

Preventing Pressure Injuries after Spinal Cord Injury

WIND Conference
October 22, 2022

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Overview

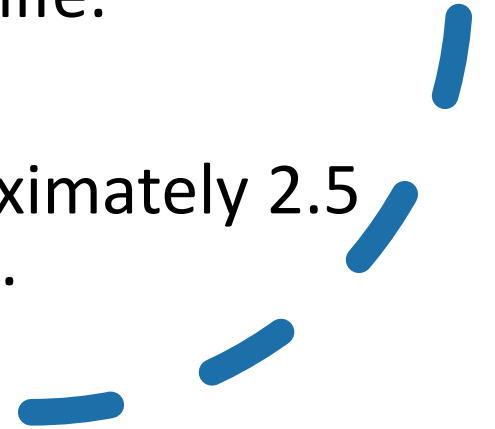


- What are pressure injuries?
- How do I avoid getting a pressure injury?
- What do I do if I find a pressure injury?
- What research is being done on pressure injury prevention?

Did you know...



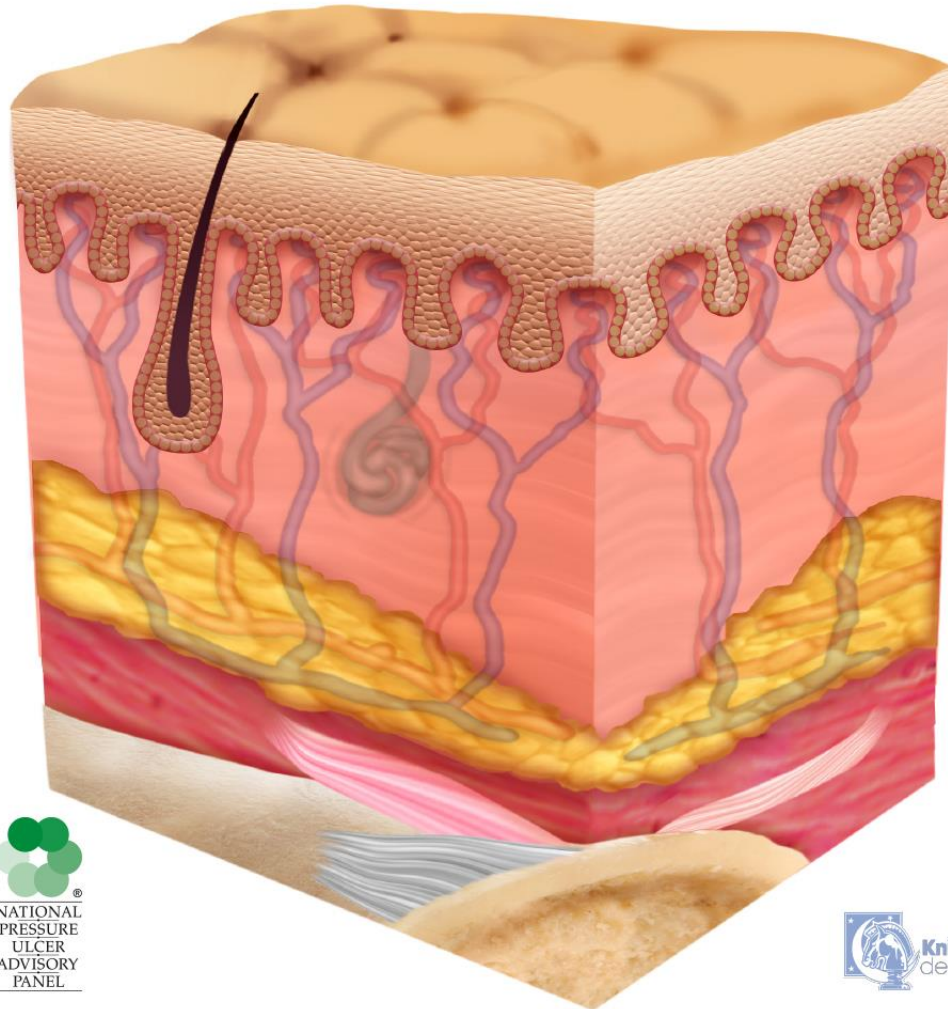
- Pressure Injuries are the second most common reason for hospitalization after SCI.
- ~25% of adults with paralysis will have one or more pressure injuries at any given time.
- Pressure Injuries can cause pain, discomfort, negative body image, etc., leading to greater isolation and decreased quality of life.
- Pressure Injury treatment is approximately 2.5 times more costly than prevention.



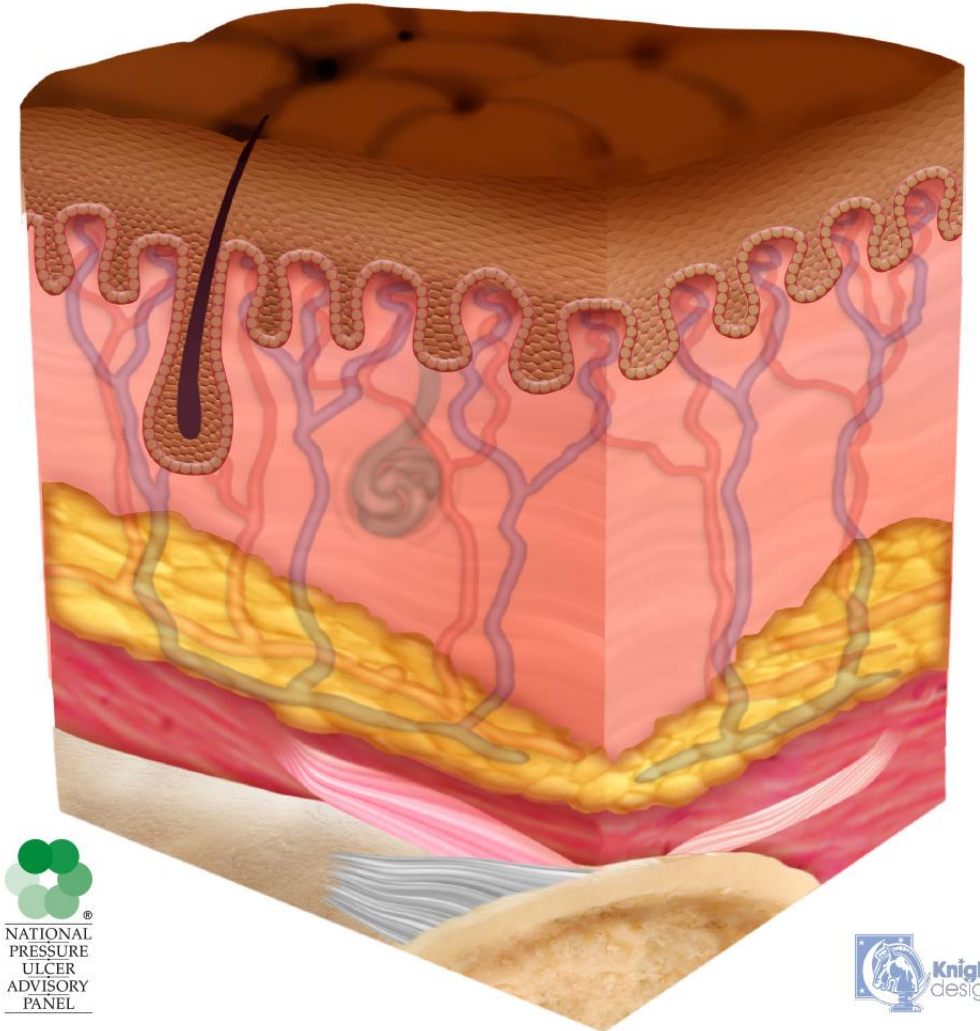
What are Pressure Injuries?



Healthy Skin – Lightly Pigmented



Healthy Skin – Darkly Pigmented



NATIONAL
PRESSURE
ULCER
ADVISORY
PANEL



Knight
design

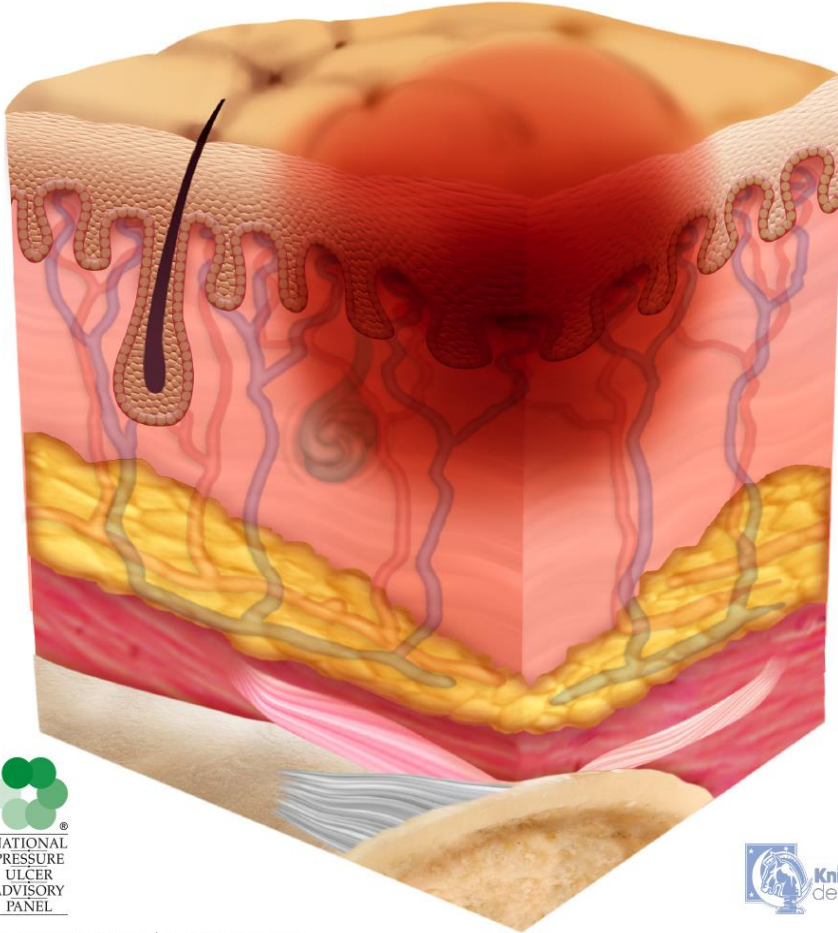


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Knight
designs

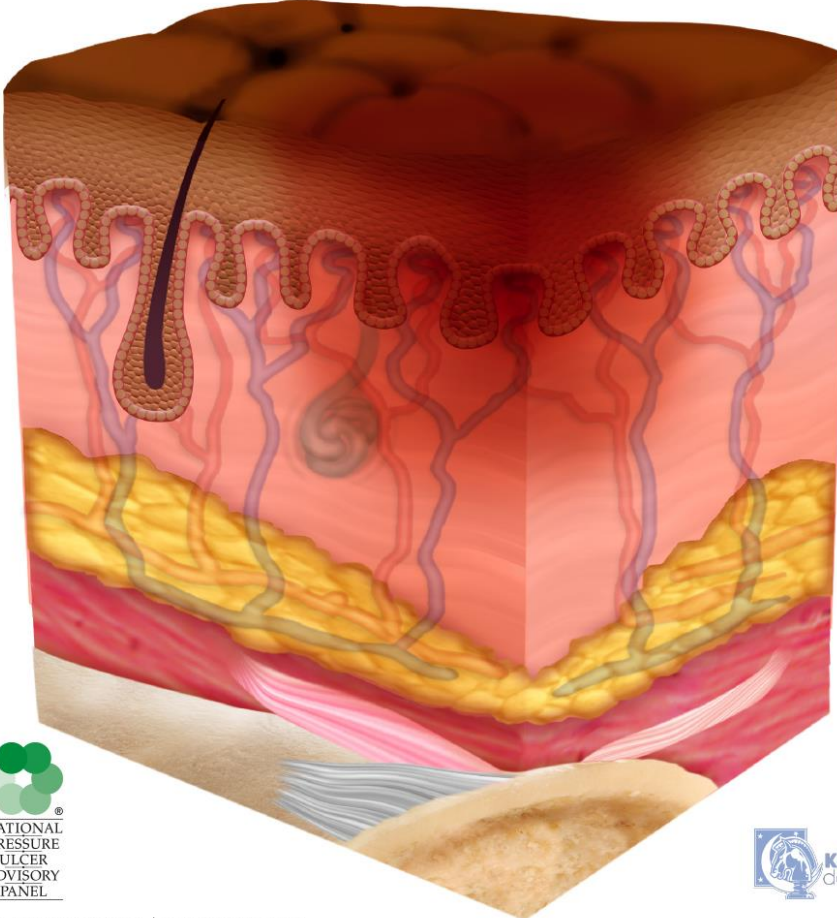
Stage 1 Pressure Injury - Lightly Pigmented



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Stage 1 Pressure Injury - Darkly Pigmented

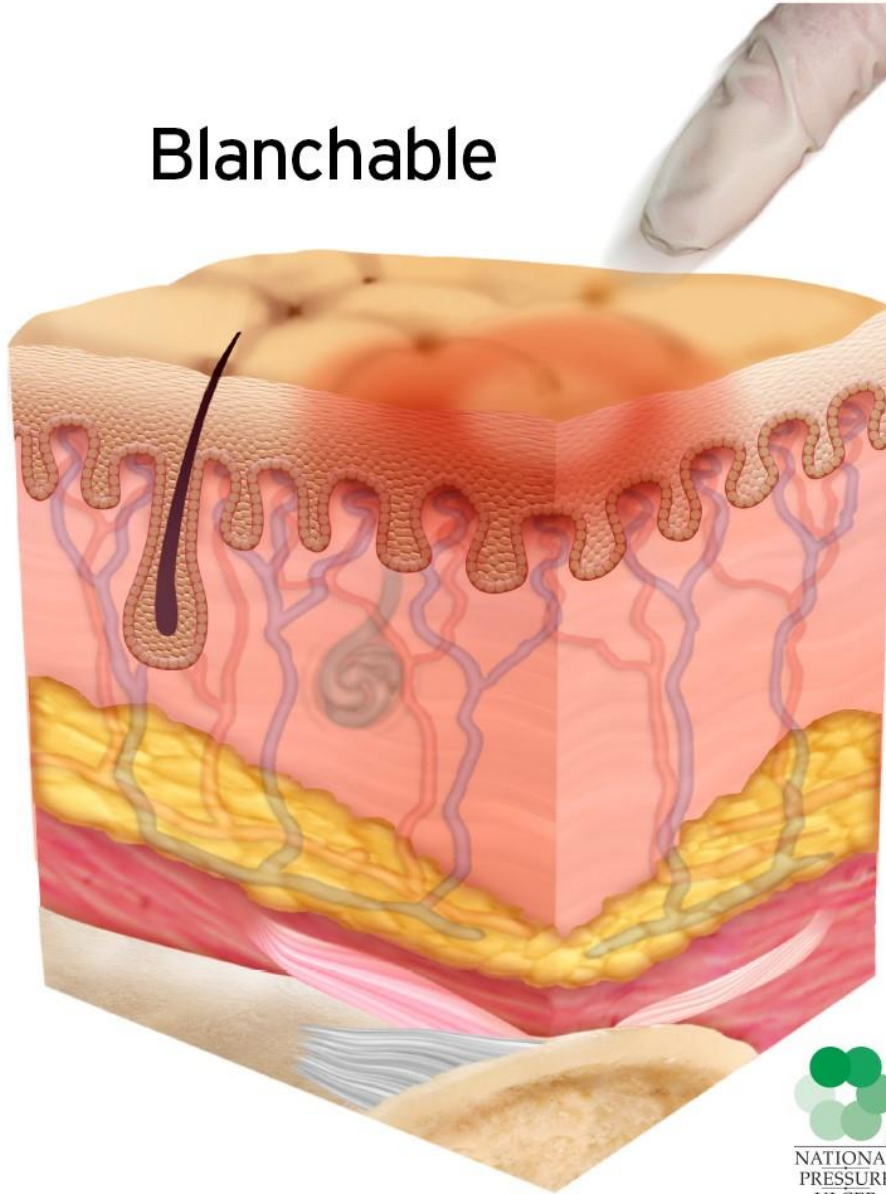


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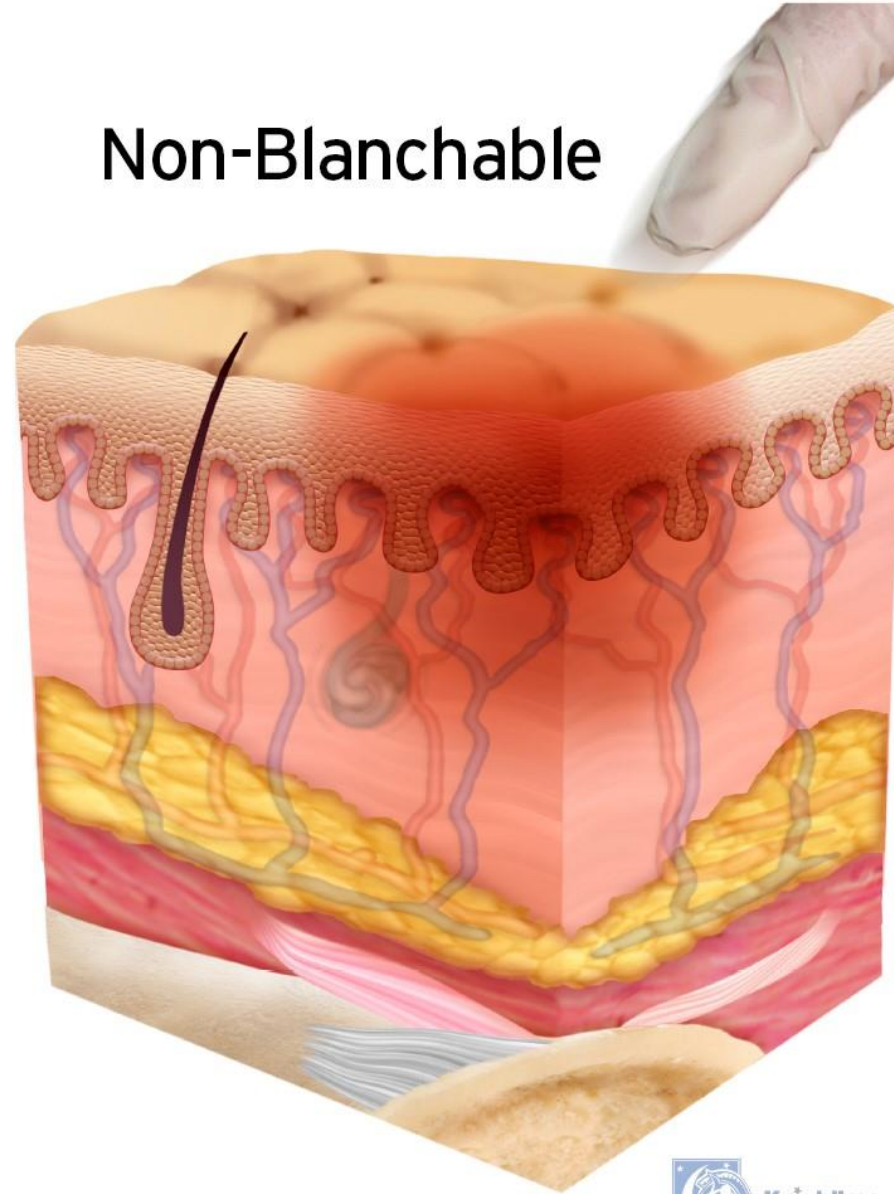


Blanchable vs Non-Blanchable

Blanchable



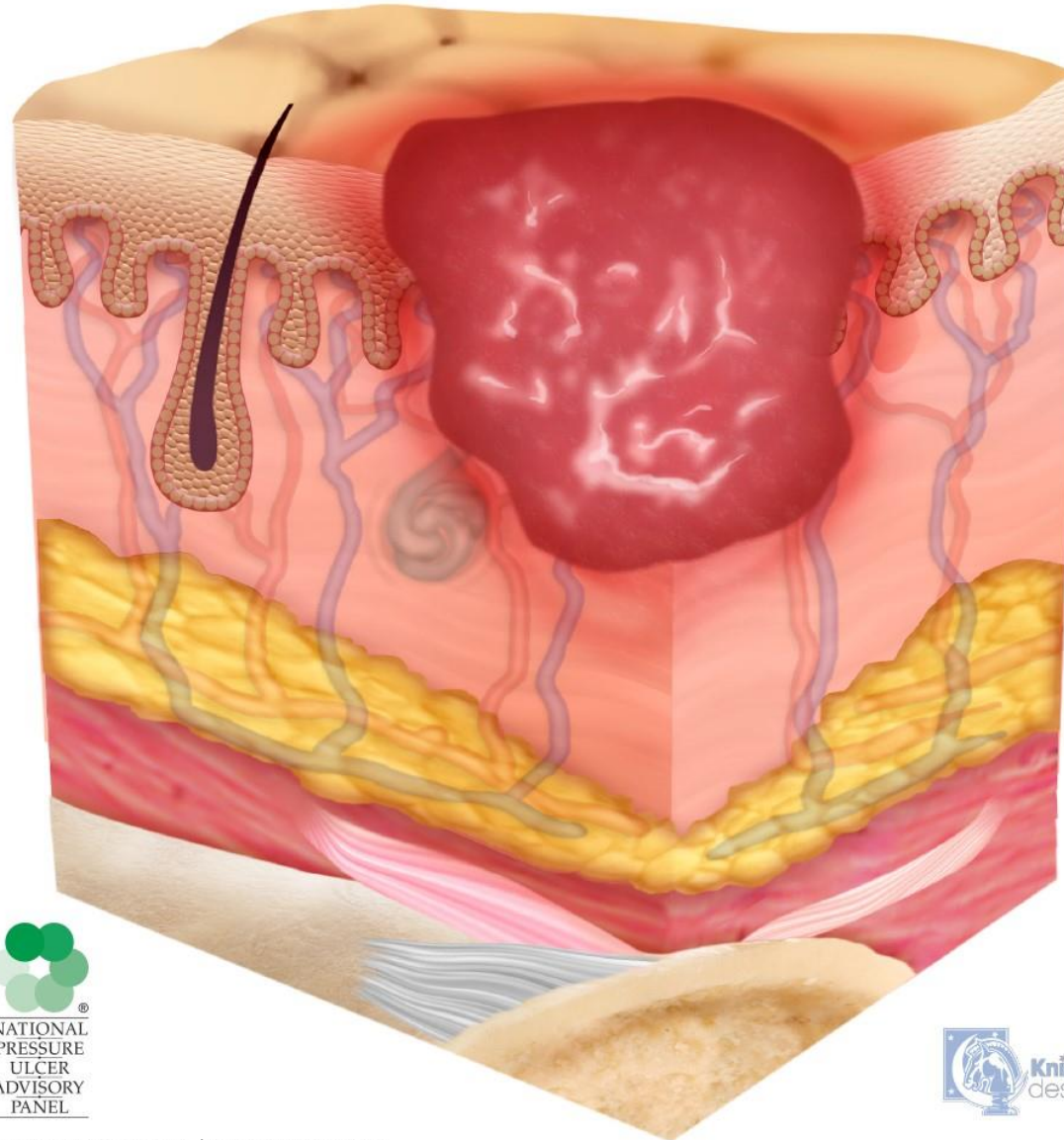
Non-Blanchable



Stage 1



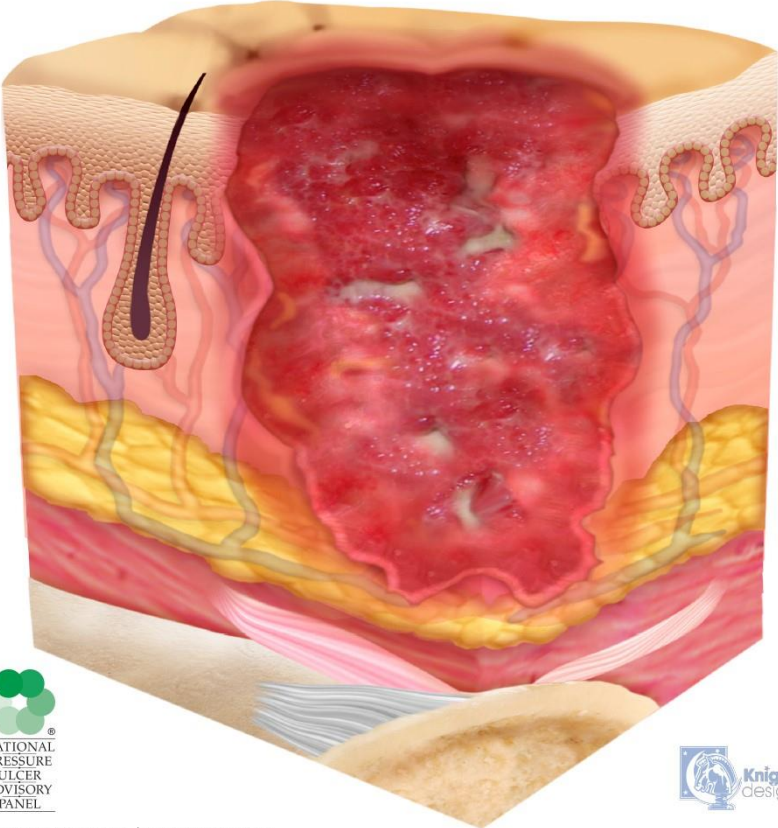
Stage 2 Pressure Injury



Stage 2



Stage 3 Pressure Injury



NATIONAL PRESSURE ULCER ADVISORY PANEL

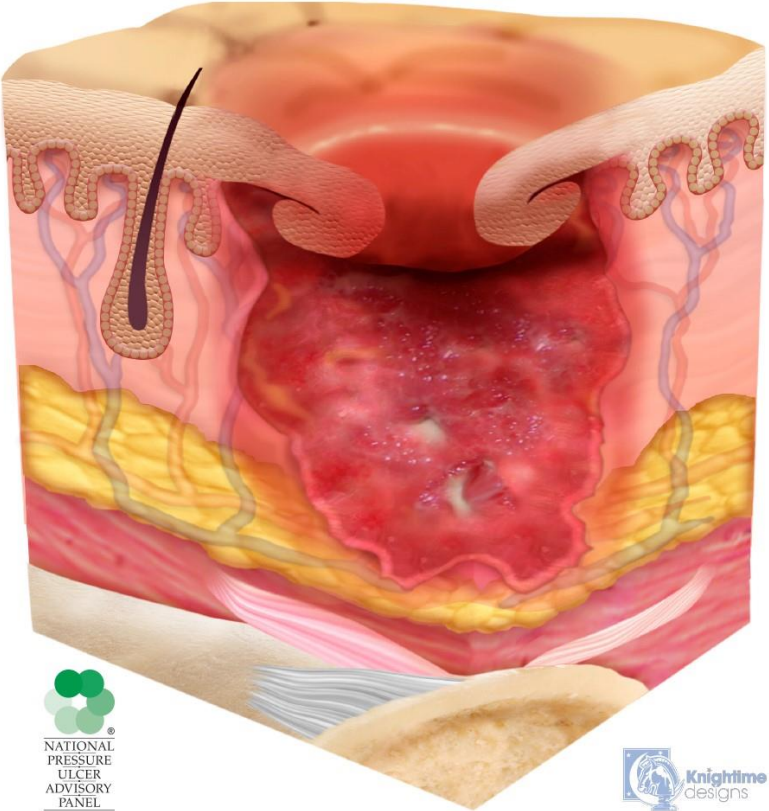


- Needs medical attention

Stage 3 Pressure Injury with Epibole



Area of Focus



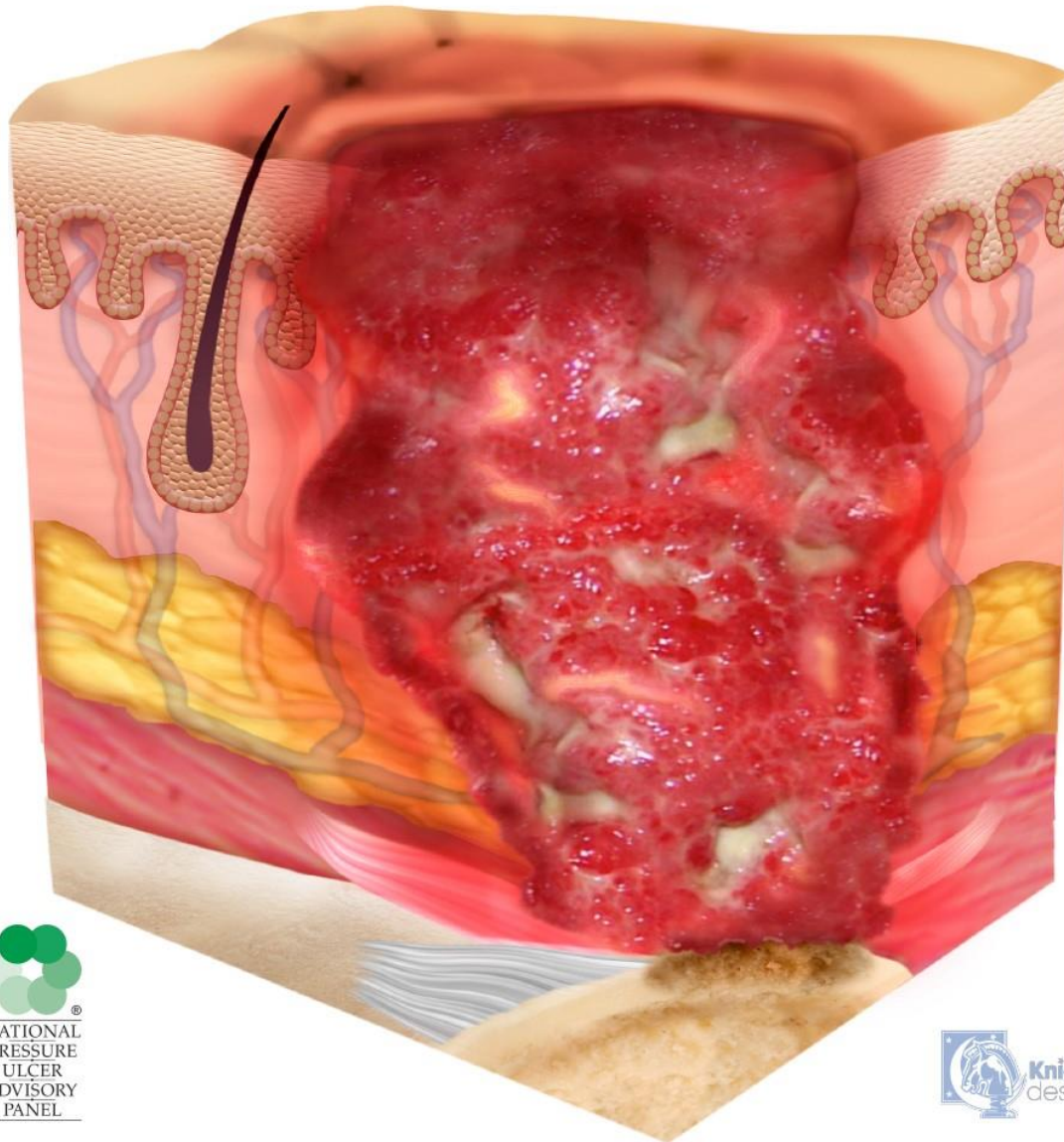
NATIONAL PRESSURE ULCER ADVISORY PANEL



Stage 3



Stage 4 Pressure Injury



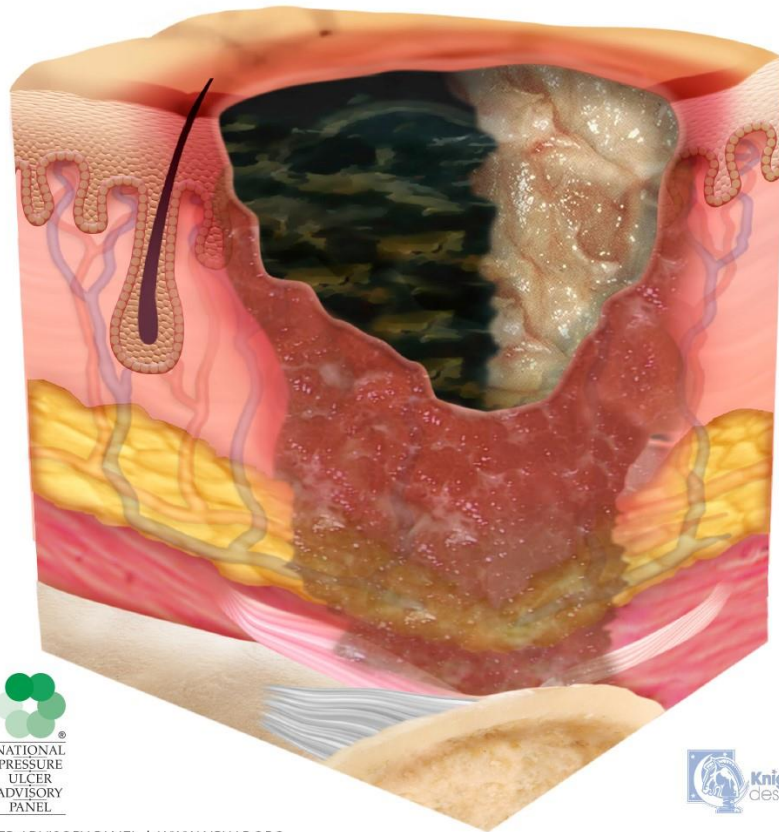
- Needs medical attention
- Will likely require that you go to hospital



Stage 4

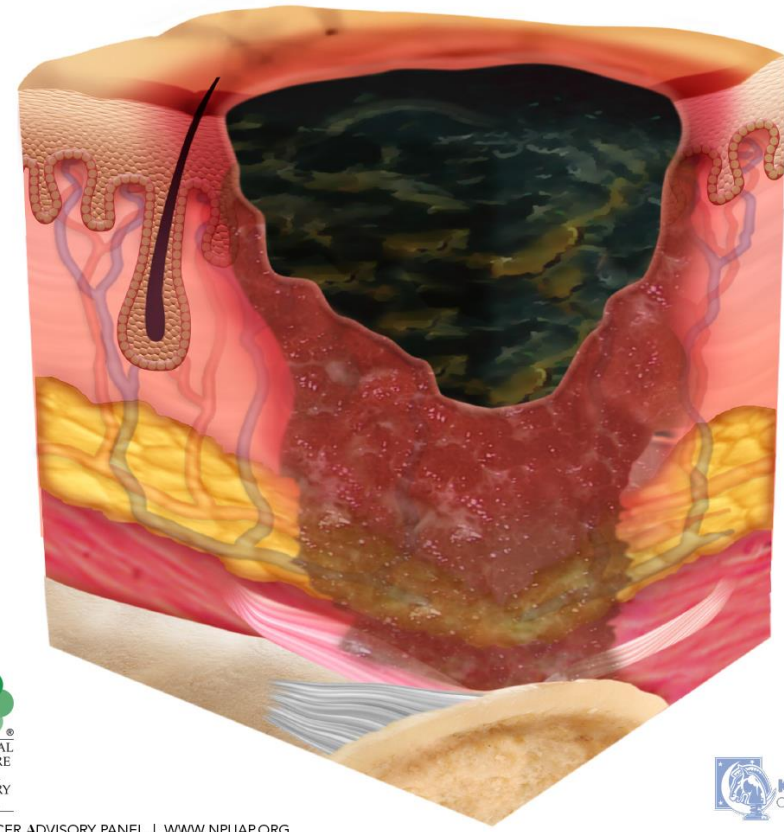


Unstageable Pressure Injury - Slough and Eschar



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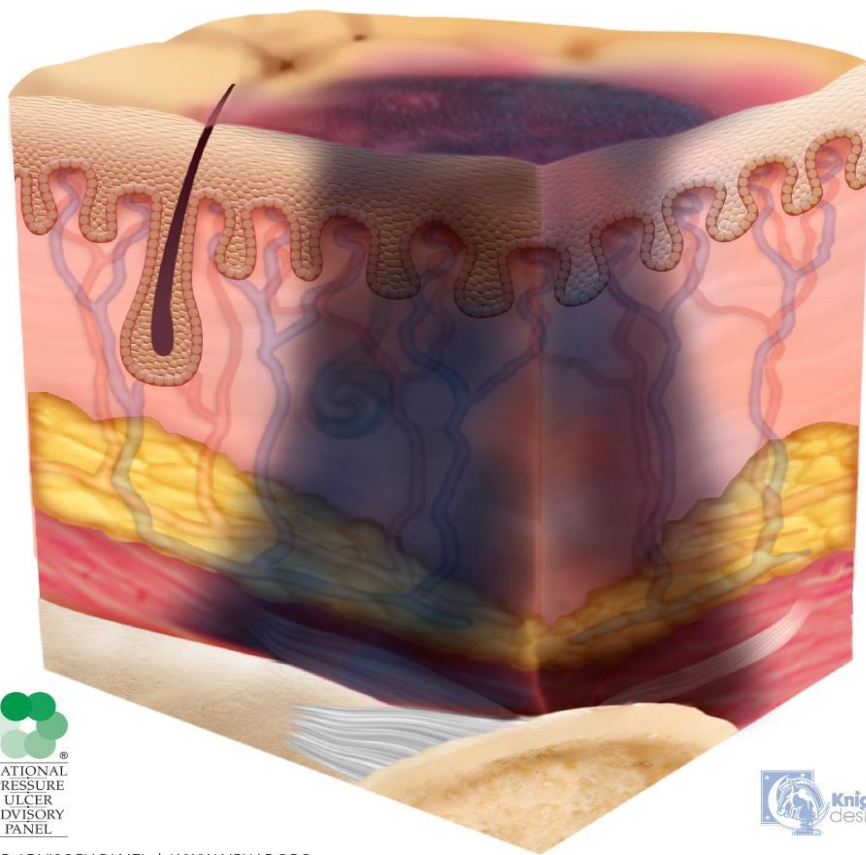
Unstageable Pressure Injury - Dark Eschar



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Deep Tissue Pressure Injury




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ESSURE ULCER ADVISORY PANEL | WWW.NPUAP.ORG



How can I avoid getting
a pressure injury?





“I regret taking such good care of my skin!”

- Said no one ever!

Risk Factors

- Immobility and lack of feeling
- Shear, friction, and moisture
- Prior pressure injury
- Unhealthy diet
- Older age
- Smoking
- Incontinence
- Other chronic conditions like diabetes, vascular disease, etc.
- Poor support system
- Unreliable caregivers
- Low income
- Mental health issues
- Lack of transportation
- Poor quality equipment
- Poorly fitting equipment
- Lack of access to healthcare



Important message!

- Understand YOUR risk factors!
- Everyone's level of risk is different.
- There is NO “one size fits” all approach to pressure injury prevention!
- Find out what works for you.

Pressure Release

Rule of thumb:

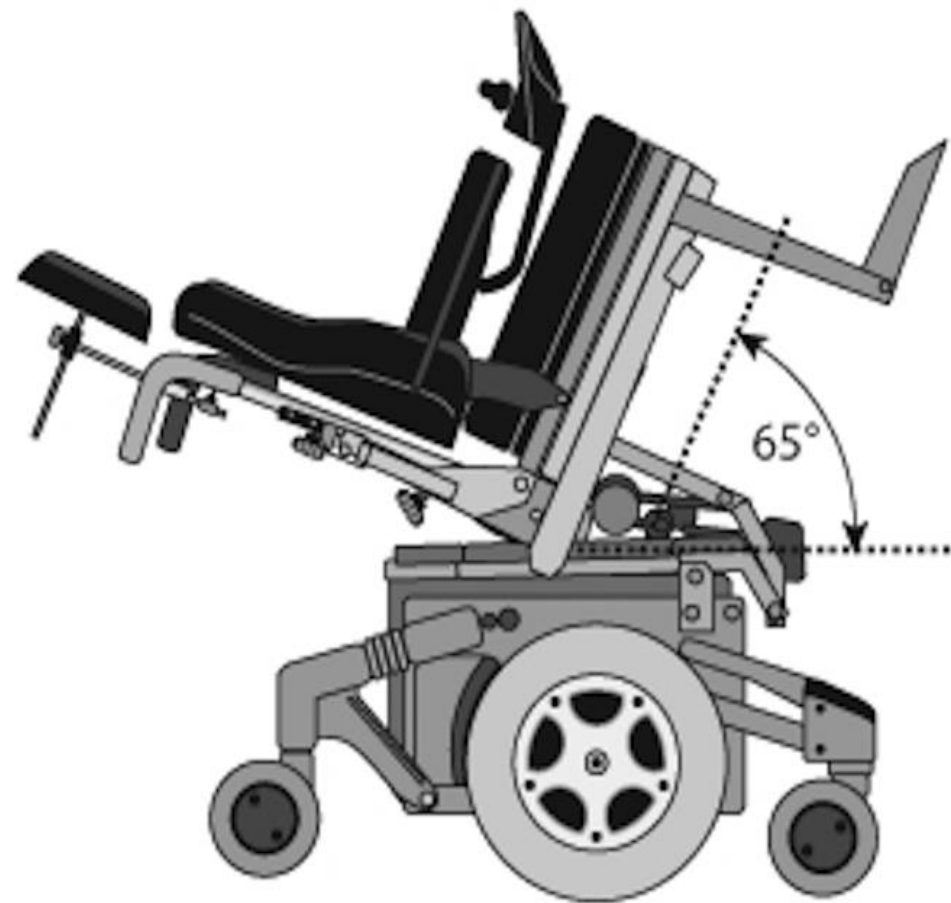
Every 30 minutes for 15-20 seconds

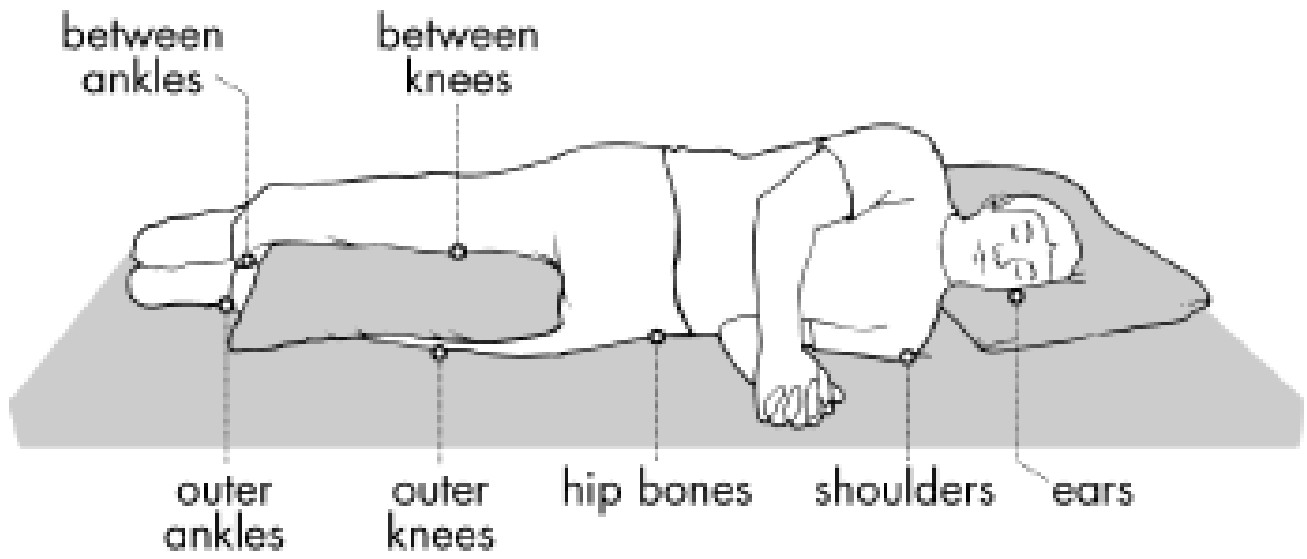
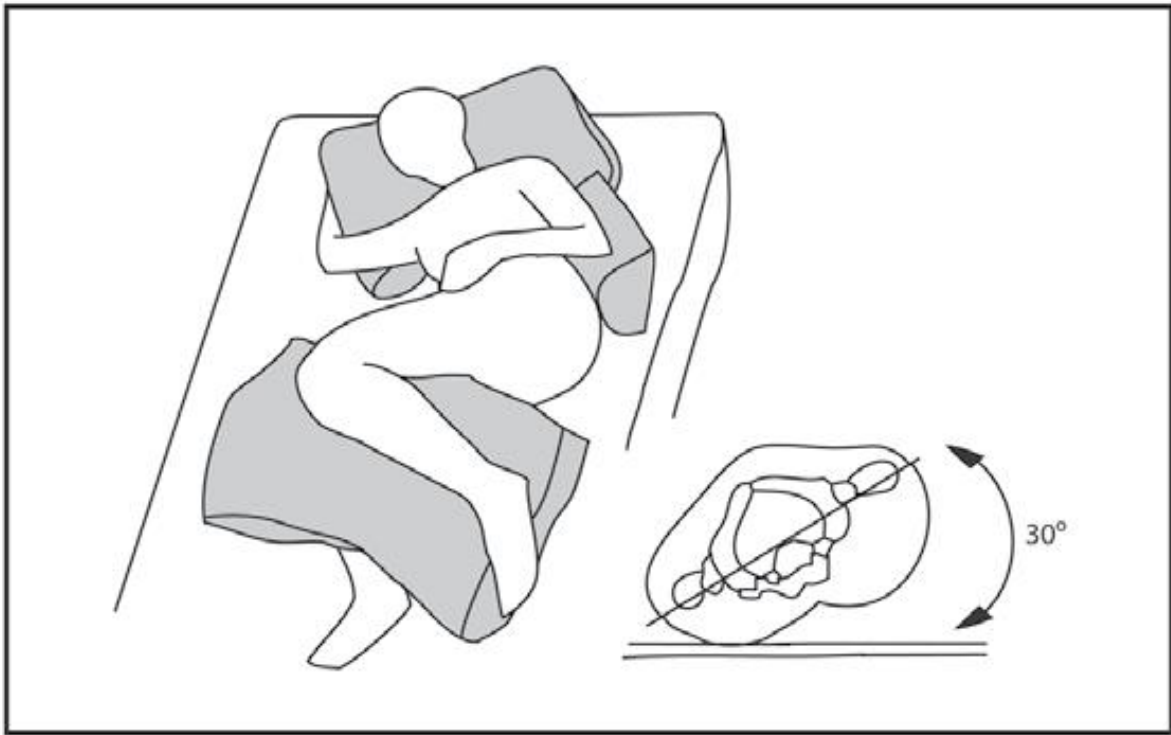
Regular skin checks can guide seating and pressure release schedule.



Figure 1 - Patient with SCI performing a push-up maneuver for pressure relief.







Skin Checks



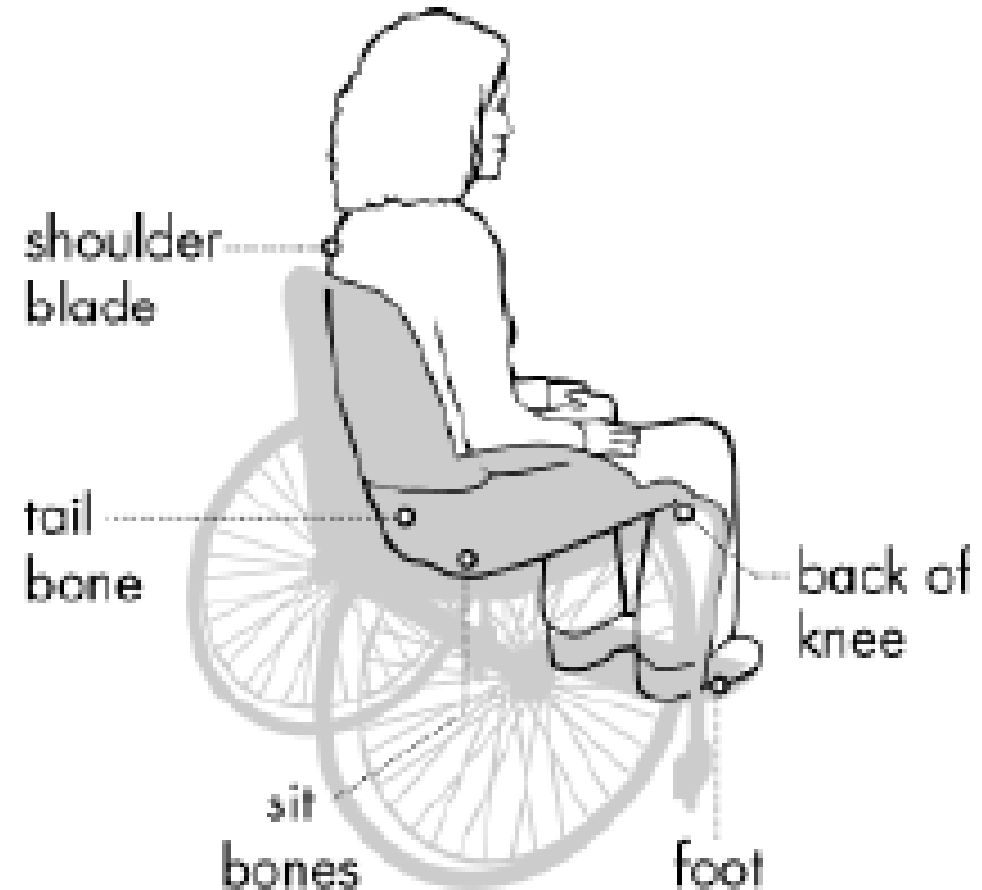
Skin Checks

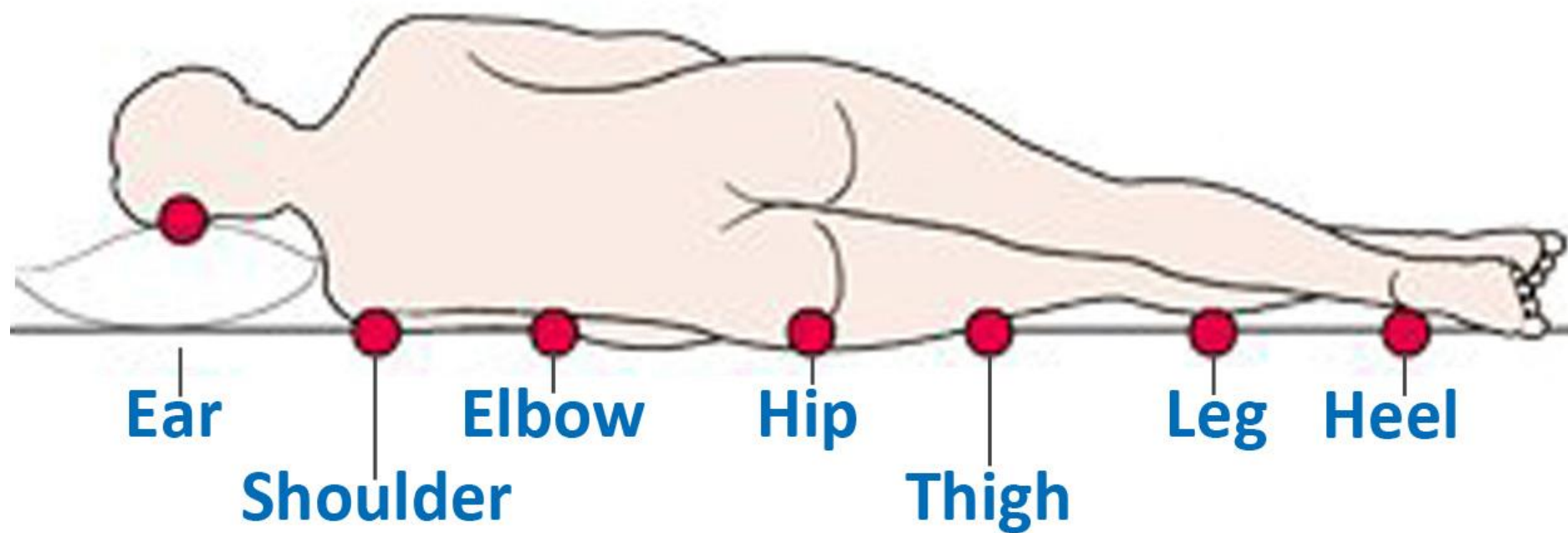
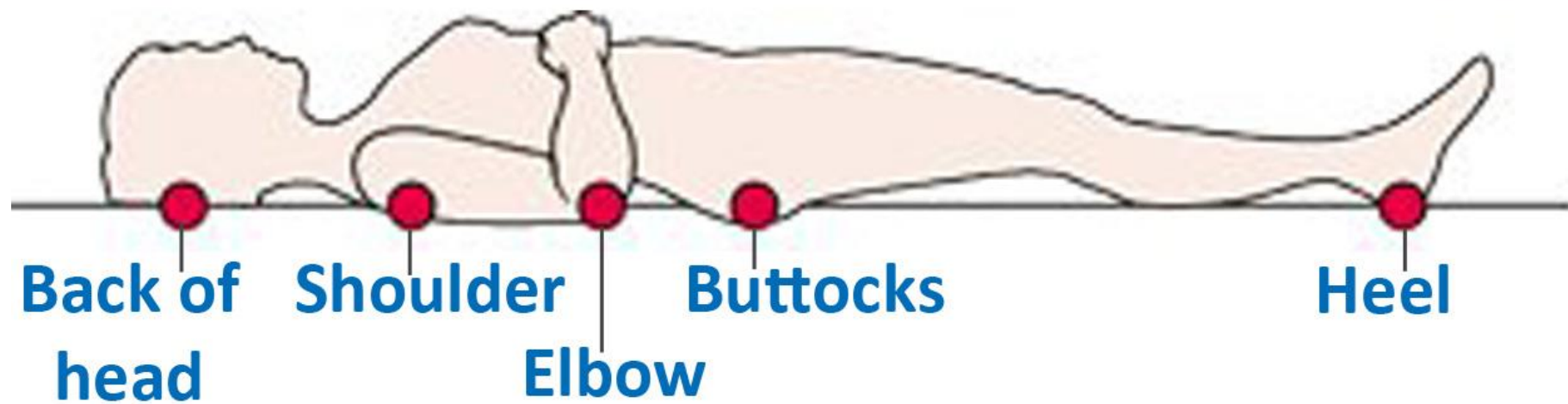
- Twice a day!
- Use a mirror to check your backside or ask someone to check for you



Skin Checks

- Know the areas on your body that are high risk for pressure injury.







Good Hygiene




Good Nutrition
and Enough
Water



Avoid poorly fitting clothing and equipment.



What do I do if I find a
pressure injury?





Be good to your
skin! You will
wear it every day
for the rest of
your life!

Stage 1

What to do:

- Stay off area and remove all pressure.
- Find and remove the cause.
- Keep the area clean and dry.
- Eat adequate calories high in protein.
- Drink more water.
- Inspect the area at least twice a day.

Healing time:

- A pressure sore at this stage can be reversed in about three days if all pressure is taken off the site.
- Call your healthcare provider if it has not gone away in 2-3 days.



Stage 2

What to do:

- Get the pressure off.^[L]_[SEP]
- Follow steps for a Stage 1 injury.^[L]_[SEP]
- **Contact your health care provider for guidance in treatment options.**^[L]_[SEP]

Healing time:

- Three days to three weeks.



Stage 3

What to do:

- If you have not already done so, **get the pressure off the area and see your health care provider right away.**^[L]_[SEP]
- Wounds in this stage frequently need special wound care.^[L]_[SEP]
- You may also qualify for a special bed or pressure-relieving mattress that can be ordered by your health care provider.^[L]_[SEP]

Healing time:

- More than one to four months.



Stage 4

What to do:

- **Always consult your health care provider right away.**
- Hospitalization and surgery are frequently required for this type of wound.

Healing time:

- Anywhere from three months to two years.



If you find a pressure injury, **get the pressure off** of it.

This may mean a few days in bed.

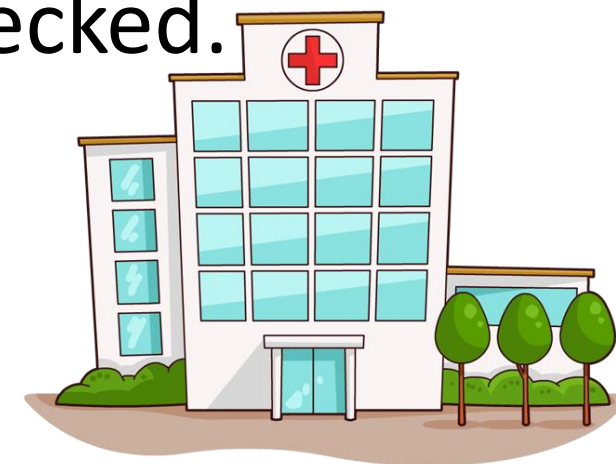
Try to find out what caused it and **remove the problem**.

Sometimes seams on clothes or tight shoes can cause problems.

Make adjustments to your prevention plan – e.g. more frequent pressure release, shorter time sitting.

If you are not sure, **go to your doctor** to get checked.

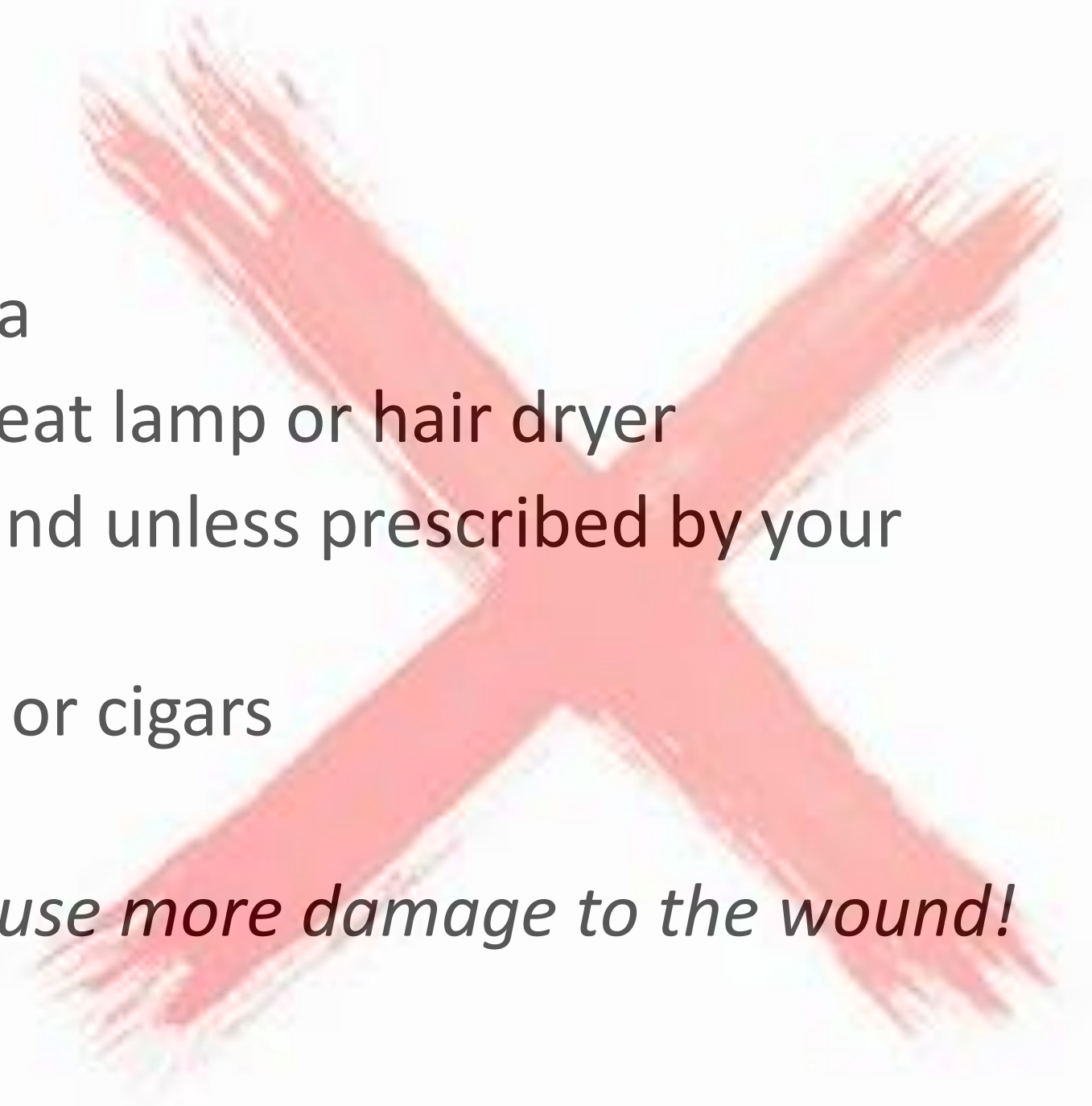
Stage 3 and 4 injuries always require medical attention, and may need surgery to heal.



Please DO NOT...

- Rub or massage the area
- Dry the wound with a heat lamp or hair dryer
- Put anything in the wound unless prescribed by your doctor
- Smoke cigarettes, pipes or cigars

All of these things can cause more damage to the wound!





DO NOT IGNORE EARLY WARNING SIGNS THAT A PRESSURE INJURY IS DEVELOPING!

- **UNTREATED PRESSURE INJURIES CAN LEAD TO:**
 - Infection can spread to the blood, heart and bone.
 - Amputations.
 - Prolonged bed rest that can keep you out of work, school and social activities for months.
 - Treatment can be very costly in lost wages or additional medical expenses.

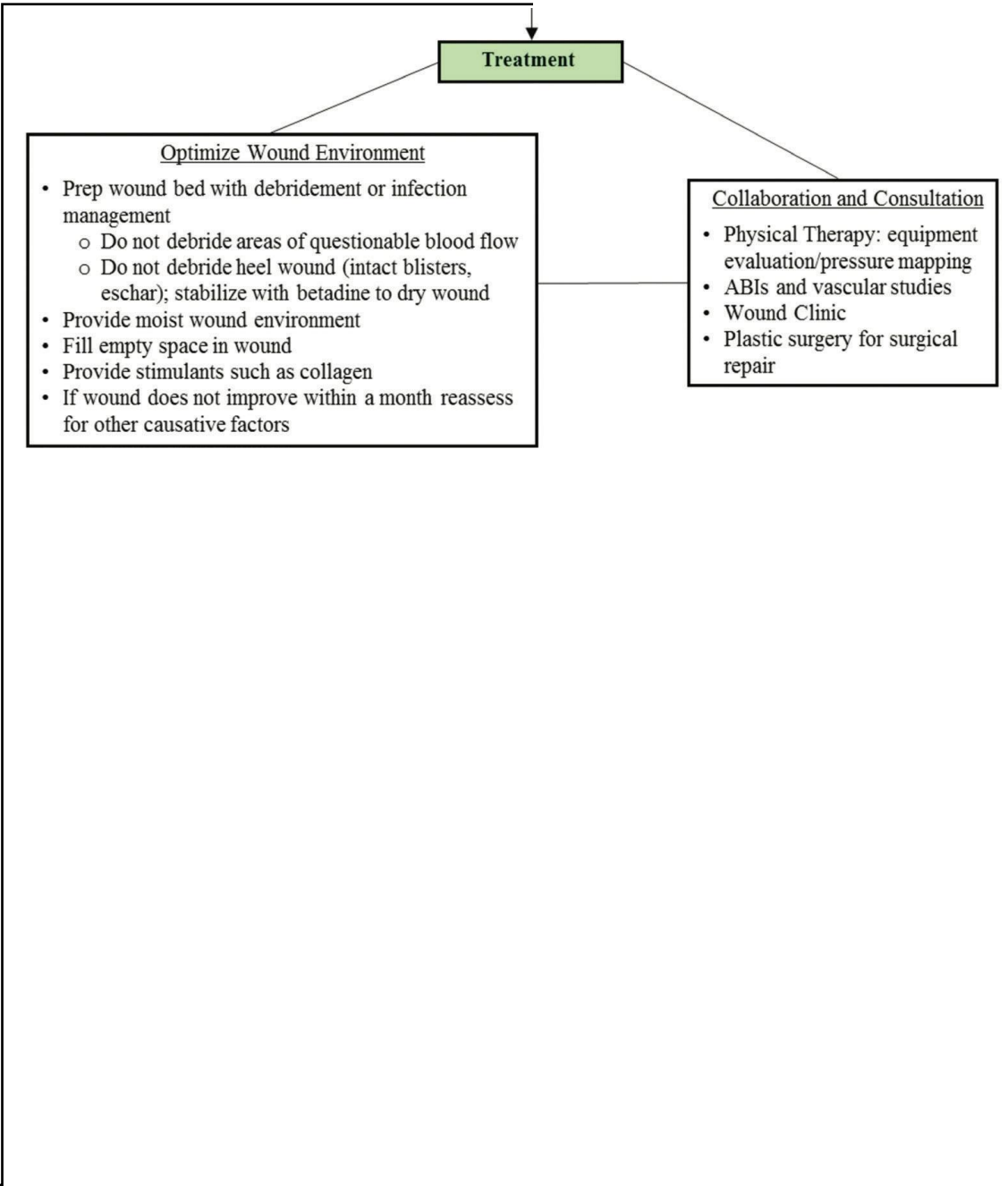
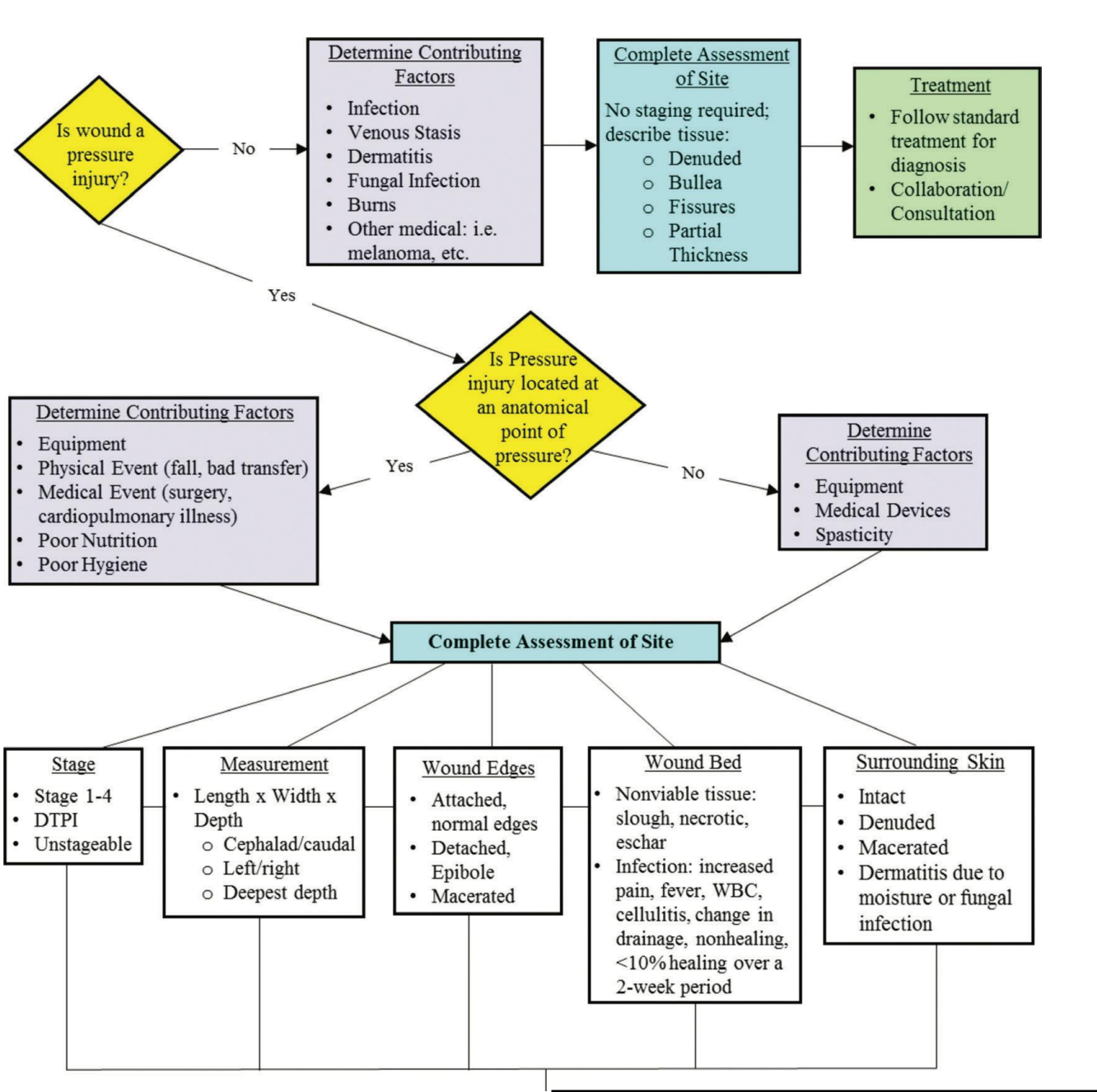



A Primary Care Provider's Guide to Prevention and Management of Pressure Injury and Skin Breakdown in People With Spinal Cord Injury

Nicole R. Rosin, APNP, CRRN, WCC,¹ Robyn S. Tabibi, MD,² John D. Trimbath, PA-C, MPAS,³ and Mary Kristina Henzel, MD, PhD^{4,5}

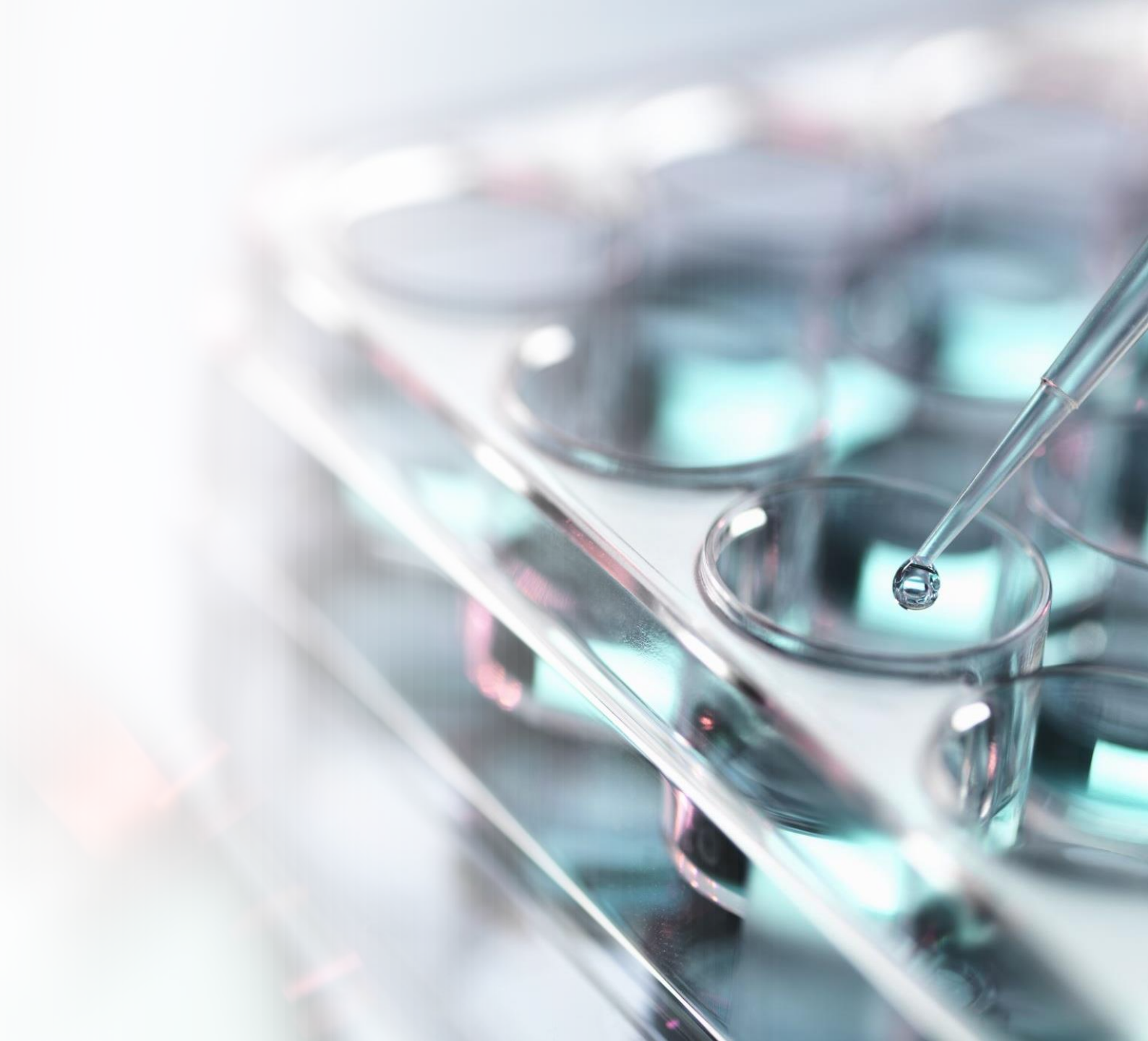
¹Spinal Cord Injury Primary Care, Clement J. Zablocki VA Medical Center, Milwaukee, Wisconsin; ²HealthEast Clinic, Roselawn, St. Paul, Minnesota; ³Crossroads Health, Mentor, Ohio; ⁴Spinal Cord Injuries and Disorders Center, Louis Stokes Cleveland VA Medical Center, Cleveland, Ohio; ⁵Case Western Reserve University/MetroHealth System, Department of Physical Medicine & Rehabilitation, Cleveland, Ohio

Abstract: Skin breakdown, including burns and pressure injuries (PrIs), is a devastating complication of spinal cord injury (SCI). Chronic wounds place the person with SCI at high risk of infections, sepsis, and death. Skin health and breakdown is individual and multifactorial, thus prevention requires individualized education focused on patient preferences and goals. Assessment requires an accurate description of wound type/PrI stage, location, size, wound bed, wound margin, epithelialization, exudate, and peri-wound condition. PrIs should be staged using the National Pressure Injury Advisory Panel (NPIAP) staging system. Successful treatment requires optimal wound bed preparation, pressure off-loading, and access to surgical specialists if needed. Mattress and seating systems, pressure relief, skin microclimate, nutrition, and home supports should be optimized. To promote wound healing and aid prevention, identifiable causes need to be removed, risk factors improved, and wound care provided. Infection should be treated with input from infectious disease specialists. Consideration for specialized surgical management including flaps and primary closures should be coordinated with the interdisciplinary team to optimize outcomes. If comorbid conditions promote wound chronicity, a palliative rather than curative treatment plan may be needed. **Key words:** *paraplegia, pressure ulcer, primary care health, quadriplegia, spinal cord injuries, wounds and injuries*





What research is
being done on
pressure injury
prevention?





Analytical Review: Systematic

Prevention of Pressure Ulcers Among People With Spinal Cord Injury: A Systematic Review

Suzanne L. Groah, MD, MSPH, Manon Schladen, MSE, Cynthia G. Pineda, MD, Ching-Hui J. Hsieh, PhD

Abstract

Objectives: To evaluate the literature on the effectiveness of bed and wheelchair positioning and repositioning in the prevention of pressure ulcers (PUs) in both the spinal cord injury (SCI) and non-SCI populations.

Design: Systematic review.

Methods: PubMed, CINAHL, PsycINFO, and EMBASE were queried with the subject heading terms "pressure sore," "pressure ulcer," "position or turn in bed, wheelchair," "pressure relief," and "pressure release." All study design types that assessed the effectiveness of bed and wheelchair positioning and pressure relief maneuvers in any patient group and in any setting were sought. Three independent reviewers extracted and summarized details of eligible trials using a standardized method. Two independent reviewers assessed the methodological quality of each trial using the American Academy of Neurology guidelines. When reviewers were not able to reach consensus, a third independent reviewer served as tiebreaker.

Results: We identified 2820 publications, of which 49 met inclusion criteria. Of these publications, the subject population was 2834 (923 persons with SCI, 717 persons without SCI, and 1194 healthy control subjects). Among studies examining pressure related to position or repositioning in bed or sitting, procedures for measuring skin pressure and metabolism were highly variable by anatomic location, measurement technique, outcome measure, study site, participant characteristics, and description of position/turning for bed and seated interventions. Numerous factors can influence tissue interface pressures, and no prospective studies had been performed to determine a causal relationship between interface pressure and skin breakdown. Several studies suggest that skin response to pressure differs between subjects with and without SCI. **Conflicting results and insufficient evidence for optimal bed and seated positioning and turning and pressure relief maneuvers to prevent PUs in both SCI and non-SCI populations were limiting factors.**

Conclusions: Although there is no clear optimal positioning or turning frequency in bed, the evidence suggests avoiding the 90° lateral position because of high pressures and PU risk over the trochanters. During sitting, pressures are linearly redistributed from the sitting area during recline and tilt; however, reclining carries with it an increased risk of shear forces on this skin. The evidence does not support conclusive guidelines on positioning or repositioning techniques for PU prevention in bed or during sitting. **We conclude that PU risk is highly individualized, with the SCI population at a higher risk, which demands flexible PU prevention strategies for bed/seated positioning and pressure relief maneuvers. Education has and will remain our most powerful ally to thwart this pervasive public health problem.**



Interventions for pressure ulcers: a summary of evidence for prevention and treatment

Ross A. Atkinson ¹ · Nicky A. Cullum^{1,2}

Received: 6 October 2017 / Revised: 18 December 2017 / Accepted: 19 December 2017 / Published online: 25 January 2018
© International Spinal Cord Society 2018

Abstract

Study design Narrative review.

Objectives Pressure ulcers are a common complication in people with reduced sensation and limited mobility, occurring frequently in those who have sustained spinal cord injury. This narrative review summarises the evidence relating to interventions for the prevention and treatment of pressure ulcers, in particular from Cochrane systematic reviews. It also aims to highlight the degree to which people with spinal cord injury have been included as participants in randomised controlled trials included in Cochrane reviews of such interventions.

Setting Global.

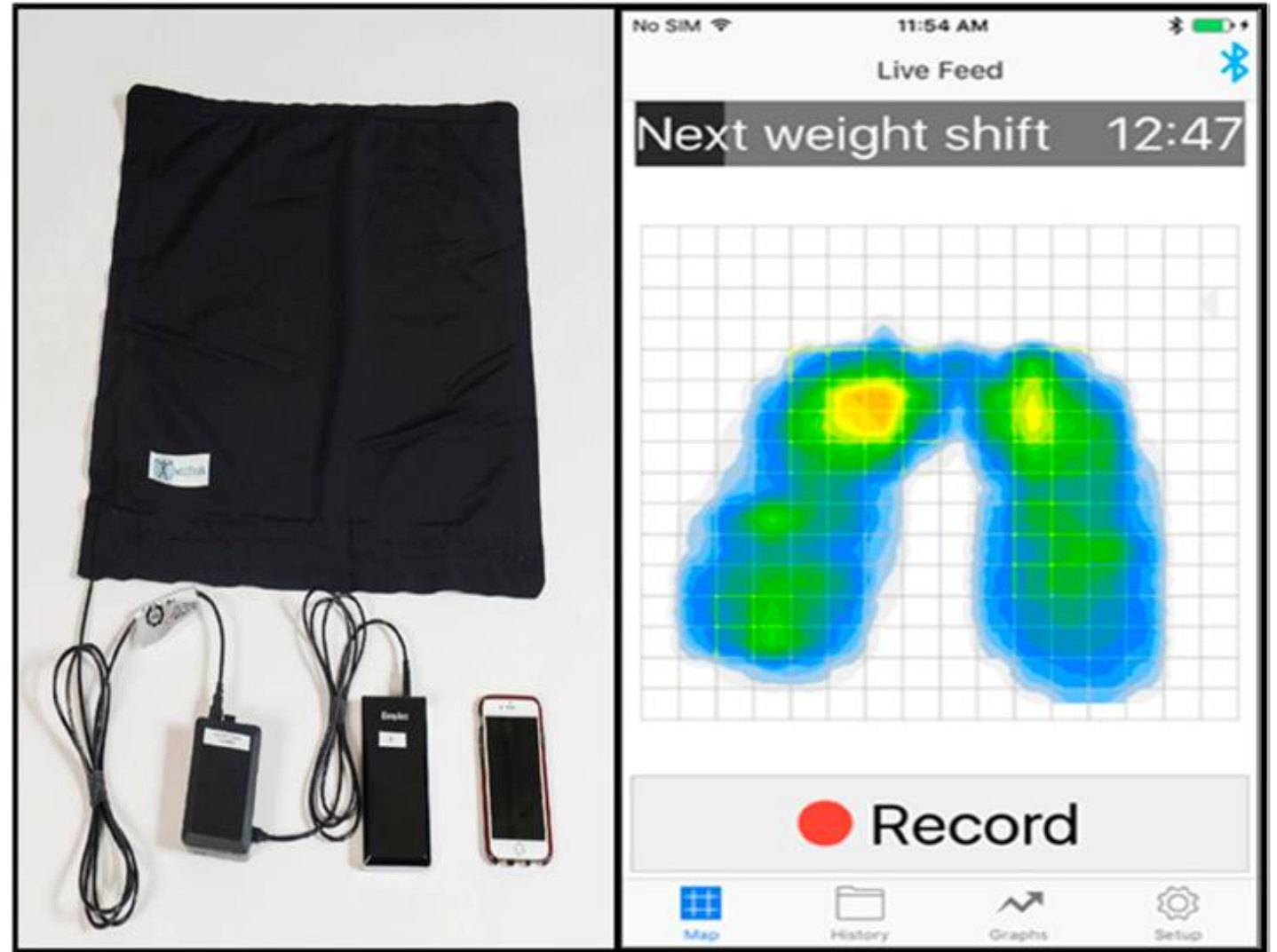
Methods The Cochrane library (up to July 2017) was searched for systematic reviews of any type of intervention for the prevention or treatment of pressure ulcers. A search of PubMed (up to July 2017) was undertaken to identify other systematic reviews and additional published trial reports of interventions for pressure ulcer prevention and treatment.

Results The searches revealed 38 published systematic reviews (27 Cochrane and 11 others) and 6 additional published trial reports. An array of interventions is available for clinical use, but few have been evaluated adequately in people with SCI.

Conclusions The effects of most interventions for preventing and treating pressure ulcers in people with spinal cord injury are highly uncertain. Existing evaluations of pressure ulcer interventions include very few participants with spinal cord injury. Subsequently, there is still a need for high-quality randomised trials of such interventions in this patient population.

Comprehensive Mobile Assessment of Pressure (CMAP) system (2019)

- Olney C., Vos-Draper T, Egginton J, Ferguson J, Goldish G, Eddy B, et al. (2019) Development of a comprehensive mobile assessment of pressure (CMAP) system for pressure injury prevention for veterans with spinal cord injury, *The Journal of Spinal Cord Medicine*, 42:6, 685-694.



CMAP components and app image.

Cooling to increase skin tolerance (2019)

Tzen YT, Brienza DM, Karg PE. Implementing local cooling to increase skin tolerance to ischemia during normal seating in people with spinal cord injury. *J Tissue Viability*. 2019 Nov;28(4):173-178



Fig. 1. Prototype temperature control wheelchair seat cushion. (Left) Blue squares indicated areas of temperature control for the left or right ischium. (Right) Cushioning cooling element were added to 4 air cells beneath each ischium location. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

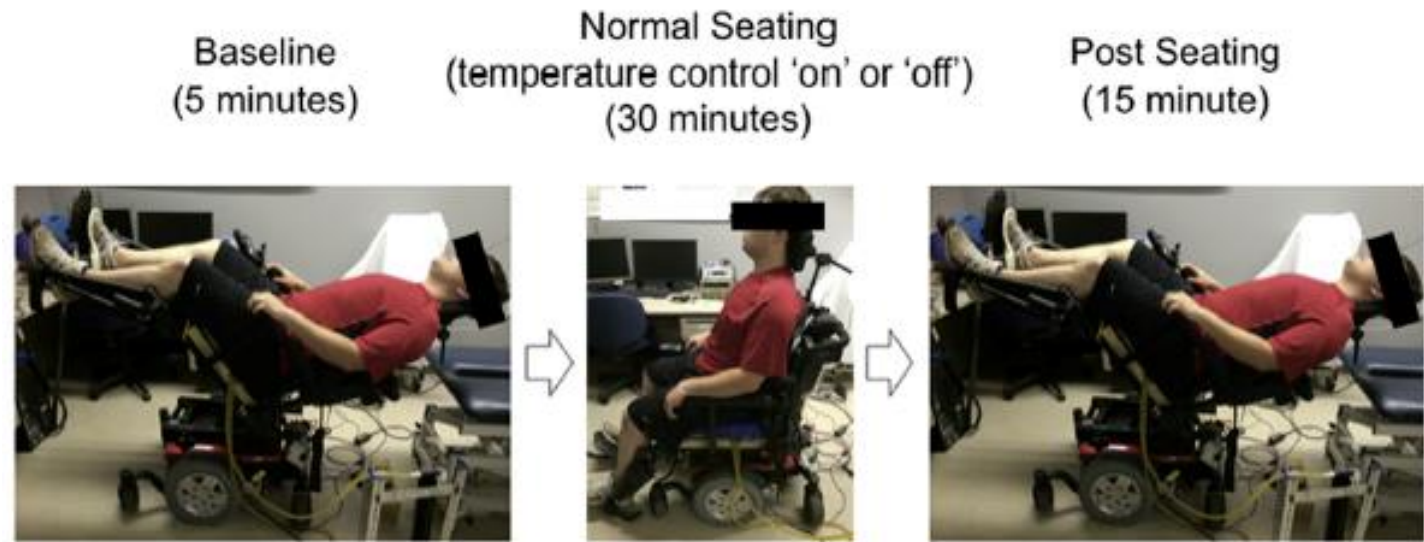
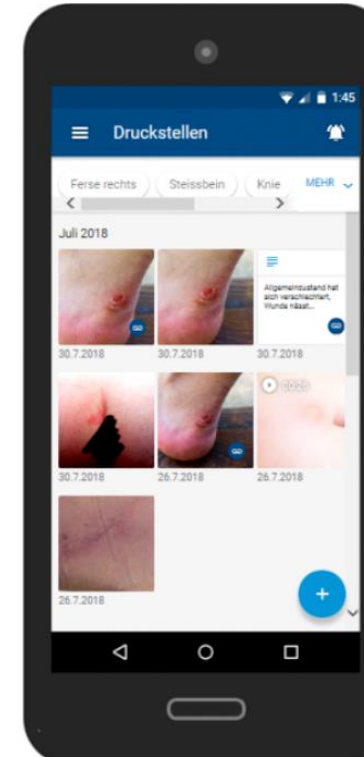
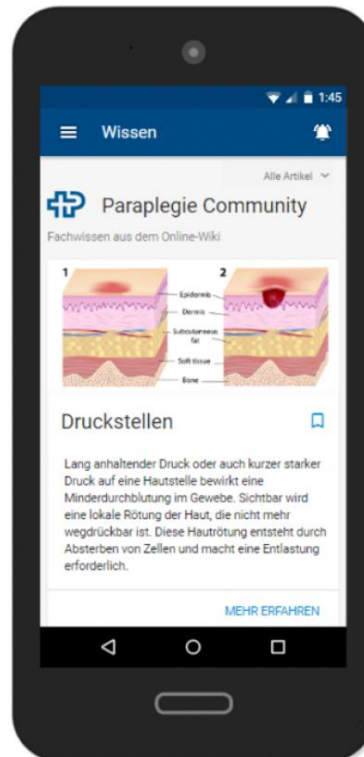
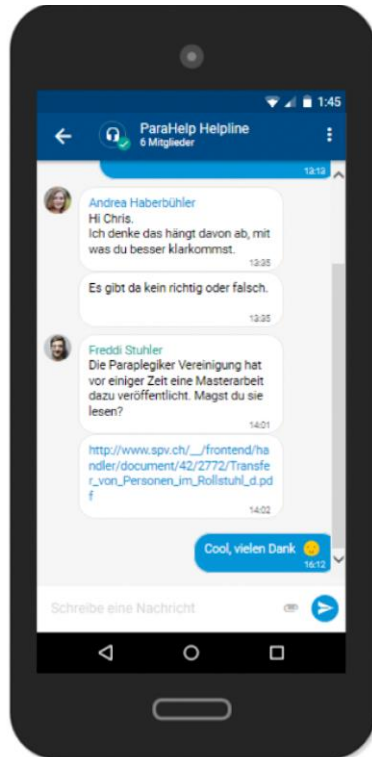
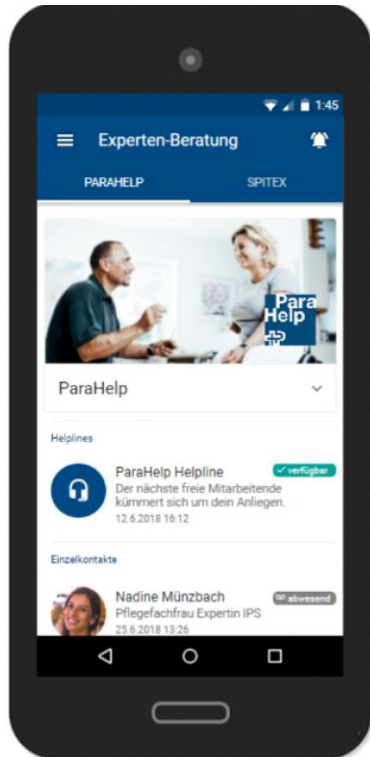


Fig. 2. Test procedure.

Self-management App prototype (2020)

Amann J, Fiordelli M, Brach M, Bertschy S, Scheel-Sailer A, Rubinelli S. Co-designing a Self-Management App Prototype to Support People With Spinal Cord Injury in the Prevention of Pressure Injuries: Mixed Methods Study. *JMIR Mhealth Uhealth* 2020;8(7):e18018



Skin self-inspection
tool prototype
(2020)

Improving Skin Screening Capabilities for Veterans with Spinal Cord Injury

Gary Goldish, MD; Christine Olney, PhD RN

Minneapolis VA Healthcare System

Tested vs standard mirror for skin self-inspection



Summary



- Pressure injury prevention is a lifelong challenge after SCI.
- Understand what puts YOU at risk for pressure injury.
- Work with your healthcare team to come up with a prevention plan.
- Monitor how well your plan is working and make adjustments as needed.
- Don't ignore a problem.
- Volunteer for research studies!

Take care of the skin you're in!

IF YOU FIND SOMETHING THAT CONCERNS YOU OR YOU JUST AREN'T SURE, ALWAYS CONSULT YOUR HEALTH CARE PROVIDER RIGHT AWAY!

YOUR LIFE COULD DEPEND ON IT!





Questions?

