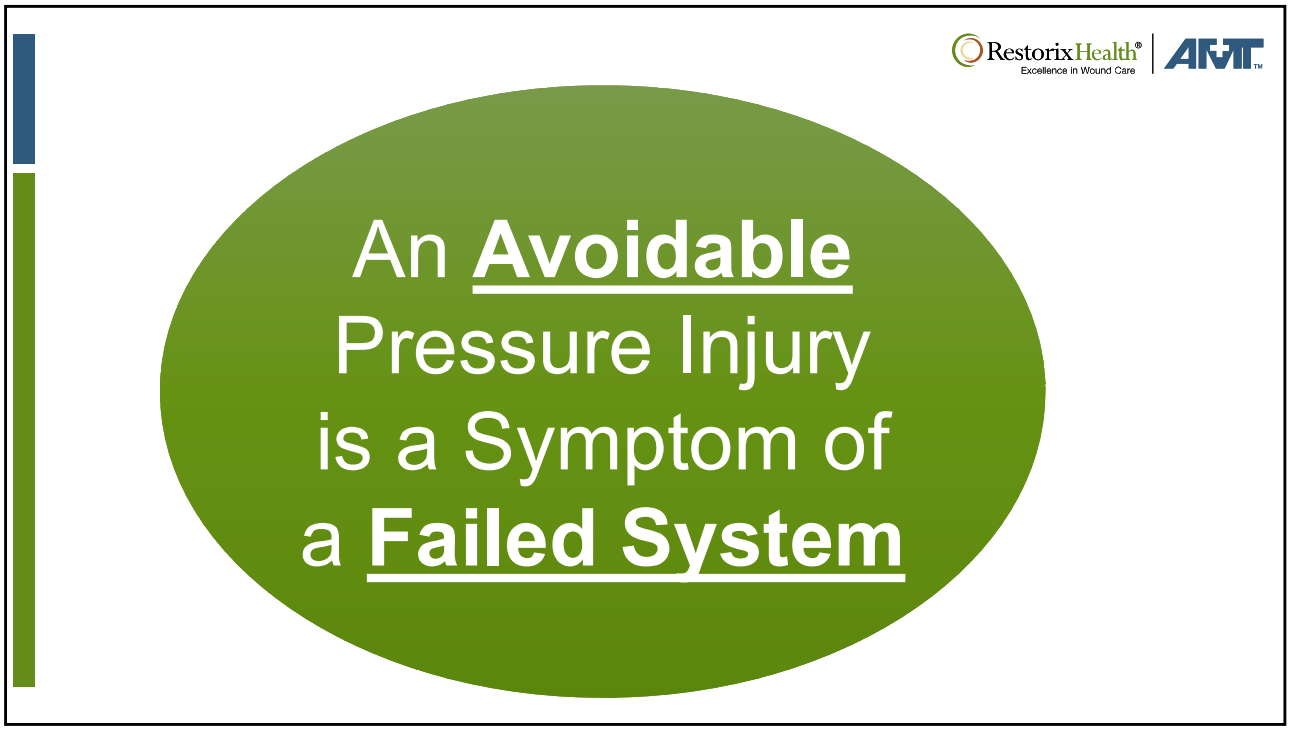
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AMT
An Avoidable
Pressure Injury
is a Symptom of
a Failed System

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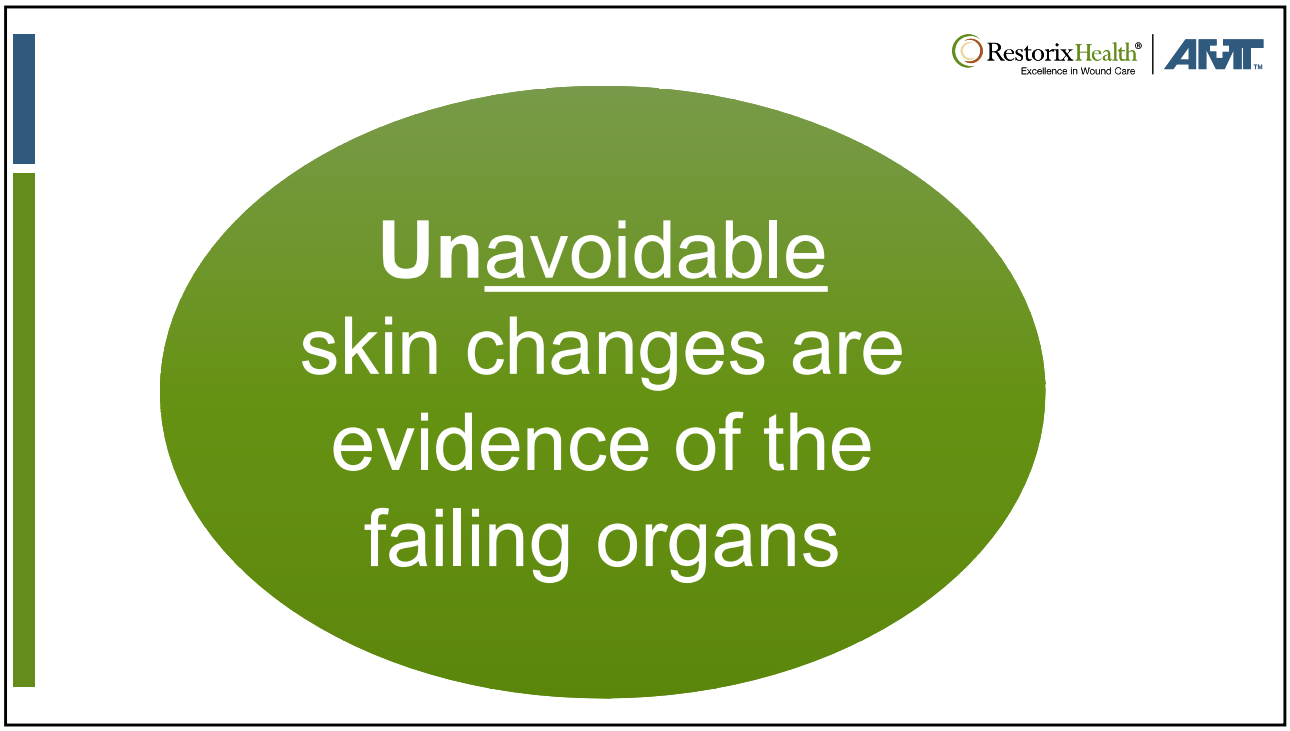
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AMT
Unavoidable
skin changes are
evidence of the
failing organs

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THANK YOU!!!

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REFERENCES/RESOURCES

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