Scott Triggers: Perioperative Pressure Injury Prevention Program

Susan M. Scott MSN, RN, WOC Nurse
CEO Scott Triggers PLLC

Scott Triggers©

Objectives

1. Identify risk assessment, prevention, incidence, cost, and litigation trends for Perioperative Pressure Injuries (PPI).
2. Illustrate components of a Perioperative Pressure Injury Prevention Program (PPIPP) to reduce the risk of Pressure Injury (PI) in the surgical and procedure areas.
3. Describe the commonly used surgical positions, medical devices, and associated pressure points, with the impact on tissue deformation as a risk factor for positioning injuries.
4. Identify key factors to include in post-op assessments, handoff communication, documentation, and quality initiatives.

Surgery is a high-risk environment for Pressure Injuries

"Surgery is one of the few times a normal, healthy individual is placed at risk for pressure sores." [1]

" The OR is known to be one of the most high-risk environments" [2]

Scott Triggers©

1. Gendron, F. "Burns" occurring during lengthy surgical procedures. *Journal of Clinical Engineering*. 1980;5:19–26.
2. Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776.

Pressure injury definition (NPIAP, 2019)

- A pressure injury is localized damage to the skin and underlying soft tissue usually over a bony prominence or related to a medical or other device.
- The injury can present as intact skin or an open ulcer and may be painful. The injury occurs as a result of intense and/or prolonged pressure or pressure in combination with shear.
- The tolerance of soft tissue for pressure and shear may also be affected by microclimate, nutrition, perfusion, co-morbidities and condition of the soft tissue.

Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice Guideline. The International Guideline. 3rd ed. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel (NPIAP), and Pan Pacific Pressure Injury Alliance; 2019.

Problem: Perioperative Pressure Injury (PPI)

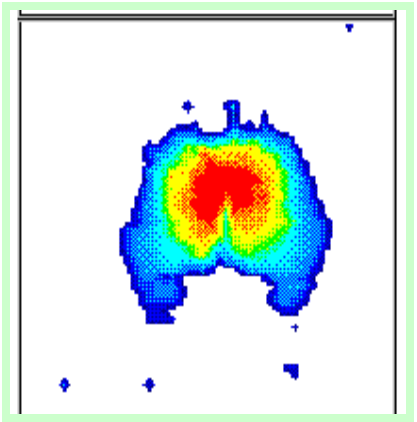
- PPI is associated with the surgical position or medical device.[1]
- A PPI is detected through visual skin assessment (VSA) within 1-4 days[2,3,]
- Deep tissue injury may take up to 7 days[3,4]
- Pain is a common complaint[2]

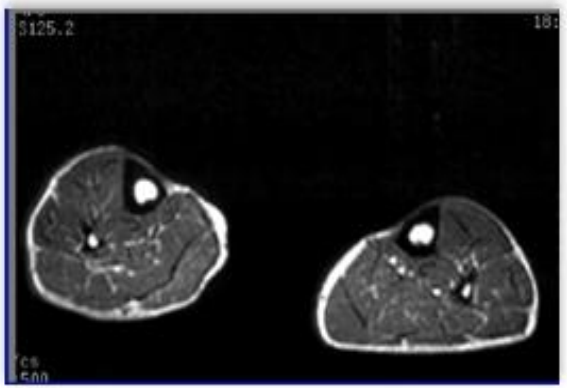
CABG 48 hrs post-op

1. Scott S. Progress and Challenges in Perioperative Pressure Ulcer Prevention. *J Wound Ostomy Continence Nurs.* 2015;42 (5);480-485
2. *Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice Guideline. The International Guideline.* 3rd ed. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel (NPIAP), 1nd Pan Pacific Pressure Injury Alliance; 2019.
3. Gefen A, Creehan S, Black J. Critical biomechanical and clinical insights concerning tissue protection when positioning patients in the operating room: A scoping review. *Int Wound J.* 2020;1-19.
4. Hayes RM, Spear ME, Lee SI, et al. Relationship between time in the operating room and incident pressure ulcers: a matched case-control study. *Am J Med Qual.* 2015;30(6):591-597.

Scott Triggers©

Etiology of Pressure Injury



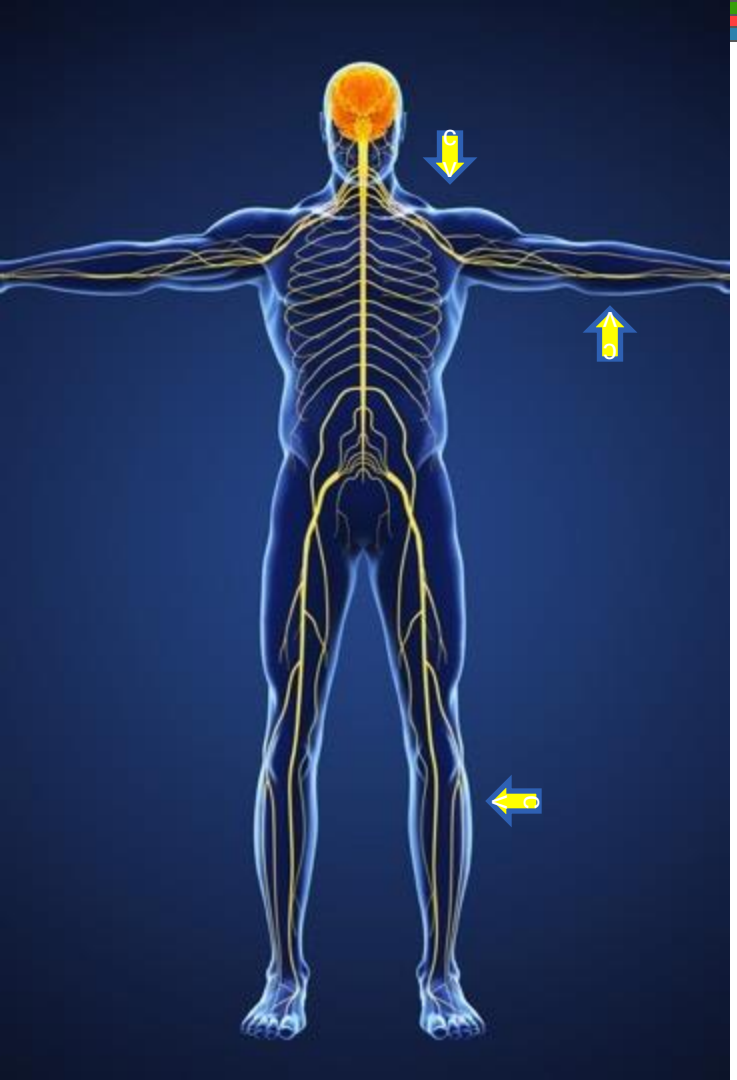


Bony Prominence → **Sustained Pressure** → **Tissue Distortion** → **Cell Death** → **Pressure Injury**

1.Gefen A, Creehan S, Black J. Critical biomechanical and clinical insights concerning tissue protection when positioning patients in the operating room: A scoping review. *Int Wound J*. 2020;1-19.

2. European Pressure Ulcer Advisory Panel National Pressure Injury Advisory Panel, and Pan Pacific Pressure Injury Alliance. in Haesler E, ed. Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice Guideline. The International Guideline. Westford, MA, USA: EPUAP-NPIAP-PPPIA; 2019.

Scott Triggers©



Peripheral Nerve injuries[1-3]

- Incidence and Contributing factors
- Brachial Plexus
- Ulnar Nerve
- Peroneal & Tibial nerve
- Malpractice
  - 12% of general anesthesia malpractice claims[2]
- High Risk Factors
  - Prone position – visual loss
  - Cardiac, neurosurgery, and orthopedic.
  - Surgery over 3.5 hrs

1.Gefen A, Creehan S, Black J. Critical biomechanical and clinical insights concerning tissue protection when positioning patients in the operating room: A scoping review. *Int Wound J*. 2020;1-19.
2.Uribe JS. Kolla J, Omar H, et al. Brachial plexus injury following spinal surgery. *J Neurosurg Spine*, 2010;13(4):552-558.
3.Hortman C, and Chung S, Positioning Considerations in Robotic Surgery. J AORN. 2015:102(4):435-440.

Scott Triggers©

Methodology

Prevention Programs

- Purpose
- People
- Process
- Product

1. Guideline for prevention of perioperative pressure injury. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2023
2. AORN Position Statement on Prevention of Perioperative Pressure Injury. *AORN J,* 2022;115(5):458-461.
3. Scott, S. Perioperative Pressure Injuries: Protocols and Evidence-Based Programs for Reducing Risk. *PSQH,* 2016;13(4), 20-28.

Scott Triggers©

Purpose

- Integrate a high-reliability program to mitigate patient harm from positioning and pressure injury in surgical and procedural settings.
- The Scott Triggers is a surgery-specific risk assessment tool selected to be integrated into the VHA healthcare system.
- The Scott Triggers: Perioperative Pressure Injury Prevention Program was recognized by the American Academy of Nurses as an innovation in nursing practice.
- It identifies the interprofessional team's roles and care processes, including technology, communication, assessments and skin bundles, innovative use of technology, and evidence-based standards.
- Integrating key drivers into clinical practice will improve the reliability of nursing actions.

Scott Triggers©

AORN position statement on Prevention of Perioperative Pressure injury (PPI)

- Health care organizations should define in a policy and procedure a method to determine how perioperative-acquired pressure injuries (PPI) are identified.
- Consult with WOC nurse with suspected PI
- Monitor monthly incidence of PPI and use as a quality indicator
- Report PPI incidence rates in standard method
- Use RCA to investigate reported and confirmed PPI
- Report PPI rates and RCA to perioperative staff
- Review RCAs of PPI for trends and to create QI initiatives

AORN Position Statement on Prevention of Perioperative Pressure Injury. AORN J, 2022;115(5):458-461.

Scott Triggers©

Incidence & Prevalence

- Surgeries in US[2]
  - 7.3 Million - Inpatient
  - 9.9 Million - Ambulatory
  - 57.1% Medicare/Medicaid
- Exact incidence of Perioperative PI is unknown[3]
- NDNQI[4]

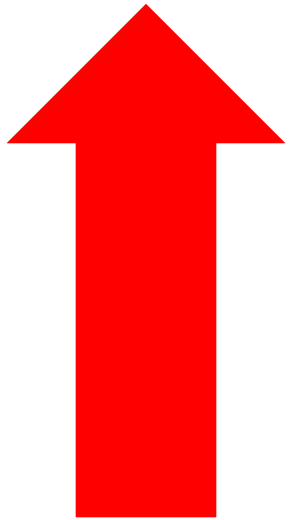
- Incidence & Prevalence
  - Chen - Range 0.3%-57% mean 15%[5]
  - Shafipour - almost 19%[6]
  - Surgery >3 hrs 8.5%[1]

1 Gefen A, Creehan S, Black J. Critical biomechanical and clinical insights concerning tissue protection when positioning patients in the operating room: A scoping review. *Int Wound J.* 2020;1-19.
2. Agency for Healthcare Research and Quality. Surgeries in Hospital-Based Ambulatory Surgery and Hospital Inpatient Settings (H-CUP statistical brief #223). Washington DC: AHRQ; 2014.
3. Creehan S, Black J. Defining Practices to Avoid Hospital-Acquired Pressure Injuries in the Operating Room. *J Wound, Ostomy and Continence Nurs.* 2022;49(1):89-96. doi: 10.1097/WON.0000000000000835.
4. NDNQI The National Data Base of Nursing Quality Indicators (NDNQI) Guidelines for Data Collection and Submission on Pressure Injury Indicator. 2021. Accessed July 24, 2022 at Microsoft Word - Guidelines - Pressure Injury_2021128 (nursingquality.org)
5. Chen H, Chen X, Wu J. The incidence of pressure ulcers in surgical patients of the last 5 years: a systematic review. *Wounds.* 2012;24(9):234–241.
6. Shafipour V, Ramezanpour E, Gorji, MAH, Moosadadeh M, Prevalence of postoperative pressure ulcer: A systematic review and meta-analysis. *Electronic Physician* Nov 2016;8(11):3170-3176. http://www.ephysician.ir/2016/3170.pdf Accessed March 23, 2019.

Scott Triggers©

Challenges: Cost & quality

- Cost[1]
  - 26.8 billion
  - 59% non-reimbursed by CMS
- Hospital acquired conditions[2-3]
  - PSI-90 - 48,700 (2016)
  - $ 2 Billion
- Litigation[4]
  - $250,000



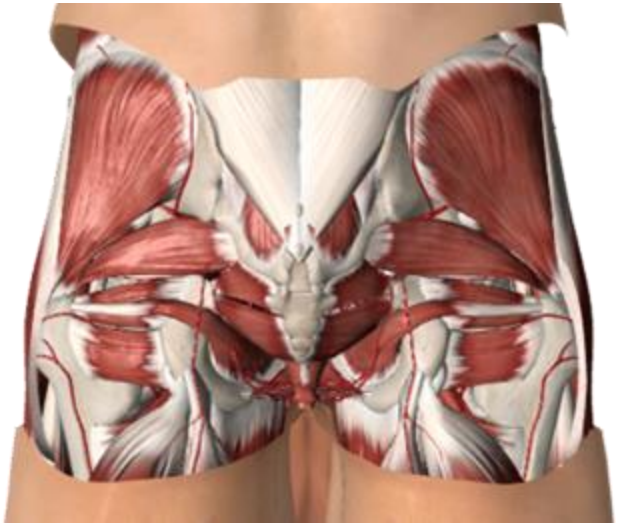
HAPIs exclusively increasing since 2015[3]

1 Padula WV, Delarmente BA. The national cost of hospital-acquired pressure injuries in the United States. *Int Wound J.* 2019:1–7.
2. IBM Watson Health, Research Brief Hospital-Acquired Conditions lead to avoidable cost and excess deaths (2018). Available at https://www.ibm.com/downloads/cas/X97QXLER Retrieved January 31, 2023.
3. Padula WV, Black JM, Davidson PM, Kang SY, Pronovost PJ. Adverse Effects of the Medicare PSI-90 Hospital Penalty System on Revenue-Neutral Hospital-Acquired Conditions. *J Patient Saf.* 2020 Jun;16(2):e97-e102. doi: 10.1097/PTS.0000000000000517. PMID: 30110019.
4. Bennett R, O'Sullivan J, DeVito E, Remsburg R. The increasing medical malpractice risk related to pressure ulcers in the United States. *J Am Geriatr Soc.* 2000;48(1):73-81.

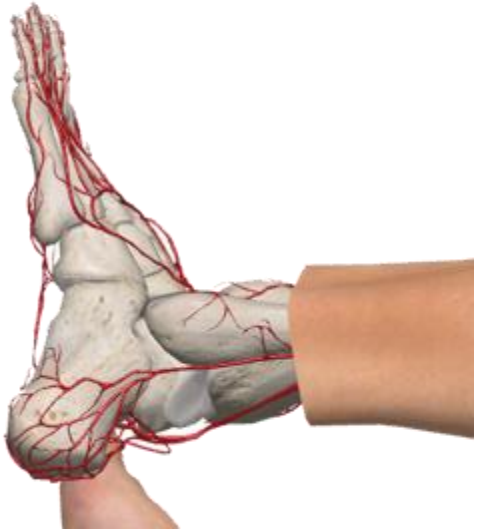
Scott Triggers©

OR Pressure injury locations

Occiput



Sacral Buttocks



Heels

Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776
Images courtesy of the University of Tennessee Health Science Center

Scott Triggers©

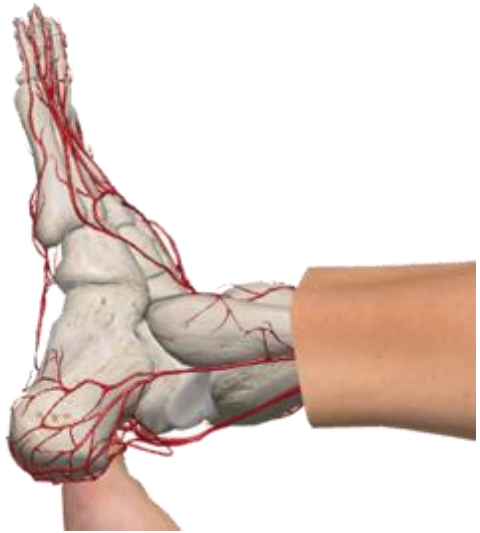
Alopecia

- Alopecia can occur after 4 hrs of prolonged pressure
- Occiput most common site in pediatrics
- Reposition the head every 30 min

Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776
Images courtesy of the University of Tennessee Health Science Center and Amy Green

Scott Triggers©

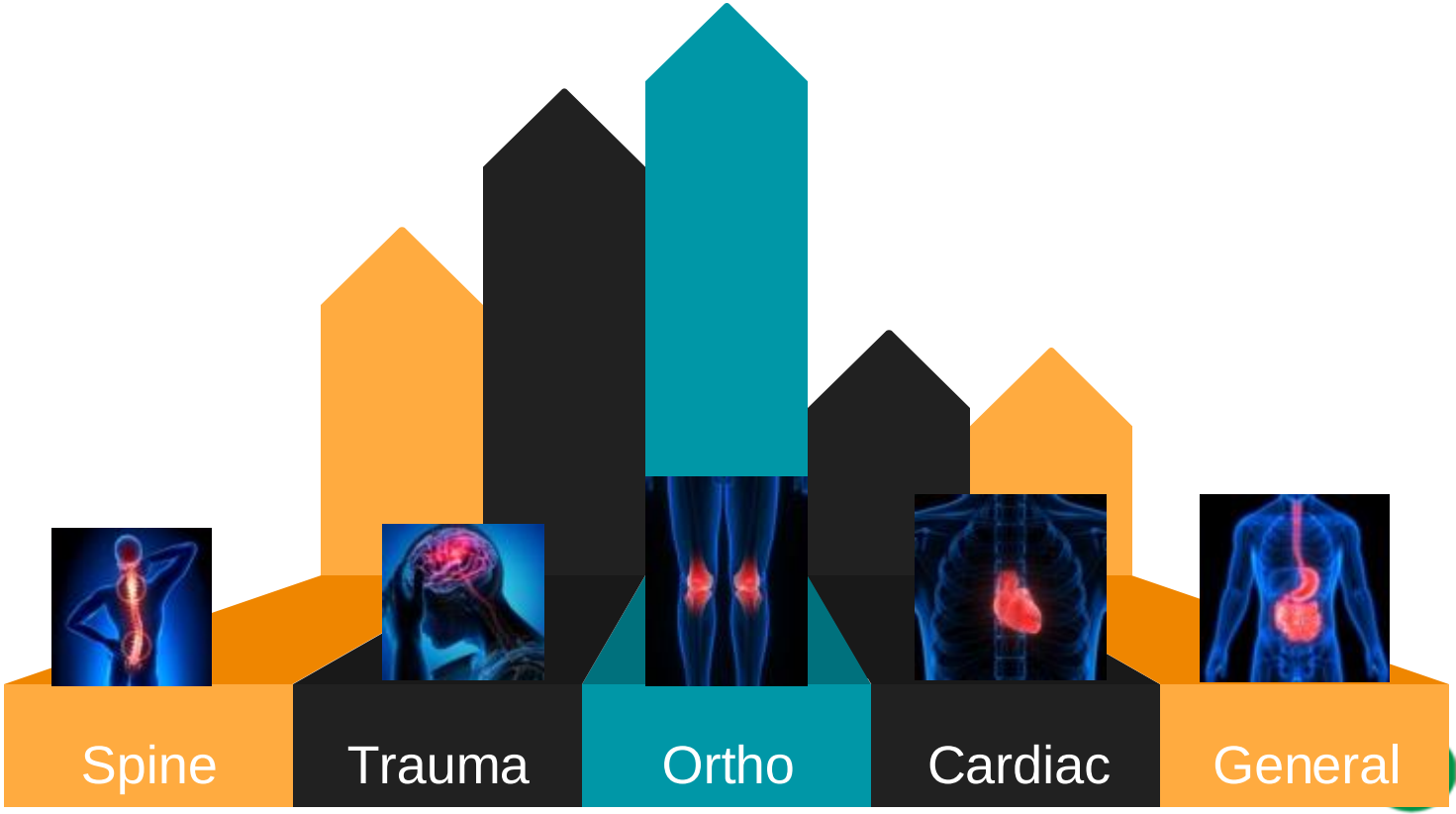
Heel Pressure Injury



Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776
Images courtesy of the University of Tennessee Health Science Center, www.scotttriggers.com and Marie Brown-Etris

Scott Triggers©

Surgery Specialty



Scott Triggers©

Chen H, Chen X, Wu J. The incidence of pressure ulcers in surgical patients of the last 5 years: a systematic review. *Wounds.* 2012;24(9):234–241.

Prevention Programs

- Purpose
- People
- Process
- Product

1. Guideline for prevention of perioperative pressure injury. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2023
2. AORN Position Statement on Prevention of Perioperative Pressure Injury. *AORN J,* 2022;115(5):458-461.
3. Scott, S. Perioperative Pressure Injuries: Protocols and Evidence-Based Programs for Reducing Risk. *PSQH,* 2016;13(4), 20-28

Scott Triggers©

People: Interprofessional Team

- Leadership[1]
- Team Collaboration[1-2]
  - OR Staff, WOC nurse, QI
  - Anesthesia & Surgery
  - PACU
- Knowledge, Skills, Attitude (KSA)[3-7]
  - Competency
  - Education - enduring
- Handoff Communication

1. Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776.
2. AORN Position Statement on Prevention of Perioperative Pressure Injury. *AORN J,* 2022;115(5):458-461.
3. Creehan S, Black J. Defining Practices to Avoid Hospital-Acquired Pressure Injuries in the Operating Room. *J Wound, Ostomy and Continence Nurs.* 2022;49(1):89-96. doi: 10.1097/WON.0000000000000835.
4. Stanton C. Guideline for Prevention of Perioperative Pressure Injury. *AORN J.* 2022;115(5):8-10.
5. Cebeci F, Senol Celik S, Knowledge and practices of operating room nurses in the prevention of pressure injury. *Journal of Tissue Viability.* 2022;31(1):38-45 Available at: https://www.sciencedirect.com/science/article/pii/S0965206X2100092.
6. Khong BPC, Goh BC, Phang LY, David T. Operating room nurses' self-reported knowledge and attitude on perioperative pressure injury. *Int Wound J.* 2020;17:455-465.
7. Lupear SK, Overstreet M, Krau SD. Perioperative nurses' knowledge of indicators for pressure ulcer development in the surgical patient population. *Nurse Clin N Am.* 2015; 50:411-435.

Scott Triggers©

Process: Standards of Care

- Strategic Plan[1-3]
- Policy and Procedure[1]
- Risk Assessment[1-3]
- Skin Bundles[1,5]
- Standardize equipment & devices [4,7]
- QI work, RCA & Action[2,3,6]
- Data management[6]
- EHR Documentation

1. Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776.
2. AORN Position Statement on Prevention of Perioperative Pressure Injury. *AORN J,* 2022;115(5):458-461.
3. Scott, S. Perioperative Pressure Injuries: Protocols and Evidence-Based Programs for Reducing Risk. *PSQH,* 2016;13(4), 20-28.
4. Scott SM. Creating a strategic plan for perioperative pressure ulcer prevention. *AORN J.* 2016;103(4):13-14.
5. Scott S. Use of an OR skin bundle to prevent pressure injury. *AORN J.* 2017;106(4):18-19.
6. Scott SM, Bennett J. Avoiding pressure injuries with root cause analysis and action. *AORN J.* 2018:108(5):15-16.
7. Scott Triggers Gap Assessment Template in AORN Prevention of Perioperative Pressure Injury Tool Kit. Available at https://scotttriggers.com/resources

Scott Triggers©

Perioperative Plan of Care

Pre-op

Intra-op

Post-op

1. Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776.
2. Guideline for positioning the patient. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:701-750.
3. Guideline for safe patient handling and movement. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023;895-944.

Scott Triggers©

Risk Factors

Intrinsic - Extrinsic

Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776.

Scott Triggers©

Patient specific risk factors

- Type of Procedure [1]
- Time on the table and immobility before surgery. [2]
- Obesity [3]
- Pregnant [3]
- Disabilities [3]
- Critically Ill, Spinal Cord Injury (SCI), Palliative Care [2]
- **Critical devices catheters and drainage tubes [1]**
- Vascular perfusion and effects of inotropes/vasopressors [2,3]
- Anesthesia type and ASA score [1,2]

1. Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776.
2. Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice Guideline. The International Guideline. 3rd ed. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel (NPIAP), and Pan Pacific Pressure Injury Alliance; 2019.
3. Guideline for positioning the patient. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:701-750.

Preoperative risk assessment

- “High Quality Evidence to support the use of a Risk Assessment Tool.”
  - Munro Scale
  - ELPO
  - PRAMS
  - Scott Triggers

- “Risk assessment tools **DO NOT** replace the need comprehensive patient assessment”

Scott Triggers©

Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776.

Scott Triggers©

- OR Specific risk assessment tool [1]
- Validity/Reliability studies:
- Park et al. 2019, N=400 Higher Sensitivity ST > Braden [2]
- Emerson 2020, N=11,241 – PI reduction. P=0.015 [3-4]
- Dai Yang & Wu 2021 N=447 “Good reliability, validity, and predictive validity.” [5]

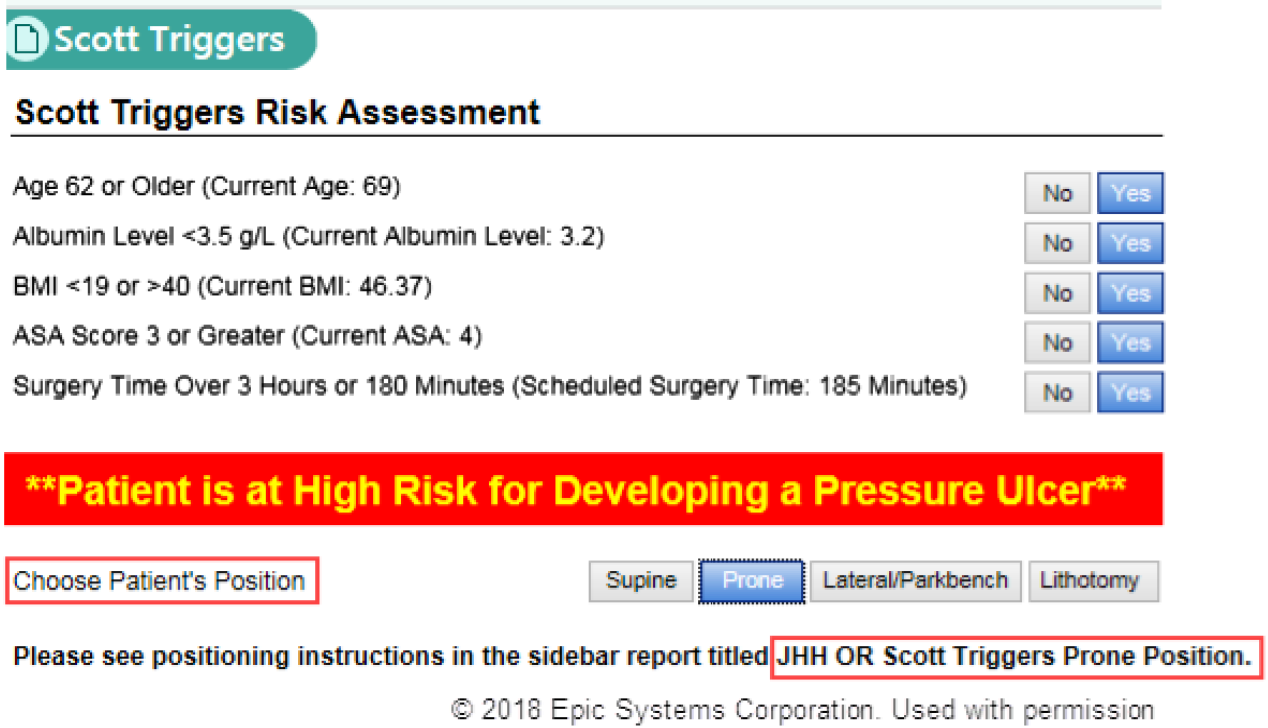
SCOTT TRIGGERS

SCOTT TRIGGERS ASSESSMENT	Does it meet these qualifications?	If YES please place check here
Age _____	Age 62 or older	
Serum Albumin g/dL or BMI	Albumin level < 3.5g/dL or BMI <19 or > 40	
ASA score (circle) 1 2 3 4 5	ASA score 3 or greater	
Estimated surgery time in hours/minutes	Surgery time over 3 hours or 180 minutes	
Two or more YESSES =	HIGH RISK SURGICAL PATIENT	Implement OR skin bundle

1. Scott S. Progress and Challenges in Perioperative Pressure Ulcer Prevention. *J Wound Ostomy Continence Nurs.* 2015;42 (5);480-485
2. Park SK, Park HA, Hwang H. Development and Comparison of Predictive Models for Pressure Injuries in Surgical Patients. *J Wound Ostomy Continence Nurs.* 2019;46(4)291-297.
3. Emerson T. Preventing pressure injuries in patients placed on a spinal table *AORN J* 2019;109(5):11-13.
4. Emerson T, Myers KBJ, Fernandez, JC, Burkett S, Quion S, Bangud CC, and Shuman, MLH The Perioperative Journey: An Approach to Decreasing Hospital Acquired Pressure Injury Associated with the Intraoperative Phase of Care. Poster presented at the AORN Global Conference and Expo, 2020.
5 Dai J, Yang Z, Wu C. The reliability and validity of the Scott Triggers for patients in China undergoing gastrointestinal surgery. *Asian J Surg* 2021;44(10):1343-1344.

Scott Triggers©

Artificial intelligence & bundles [1,2]

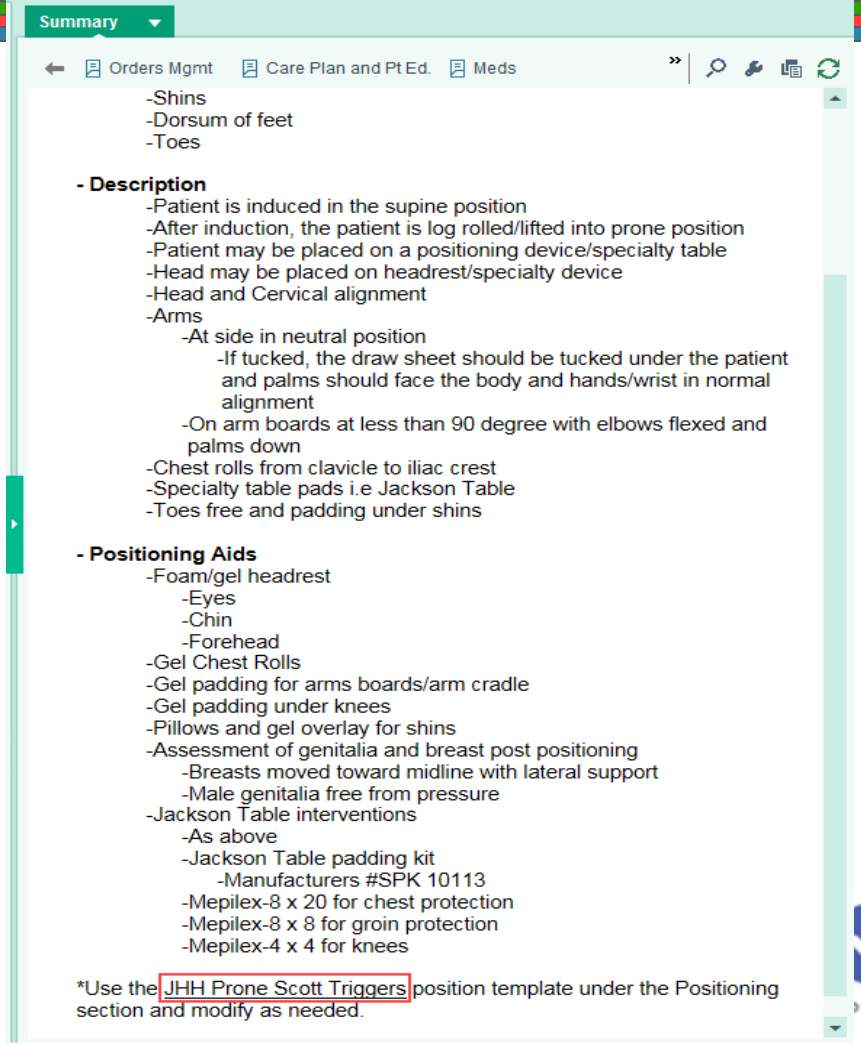


Used with permission. Terry Emerson, MSN, RN, CNOR, NEA-BC, Nurse Manager, Neurosurgery/Orthopedic/Otology and Trauma/Transplant Services, Zayed/Bloomberg Operating Rooms. The Johns Hopkins Hospital.

1. Emerson T. Preventing pressure injuries in patients placed on a spinal table *AORN J* 2019;109(5):11-13.
2. Emerson T, Myers KBJ, Fernandez, JC, Burkett S, Quion S, Bangud CC, and Shuman, MLH The Perioperative Journey: An Approach to Decreasing Hospital Acquired Pressure Injury Associated with the Intraoperative Phase of Care. Poster presented at the AORN Global Conference and Expo, 2020.

Scott Triggers©

Incorporate AORN Guidelines on Positioning & PPIP into VHA Directive, SOP & VA Skin Bundle



Used with permission. Terry Emerson, MSN, RN, CNOR, NEA-BC, Nurse Manager, Neurosurgery/Orthopedic/Otology and Trauma/Transplant Services, Zayed/Bloomberg Operating Rooms. The Johns Hopkins Hospital.

Step 2: Dete... Scott Tri...

Scott Trigger Score ≥ 2

- ✓ Age ≥ 62 years
- ✓ Albumin Level ≤ 3.5 g/dL or BMI < 19 or > 40
- ✓ Estimated Surgery Time > 3 hours

Skin Assessment

Timing **Skill** **Accuracy** **Documentation**

1. Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776.
2. *Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice Guideline. The International Guideline.* 3rd ed. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel (NPIAP), and Pan Pacific Pressure Injury Alliance; 2019.
3. Scott SM, Bennett J. Avoiding pressure injuries with root cause analysis and action. *AORN J.* 2018:108(5):15-16.

Scott Triggers©

OR skin bundle

- Pre-op risk and skin assessment[1-3, 6-7]
- Safe Patient Handling Movement[1-3,11]
- Reduce, Relieve, or Redistribute Pressure
  - OR table support surfaces[1,10]
  - Approved positioning devices[2,10]
  - Padding bony prominence[1]
  - Heel offloading devices[1,8,5]
  - Prophylactic dressings[1,4,9]
- Communication and documentation[1]

1. Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776.
2. AORN Position Statement on Prevention of Perioperative Pressure Injury. *AORN J*, 2022;115(5):458-461.
3. Scott, S. Perioperative Pressure Injuries: Protocols and Evidence-Based Programs for Reducing Risk. *PSQH*, 2016;13(4), 20-28.
4. Creehan S, Black J. Defining Practices to Avoid Hospital-Acquired Pressure Injuries in the Operating Room. *J Wound, Ostomy and Continence Nurs* 2022;49(1):89-96. doi: 10.1097/WON.0000000000000835.
5 Scott SM. Creating a strategic plan for perioperative pressure ulcer prevention. *AORN J*. 2016;103(4):13-14.
6 Scott S. Use of an OR skin bundle to prevent pressure injury. *AORN J*. 2017;106(4):18-19.
7. Scott SM, Bennett J. Avoiding pressure injuries with root cause analysis and action. *AORN J*. 2018:108(5):15-16.
8. Scott Triggers Gap Assessment Template in AORN Prevention of Perioperative Pressure Injury Tool Kit. Available at https://scotttriggers.com/resources
9. Betts H, Scott D, Makic MBF. Using Evidence to Prevent Risk Associated with Perioperative Pressure Injuries. *J Perianesth Nurs*. 2022 Jun;37(3):308-311. doi: 10.1016/j.jopan.2021.08.010. Epub 2022 Mar 4. PMID: 35256249.
10. Guideline for positioning the patient. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:701-750.
11. Guideline for safe patient handling and movement. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023;895-944.

Scott Triggers©

Intraoperative interventions

Scott Triggers©

Product selection, care, and maintenance

- Support surfaces [1,2,]
- Positioning devices [1,3]
- Prophylactic dressings [1]
- SPHM devices [4]
- Stretchers [4]

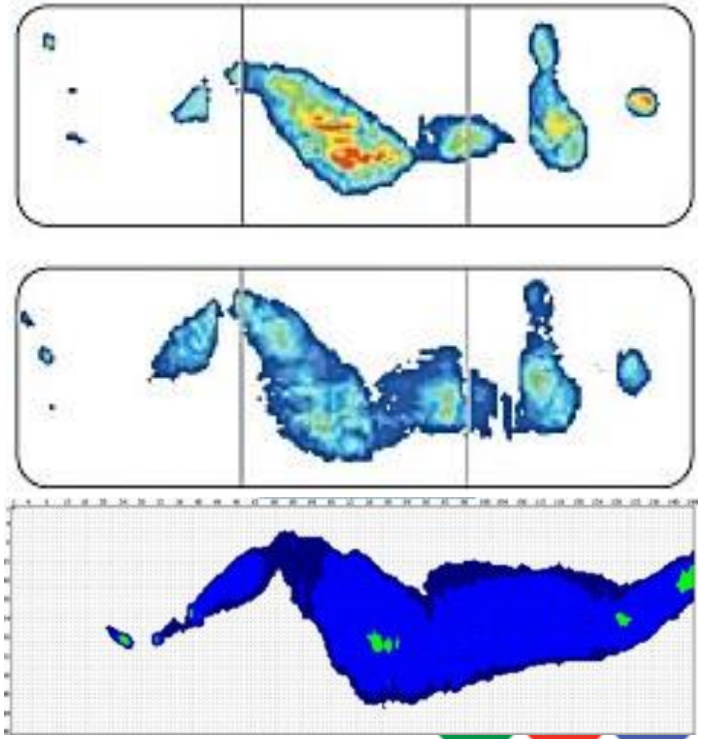
- Gap assessment
- Selected by team [1,3]
- Evidence-based[2]
- Efficacy evaluations[2]
- Equipment standardization [2]
- Availability[1]
- Maintenance [3]
- Budget [2]

1. Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776.
2. Scott S. Progress and Challenges in Perioperative Pressure Ulcer Prevention. *J Wound Ostomy Continence Nurs.* 2015;42 (5);480-485
3. Guideline for positioning the patient. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:701-750.
4. Guideline for safe patient handling and movement. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023;895-944.

Scott Triggers©

OR table pads check specifications

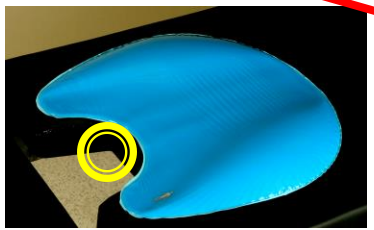
- Therapeutic weight capacity [1]
- Thickness 3-4 in. [1,3]
- Stability for positions [1]
- Radiolucency
- Research, standardized testing [3]

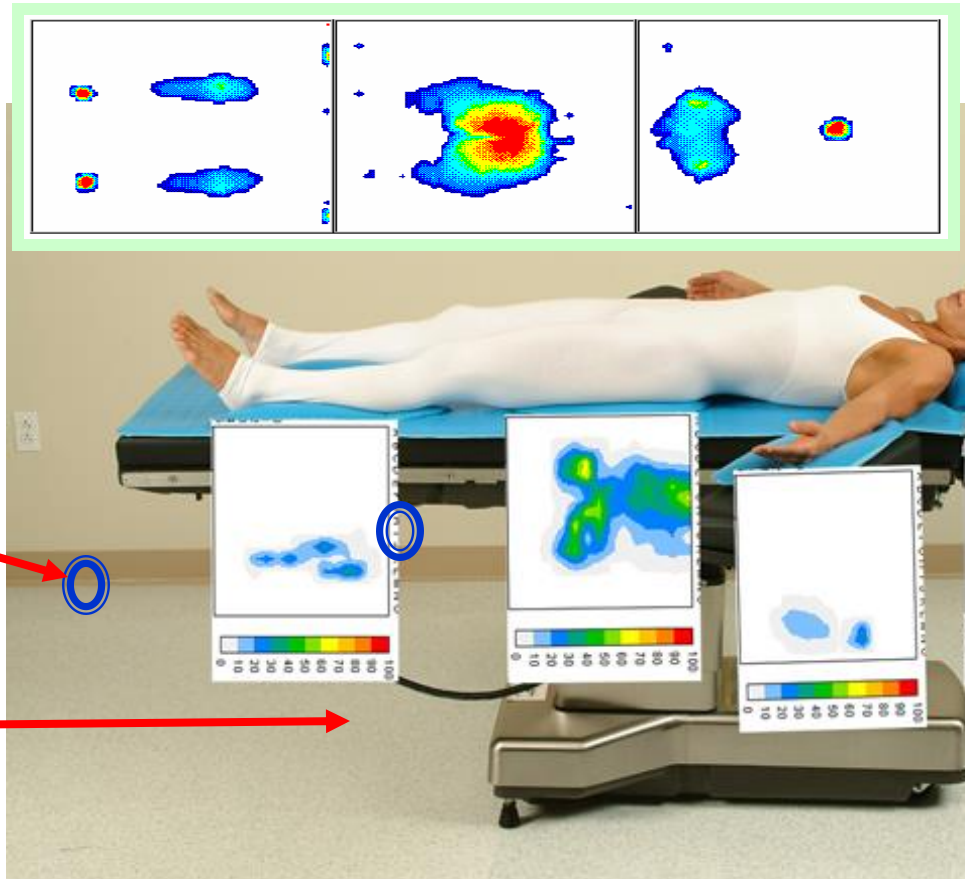


Immersion & Envelopment [1-2]

1. Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776.
2. *Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice Guideline. The International Guideline.* 3rd ed. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel (NPIAP), and Pan Pacific Pressure Injury Alliance; 2019.
3. Scott S. Progress and Challenges in Perioperative Pressure Ulcer Prevention. *J Wound Ostomy Continence Nurs*. 2015;42 (5);480-485

Flat Gel vs 3D Gel Interface Pressures





Safe patient handling mobility (SPHM)[1,2]

- Culture of Safety
- Formal systemized SPHM Program[2]
- Ergonomic design principles
- Technology solutions
- Education, training, and staff competency
- Equipment, devices
- QI to evaluate SPHM program

1. Guideline for safe patient handling and movement. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023;895-944
2. Department of Veterans Affairs, Veterans Health Administration. VHA Directive 1611: Safe Patient Handling and Mobility Program. July 11, 2023. Available at. https://www.google.com/search?q=va+sphm+directive&oq=va+sphm+directive&gs_lcrp=EgZjaHJvbWUyBggAEEUYOTIHCAEQIRigATIHCAIQIRigATIHCAMQIRigATIHCAQQIRigATIHCAUQIRigATIHCAYQIRifBdIBCDgzNzhqMGo3qAIAsAIA&sourceid=chrome&ie=UTF-8

.

Scott Triggers©

AORN SPHM recommendations “supine”

- Weight < 157 lb.
  - Use lateral transfer device & 2-4 perioperative team members
- Weight > 157 lb.
  - Use assistive technology (eg, air-assisted transfer systems, a mechanical patient lift with a supine sling) to move the patient.
  - The number of team members is dependent of the type of technology used.

How many of our patients weigh >157 lbs.?

Scott Triggers©

Guideline for safe patient handling and movement. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023;895-944.

Dos and Don’ts of Positioning[1-2]

DO NOT

- Position on critical devices implants
- Use multiple layers between patient and surface

DO NOT USE

- Towel Rolls
- Sheets
- IV Bags
- Shoulder braces
- Horseshoe shaped headrest

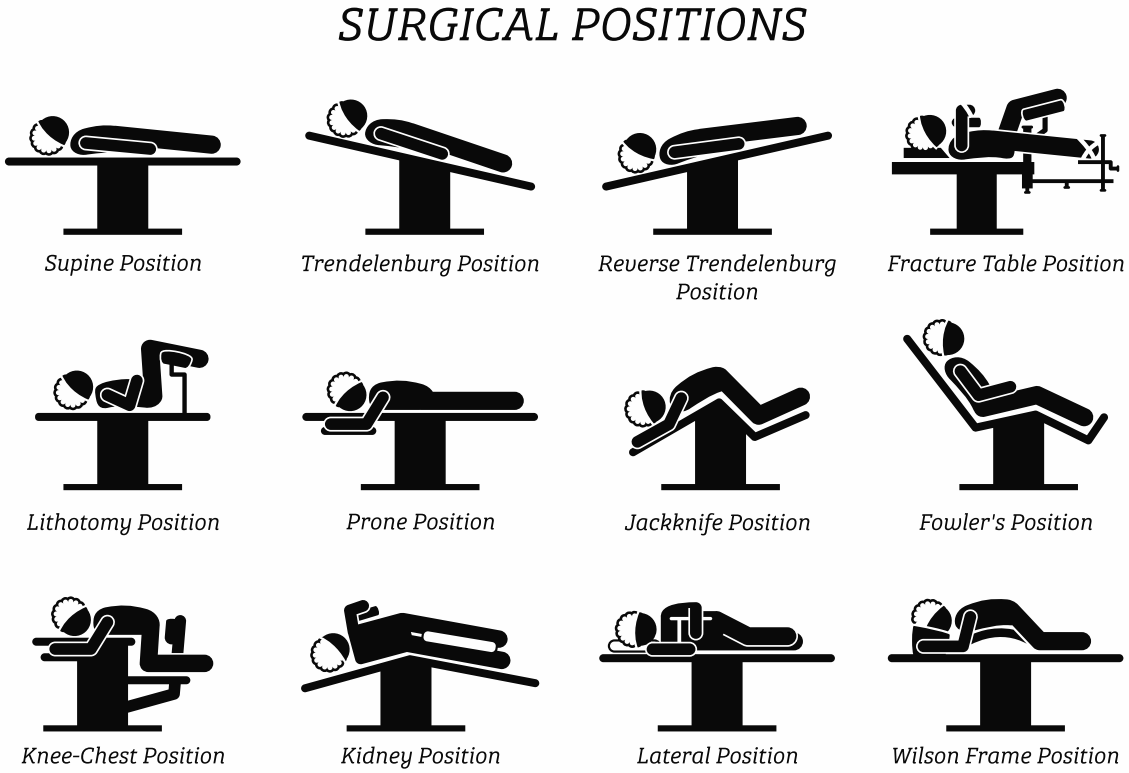
DO

- Reposition during procedure eg. Micro-shifts
- Elevate heels
- Flex knees 5-10^{0}
- Use pillows

1. Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice.* Denver, CO: AORN, Inc; 2023:751-776.
2. Guideline for positioning the patient. In: *Guidelines for Perioperative Practice.* Denver, CO: AORN, Inc; 2023:701-750.

Scott Triggers©

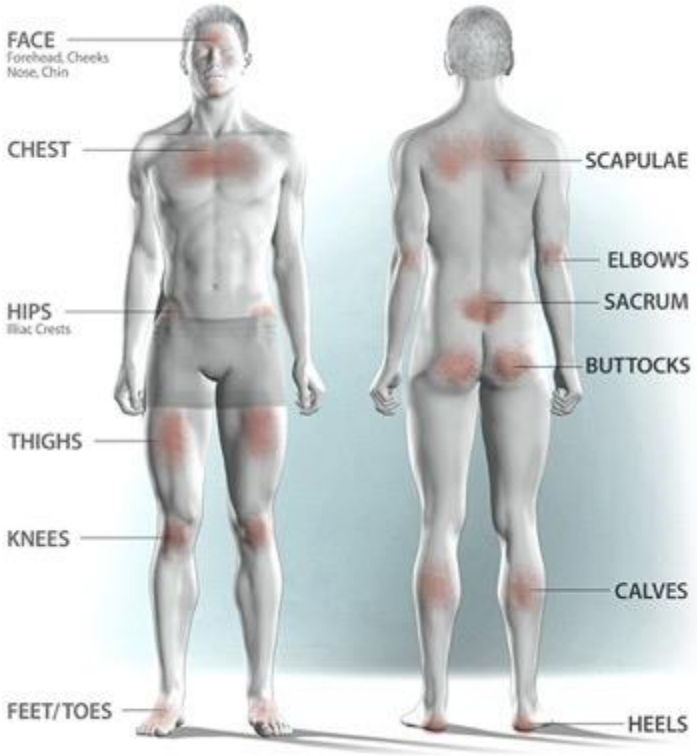
Surgical Positions & Skin Bundles[1,2]



1. *Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice Guideline. The International Guideline.* 3rd ed. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel (NPIAP), and Pan Pacific Pressure Injury Alliance; 2019.
2. Guideline for positioning the patient. In: *Guidelines for Perioperative Practice.* Denver, CO: AORN, Inc; 2023:701-750.

Scott Triggers©

High risk pressure points



Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice Guideline. The International Guideline. 3rd ed. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel (NPIAP), and Pan Pacific Pressure Injury Alliance; 2019.

Scott Triggers©

Supine position

- Occiput
- Scapulae (shoulder blades)
- Arms
- Elbows
- Thoracic vertebrae
- Lumbar area and spine
- Sacrum/coccyx
- Buttocks
- Heels

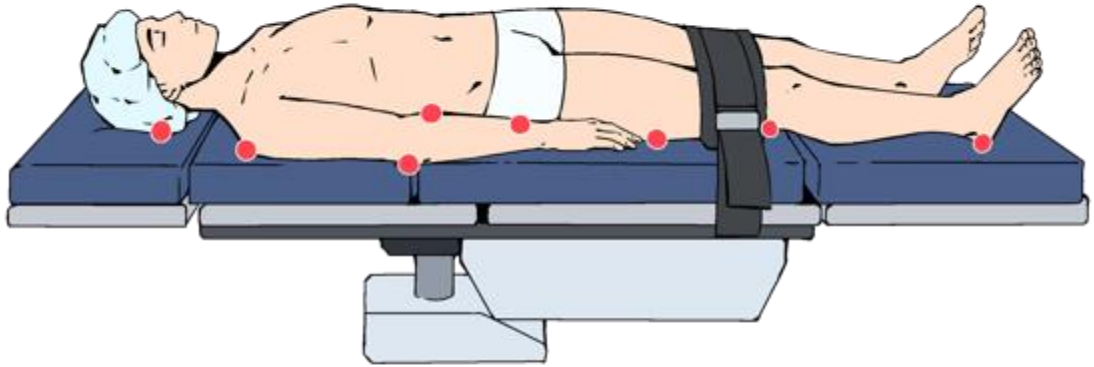


Illustration by Rex Neal, Scott Triggers©

Scott Triggers©

Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776.

Prone position

- Forehead, eyes, ears, and chin
- Chest/breasts, ports, implants
- Lower costal margins
- Iliac crest
- Genitalia
- Knees
- Shins
- Dorsum of the feet
- Toes

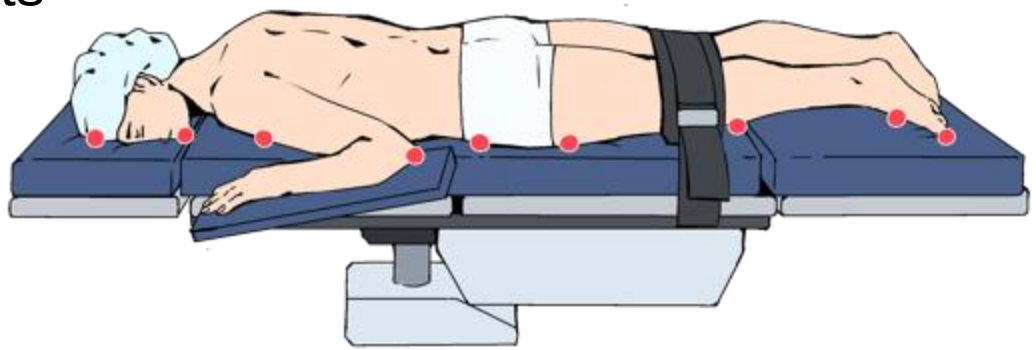


Illustration by Rex Neal, Scott Triggers©

Scott Triggers©

Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776.

Prone position risks

- Pressure injury
- Increased intraocular pressure - Blindness
- Increased intra-abdominal pressure
- Cardiovascular changes
- Venous air embolism
- Respiratory changes
- Injury to the caregiver

- Do not use Wilson Frame
- Face, chin and forehead highest risk

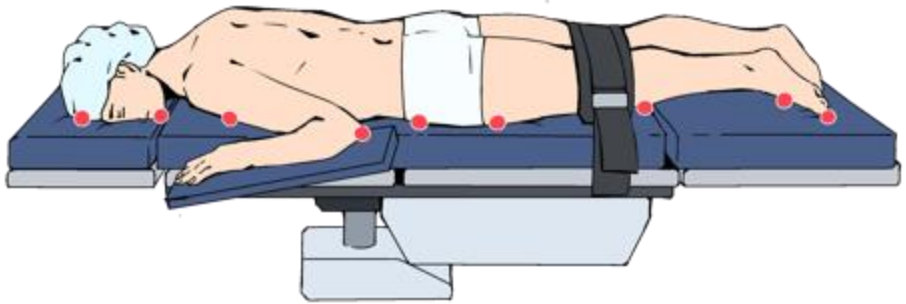


Illustration by Rex Neal, Scott Triggers©

Scott Triggers©

Guideline for positioning the patient. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2023:701-750.

Trendelenburg and Reverse Trendelenburg position

- Occiput
- Scapulae
- Elbows
- Arms
- Thoracic vertebrae
- Lumbar spine
- Buttocks
- Sacrum/coccyx
- Heels

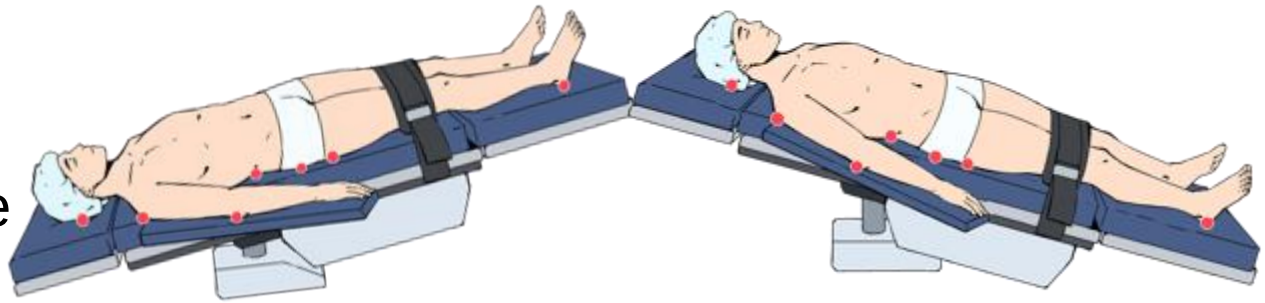
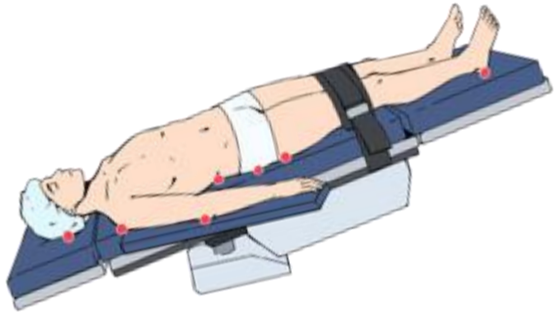


Illustration by Rex Neal, Scott Triggers©

Scott Triggers©

Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776.

Trendelenburg position – risks



- Pressure Injury
- Brachial Plexus Nerve Injury
- Cephalad sliding “toward the head”
- Hemodynamic changes
- Altered pulmonary function
- Retinal detachment – Blindness

- Patient Falls
  - Patient harm, brain damage, paralysis and death
  - Malpractice claims
  - CMS lost reimbursement
  - Reasonably preventable!

Illustration by Rex Neal, Scott Triggers©

Scott Triggers©

Guideline for positioning the patient. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2023:701-750.

Lithotomy position

- Occiput
- Shoulders
- Scapulae
- Elbows
- Arms
- Thoracic vertebrae
- Lumbar spine
- Buttocks
- Sacrum/coccyx
- Lateral aspect of thighs
- Heels

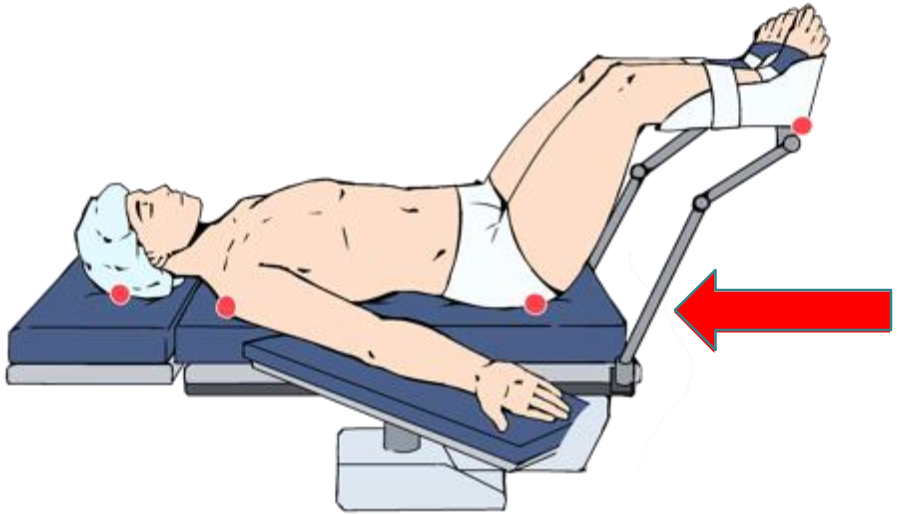


Illustration by Rex Neal, Scott Triggers©

Scott Triggers©

Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776.

Lateral position

- Side of face and ear
- Shoulder
- Arms
- Dependent axilla
- Dependent hip
- Dependent knee
- Ankles
- Feet

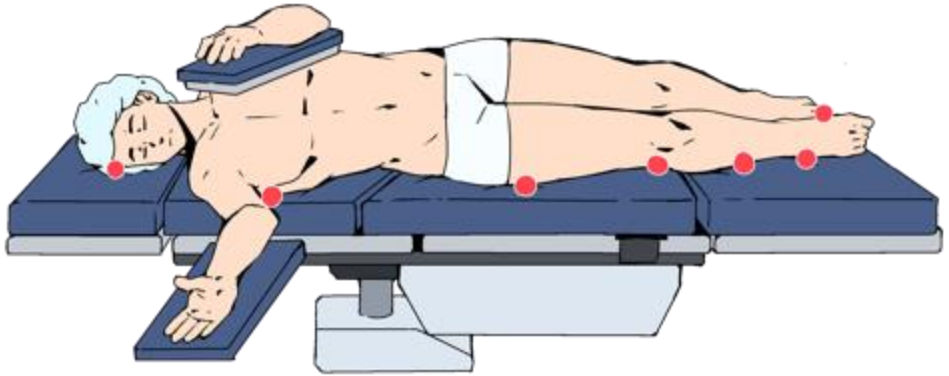


Illustration by Rex Neal, Scott Triggers©

Scott Triggers©

Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776.

Sitting position

- Back of head
  - Positioner specific
- Scapula
- Ischial Tuberosities
- Back of knees
- Heels

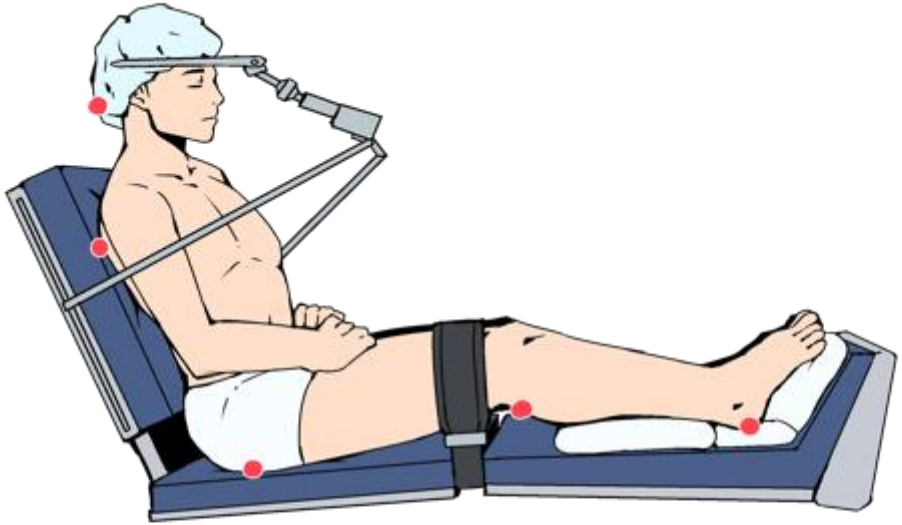


Illustration by Rex Neal, Scott Triggers©

Scott Triggers©

Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776.

High risk medical devices

- Anesthesia devices[3]
- Face plates in prone position[3]
- External fixators
- Urinary catheters & tubing[1,2]
- Vacuum-packed positioning device[1]
- Peg Boards[2]
- Mayo stands on the toes[3]
- Safety straps[3]
- Compression stockings

1. Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776.
2. Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice Guideline. The International Guideline. 3rd ed. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel (NPIAP), and Pan Pacific Pressure Injury Alliance; 2019.
3. Guideline for positioning the patient. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:701-750.

Post-op Assessment

Scott Triggers©

OR to PeriAnesthesia Gap Assessment

Communication[1]

Postoperative Assessment[1,2]

- Does the RN circulator complete a postoperative assessment to identify positioning and pressure injuries?
- 4-eyes Skin Assessment[3]

Quality Improvement

- Does the health care organization's QM program evaluate the Perioperative PI Protocols and outcomes?
- Real-time RCA and Action[3-4]

ASPAN
American Society of PeriAnesthesia Nurses

AORN

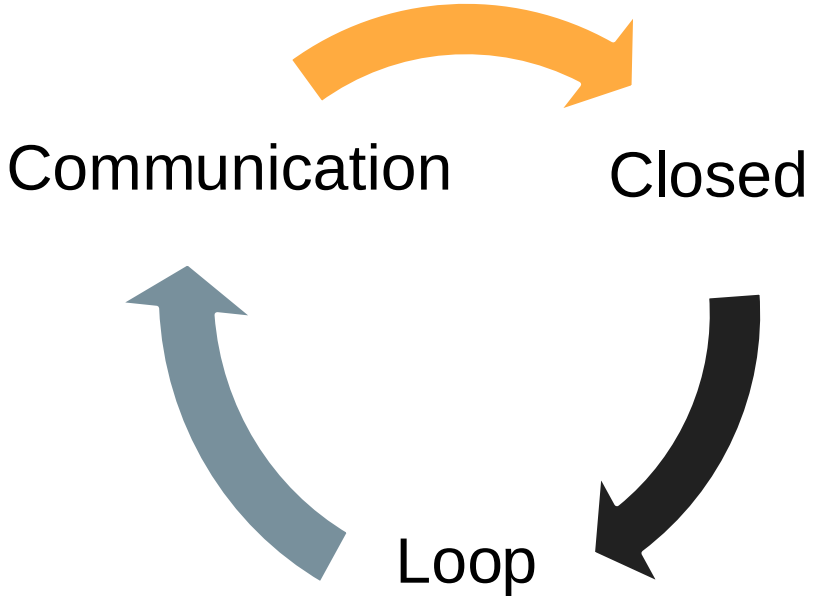
naon
National Association of Orthopaedic Nurses
Advancing the Art and Science of Orthopaedic Care

Scott Triggers©

1. Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776.
2. Guideline for positioning the patient. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:701-750.
3. Minnich L, Bennett J, Mercer J. Partnering for perioperative skin assessment: a time to change a practice culture. *J Perianesth Nurs*. 2014;29(5):361-366.
4. Scott SM, Bennett J. Avoiding pressure injuries with root cause analysis and action. *AORN J*. 2018:108(5):15-16.

Hand-off communication[39]

- Standardized hand-over tools, checklists, protocols
- Briefing
- Time Out
- Debriefing
- Education eg. Team Training



Scott Triggers©

Guideline for team communication. In: *Guidelines for Perioperative Practice.* Denver, CO: AORN, Inc; 2021:1065-1096.

Communication tools “I-PASS” [1,2]

Illness Severity

Patient Summary: Surgical Procedure

- **Risk and skin assessments**
- **Type of surgery, position, time on table**

Action List: Consult WOC Nurse, Recheck sacral area in 1 hour

Situational Awareness and Contingency Plan

Synthesis by Receiver

Scott Triggers©

1. Guideline for team communication. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:1155-1183.
2. Starmer A, Schnock K, Lyons A, et al Effects of the I-PASS Nursing Handoff Bundle on communication quality and workflow *BMJ Quality & Safety* 2017;26:949-957.

Document the following

- Pre and postoperative skin and risk assessments[1]
- Team members[2]
- Patient position[2]
- Extremity position[2]
- Specific actions to prevent injury[1,2]
- Type and location of devices[2]

Scott Triggers©

1. Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776.
2. Guideline for positioning the patient. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:701-750.

Quality initiatives

Root cause analysis and action (RCA^2)

What happened?

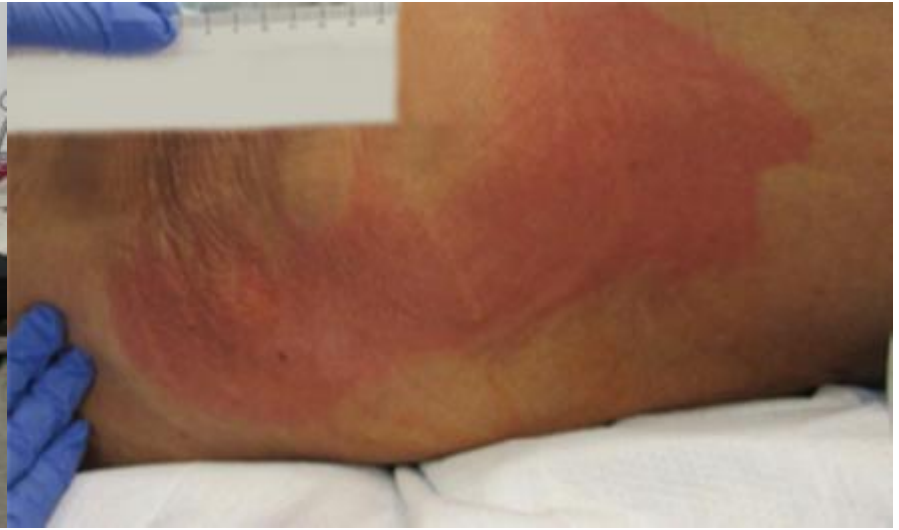
Why did it happen?

How to prevent it from happening again?

Scott Triggers©

National Patient Safety Foundation. RCA2: Improving Root Cause Analyses and Actions to Prevent Harm. https://www.ashp.org/-/media/assets/policy-guidelines/docs/endorsed-documents/endorsed-documents-improving-root-cause-analyses-actions-prevent-harm.ashx?la=en&hash=65A4C5C79395296F8CA816716CCB9B7AC20C7C6E

Real-time RCA[1-2]
Skin Injury with vacuum packed positioning device eg. bean bag usage



Photos used with permission John Muir Health

Action Item follow up: Use extra padding/Prophylactic dressings with “bean bag” device use

1. Minnich L, Bennett J, Mercer J. Partnering for perioperative skin assessment: a time to change a practice culture. *J Perianesth Nurs.* 2014;29(5):361-366.
2. Scott SM, Bennett J. Avoiding pressure injuries with root cause analysis and action. *AORN J.* 2018:108(5):15-16.

Scott Triggers©

A3 Perioperative Pressure Injury

A3 Owner_Terry
Rev.Date__9/1/18

JOHNS HOPKINS MEDICINE

Patients undergoing surgical procedures are at risk for pressure injury due to a variety of factors inclusive of, but not limited to comorbidities, nutritional status, age, length of surgery, ASA, BMI, position and positioning aids

As an organization, HAPI's remain in the forefront of prevention.

Goal: Reduce HAPI within the Neurosurgery Critical Care Unit attributed to Operating Room related procedures by 5% by March 2019

Key metric: Number of patients with pressure ulcers/total number of patients surveyed

TRY: What actions might help?

Root Cause	Action to address root cause	Who will do it and by when?	Status
Man	• Identify risk factors • Choose an appropriate and validated tool • Educate team members • Increase awareness • Partner with NM's	Terry Emerson 8/17 to current	Ongoing
Method	• Decrease/Eliminate the use of foam positioning aids • Positioning Aid Vendor Fair • Collaborate with purchasing • Education for care, cleaning and use • Encourage use of foam dressing (Mepilex) for high risk areas • Education on use of Mepilex	Terry Emerson 1/17 to current	Ongoing
Machine	• Inservicing on Positioning/Equipment • Partner with Vendors	Terry Emerson 1/17 to current	Ongoing
Mother Nature	• Knowledge of procedure • RN to RN face to face handoff during transition of care • Risk Assessment • SCIP measures intraoperatively • Manage comorbidities/hemodynamic status	RN/Anesthesia	Ongoing
Measurement System	• See below		Ongoing

ASSESS: Has the problem been resolved?

Soft Roll Out—2017
Pre-Intervention---January-March, 2018—percent of pressure injuries attributed to the Operating Room

Education and Transition—April-September, 2018

Post-Intervention—October-December
Sustainability---Quarterly

Scott Triggers©

Goals: Perioperative Pressure Injury Prevention Program

JOHNS HOPKINS MEDICINE

Background:

Patients undergoing surgical procedures are at risk for pressure injury due to a variety of factors inclusive of, but not limited to comorbidities, nutritional status, age, length of surgery, ASA, BMI, position and positioning aids

As an organization, HAPI's remain in the forefront of prevention.

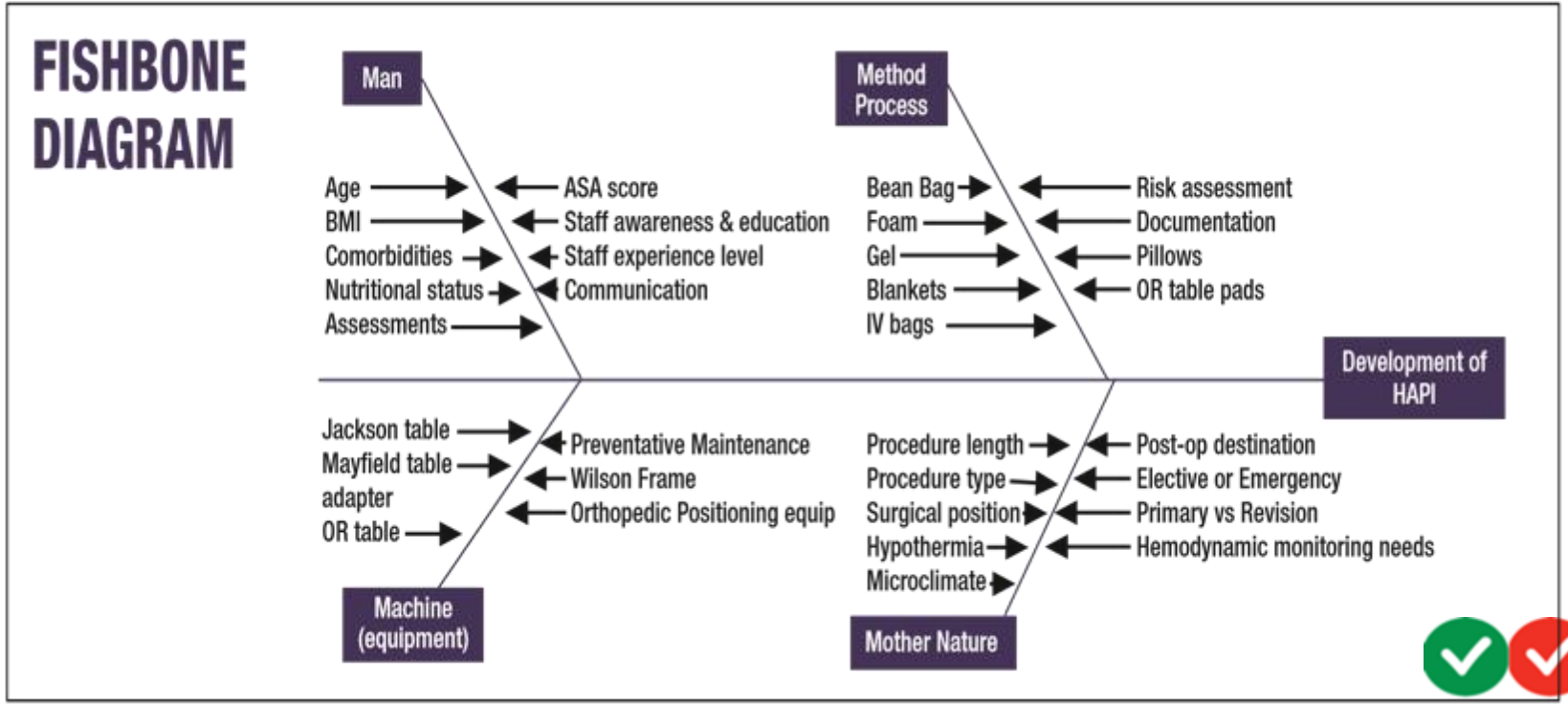
Goal: Reduce HAPI within the Neurosurgery Critical Care Unit attributed to Operating Room related procedures by 5% by March 2019

Key metric: Number of patients with pressure ulcers/total number of patients surveyed

Scott Triggers©

Fishbone Diagram

JOHNS HOPKINS MEDICINE



A3 Action Plan " To do list"

JOHNS HOPKINS MEDICINE

Root Cause	Action to address root cause	Who will do it & by when	Status
Man	Identify risk factors Chose an appropriate and validated tool Integrate tool into EHR Educate team members Increase awareness Partner with NM's	Terry Emerson 8-17 to current	Ongoing
Method	Decrease/Eliminate the use of foam positioning aids Positioning Aid Vendor Fair Collaborate with purchasing Encourage use of foam dressing for high risk areas. Educate on Mepilex	Terry Emerson 1-17 to current	Ongoing
Machine	Inservice on positioning equipment	Terry Emerson 1-17 to current	Ongoing
Mother Nature	Knowledge of procedure RN to RN face to face handoff during transition of care Risk Assessment SCIP measures Manage hemodynamic status	RN, Anesthesia	Ongoing
Measurement			

Scott Triggers©

Assess has the problem been resolved?

JOHNS HOPKINS MEDICINE

Soft Roll Out—2017

Pre-Intervention---January-March, 2018—percent of pressure injuries attributed to the Operating Room

Education and Transition—April-September, 2018

Post-Intervention—October-December

Sustainability---Quarterly

Scott Triggers©

High reliability principles

- Deference to expertise
  - Team member insight
- Reluctance to simplify
  - A-3
- Sensitivity to operations
  - Cost/Inventory
  - Computer based interventions
- Commitment to resilience
  - Continued support and education
- Preoccupation with failure
  - Constant re-evaluation

Scott Triggers©

Agency for Health Care Research and Quality High Reliability (2017) Available at https://psnet.ahrq.gov/primer/high-reliability

Thank you very much!

Scan me

Susan M. Scott MSN, RN, WOC Nurse

Email: scotttriggers@gmail.com
Webpage: www.scotttriggers.com
GOV Webpage: www.scotttriggersgov.com

Scott Triggers©

References

Agency for Health Care Research and Quality High Reliability (2017) Available at https://psnet.ahrq.gov/primer/high-reliability

Agency for Healthcare Research and Quality. Surgeries in Hospital-Based Ambulatory Surgery and Hospital Inpatient Settings (H-CUP statistical brief #223). Washington DC: AHRQ; 2014.

AORN Position Statement on Prevention of Perioperative Pressure Injury. AORN J, 2022;115(5):458-461.

Bennett R, O'Sullivan J, DeVito E, Remsburg R. The increasing medical malpractice risk related to pressure ulcers in the United States. J Am Geriatr Soc. 2000;48(1):73-81.

Betts H, Scott D, Makic MBF. Using Evidence to Prevent Risk Associated with Perioperative Pressure Injuries. J Perianesth Nurs. 2022 Jun;37(3):308-311. doi:

Cebeci F, Senol Celik S, Knowledge and practices of operating room nurses in the prevention of pressure injury. Journal of Tissue Viability. 2022;31(1):38-45 Available at: https://www.sciencedirect.com/science/article/pii/S0965206X2100092.

Chen H, Chen X, Wu J. The incidence of pressure ulcers in surgical patients of the last 5 years: a systematic review. Wounds. 2012;24(9):234–241.

Chen H, Chen X, Wu J. The incidence of pressure ulcers in surgical patients of the last 5 years. Wounds. 2012;24(9):234-241.

Creehan S, Black J. Defining Practices to Avoid Hospital-Acquired Pressure Injuries in the Operating Room. J Wound, Ostomy and Continence Nurs. 2022;49(1):89-96. doi: 10.1097/WON.0000000000000835.

Dai J, Yang Z, Wu C. The reliability and validity of the Scott Triggers for patients in China undergoing gastrointestinal surgery. Asian J Surg 2021;44(10):1343-1344.

Department of Veterans Affairs, Veterans Health Administration. Vha Directive 1611: Safe Patient Handling and Mobility Program July 11, 2023. Available at. https://www.google.com/search?q=va+sphm+directive&oq=va+sphm+directive&gs_lcrp=EgZjaHJvbWUyBggAEEUYOTIHCAEQIRigATIHCAIQIRigATIHCAMQIRigATIHCAQQIRigATIHCAUQIRigATIHCAYQIRifBdIBCDgzNzhqMGo3qAIAsAIA&sourceid=chrome&ie=UTF-8

References

Emerson T, Myers KBJ, Fernandez, JC, Burkett S, Quion S, Bangud CC, and Shuman, MLH The Perioperative Journey: An Approach to Decreasing Hospital Acquired Pressure Injury Associated with the Intraoperative Phase of Care. Poster presented at the AORN Global Conference and Expo, 2020.

Emerson T. Preventing pressure injuries in patients placed on a spinal table AORN J 2019;109(5):11-13.

Gefen A, Creehan S, Black J. Critical biomechanical and clinical insights concerning tissue protection when positioning patients in the operating room: A scoping review. Int Wound J. 2020;1-19.

Gendron, F. “Burns” occurring during lengthy surgical procedures. Journal of Clinical Engineering. 1980;5:19–26.

Guideline for positioning the patient. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2023:701-750.

Guideline for prevention of perioperative pressure injury. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2023:751-776.

Guideline for safe patient handling and movement. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2023;895-944

Guideline for team communication. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2021:1065-1096

Hayes RM, Spear ME, Lee SI, et al. Relationship between time in the operating room and incident pressure ulcers: a matched case-control study. Am J Med Qual. 2015;30(6):591-597.

Hortman C, and Chung S, Positioning Considerations in Robotic Surgery. J AORN. 2015:102(4):435-440.

IBM Watson Health, Research Brief Hospital-Acquired Conditions lead to avoidable cost and excess deaths (2018). Available at https://www.ibm.com/downloads/cas/X97QXLER Retrieved January 31, 2023.

Khong BPC, Goh BC, Phang LY, David T. Operating room nurses’ self-reported knowledge and attitude on perioperative pressure injury. Int Wound J. 2020;17:455-465.

Lupear SK, Overstreet M, Krau SD. Perioperative nurses’ knowledge of indicators for pressure ulcer development in the surgical patient population. Nurse Clin N Am. 2015; 50:411-435.

Minnich L, Bennett J, Mercer J. Partnering for perioperative skin assessment: a time to change a practice culture. J Perianesth Nurs. 2014;29(5):361-366.

National Patient Safety Foundation. RCA2: Improving Root Cause Analyses and Actions to Prevent Harm. https://www.ashp.org/-/media/assets/policy-guidelines/docs/endorsed-documents/endorsed-documents-improving-root-cause-analyses-actions-prevent-harm.ashx?la=en&hash=65A4C5C79395296F8CA816716CCB9B7AC20C7C6E Accessed 2-24-23

References

NDNQI The National Data Base of Nursing Quality Indicators (NDNQI) Guidelines for Data Collection and Submission on Pressure Injury Indicator. 2021. Accessed July 24, 2022 at Microsoft Word - Guidelines - Pressure Injury_2021128 (nursingquality.org)

Padula WV, Black JM, Davidson PM, Kang SY, Pronovost PJ. Adverse Effects of the Medicare PSI-90 Hospital Penalty System on Revenue-Neutral Hospital-Acquired Conditions. J Patient Saf. 2020 Jun;16(2):e97-e102. doi: 10.1097/PTS.0000000000000517. PMID: 30110019.

Padula WV, Delarmente BA. The national cost of hospital-acquired pressure injuries in the United States. Int Wound J. 2019:1–7.

Park SK, Park HA, Hwang H. Development and Comparison of Predictive Models for Pressure Injuries in Surgical Patients.

Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice Guideline. The International Guideline. 3rd ed. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel (NPIAP), and Pan Pacific Pressure Injury Alliance; 2019.

Scott S. Progress and Challenges in Perioperative Pressure Ulcer Prevention. J Wound Ostomy Continence Nurs. 2015;42 (5);480-485

Scott S. Use of an OR skin bundle to prevent pressure injury. AORN J. 2017;106(4):18-19.

Scott SM, Bennett J. Avoiding pressure injuries with root cause analysis and action. AORN J. 2018:108(5):15-16.

Scott SM. Creating a strategic plan for perioperative pressure ulcer prevention. AORN J. 2016;103(4):13-14.

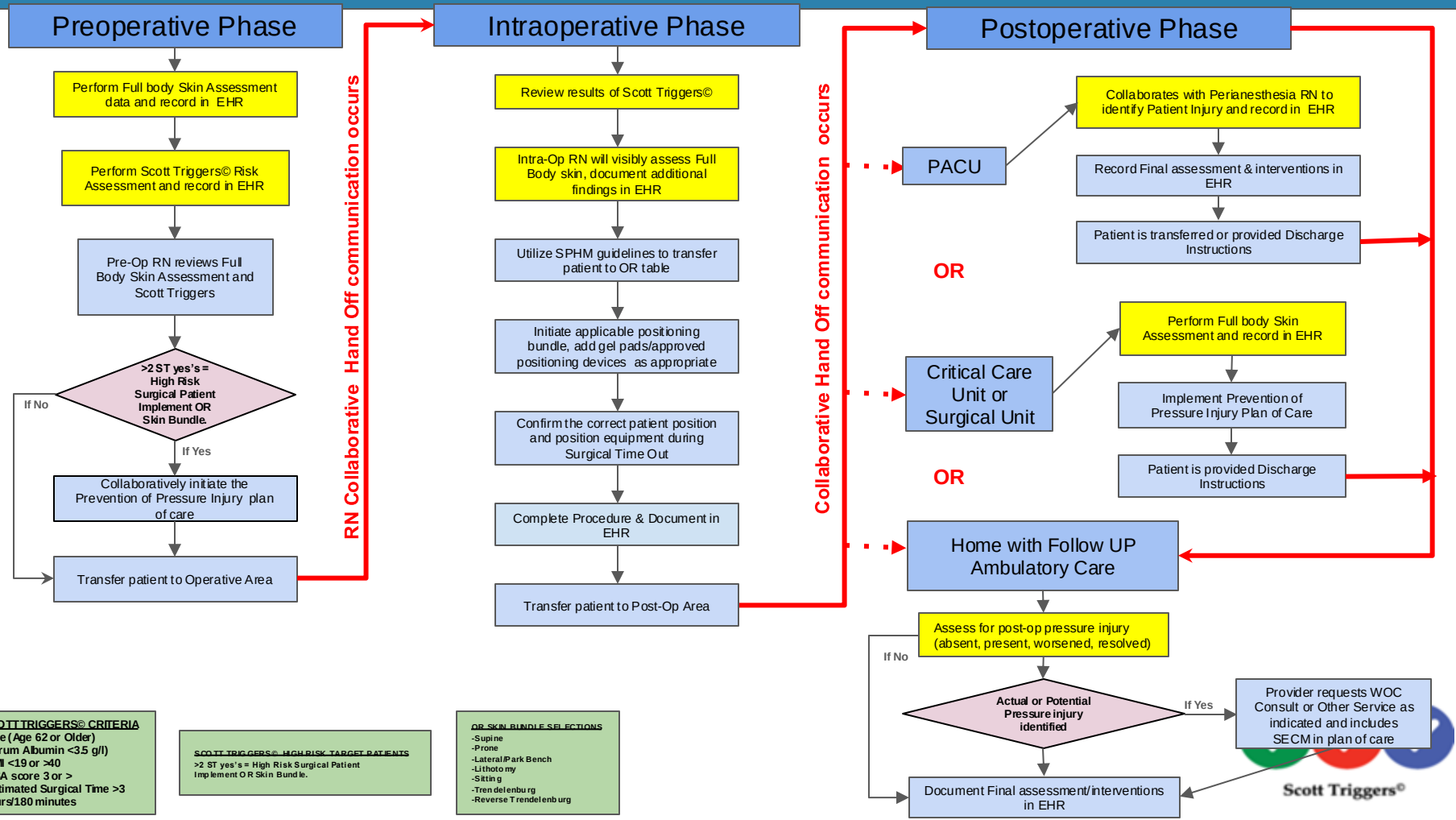
Scott Triggers Gap Assessment Template in AORN Prevention of Perioperative Pressure Injury Tool Kit. Available at https://scotttriggers.com/resources

Scott, S. Perioperative Pressure Injuries: Protocols and Evidence-Based Programs for Reducing Risk. PSQH, 2016;13(4), 20-28.

Shafipour V, Ramezanpour E, Gorji, MAH, Moosadadeh M, Prevalence of postoperative pressure ulcer: A systematic review and meta-analysis. Electronic Physician Nov 2016;8(11):3170-3176. http://www.ephysician.ir/2016/3170.pdf Accessed March 23, 2019.

Stanton C. Guideline for Prevention of Perioperative Pressure Injury. AORN J. 2022;115(5):8-10.

Uribe JS. Kolla J, Omar H, et al. Brachial plexus injury following spinal surgery. J Neurosurg Spine, 2010;13(4):552-558.


Preoperative Phase
Perform Full body Skin Assessment data and record in EHR
Perform Scott Triggers© Risk Assessment and record in EHR
Pre-Op RN reviews Full Body Skin Assessment and Scott Triggers
>2 ST yes's = High Risk Surgical Patient Implement OR Skin Bundle.
If No
If Yes
Collaboratively initiate the Prevention of Pressure Injury plan of care
Transfer patient to Operative Area
RN Collaborative Hand Off communication occurs
Intraoperative Phase
Review results of Scott Triggers©
Intra-Op RN will visibly assess Full Body skin, document additional findings in EHR
Utilize SPHM guidelines to transfer patient to OR table
Initiate applicable positioning bundle, add gel pads/approved positioning devices as appropriate
Confirm the correct patient position and position equipment during Surgical Time Out
Complete Procedure & Document in EHR
Transfer patient to Post-Op Area
Collaborative Hand Off communication occurs
Postoperative Phase
PACU
Collaborates with Perianesthesia RN to identify Patient Injury and record in EHR
Record Final assessment & interventions in EHR
Patient is transferred or provided Discharge Instructions
OR
Critical Care Unit or Surgical Unit
Perform Full body Skin Assessment and record in EHR
Implement Prevention of Pressure Injury Plan of Care
Patient is provided Discharge Instructions
OR
Home with Follow UP Ambulatory Care
Assess for post-op pressure injury (absent, present, worsened, resolved)
If No
Actual or Potential Pressure injury identified
If Yes
Provider requests WOC Consult or Other Service as indicated and includes SECM in plan of care
Document Final assessment/interventions in EHR
Scott Triggers©
SCOTT TRIGGERS© CRITERIA
-Age (Age 62 or Older)
-Serum Albumin <3.5 g/l)
-BMI <19 or >40
-ASA score 3 or >
-Estimated Surgical Time >3 hours/180 minutes
SCOTT TRIGGERS© HIGH RISK TARGET PATIENTS
>2 ST yes's = High Risk Surgical Patient Implement OR Skin Bundle.
OR SKIN BUNDLE SELECTIONS
-Supine
-Prone
-Lateral/Park Bench
-Lithotomy
-Sitting
-Trendelenburg
-Reverse Trendelenburg