

AORN Guideline for Prevention of Perioperative Pressure Injury
Evidence Table

REFERENCE #	CITATION	EVIDENCE TYPE	SAMPLE SIZE/ POPULATION	INTERVENTION(S)	CONTROL/ COMPARISON	OUTCOME MEASURE(S)	CONCLUSION(S)	CONSENSUS SCORE
1	WOCN 2016 Guideline for Prevention and Management of Pressure Injuries (Ulcers): An Executive Summary. <i>J Wound Ostomy Continence Nurs.</i> 2017;44(3):241-246	Guideline	n/a	n/a	n/a	n/a	Guideline for the prevention and management of pressure injuries, recommendations given,	VA
2	<i>Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice Guideline. The International Guideline.</i> 3rd ed. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel (NPIAP) and Pan Pacific Pressure Injury Alliance; 2019	Guideline	n/a	n/a	n/a	n/a	Guideline for the prevention and management of pressure injuries, recommendations given.	VA
3	Ganos D, Siddiqui A. Chapter 7: Operating Room. Pieper B, ed. 2nd ed. National Pressure Injury Advisory Panel (NPIAP); 2012. https://npuap.site-ym.com/store/ViewProduct.aspx?id=14100774 .	Guideline	n/a	n/a	n/a	n/a	PI guidance for the operating room.	VA
4	Kumta N, Coyer F, David M. Perioperative factors and pressure ulcer development in postoperative ICU patients: a retrospective review. <i>J Wound Care.</i> 2018;27(8):475-485.	Nonexperimental	3484 postoperative ICU patients	n/a	n/a	Association between perioperative variables and PI occurrence	No specific variables were associated with the development of a PI within 72 hours of the patient's ICU admission. Multiple regression showed that length of time in the OR, surgical specialty, hypotensive episodes.	VB
5	Engels D, Austin M, McNichol L, Fencil J, Gupta S, Kazi H. Pressure Ulcers: Factors Contributing to Their Development in the OR. <i>AORN J.</i> 2016;103(3):271-81.	Nonexperimental	retrospective chart review of 4 community hospitals-identified any patient who experience a HAPU within one week of undergoing an OR procedure. 45 patients who did not develop a pressure ulcer served as controls.	n/a	n/a	Incidence of pressure injury	15 patients were identified who underwent surgical procedures and developed a pressure injury within one week of a perioperative stay. Compared to the 45 control patients-total of 60 patients. The authors concluded that gel pad overlays or thermo-active foam pads significantly reduce the incidence of pressure injury compared to standard OR mattresses but they did not find a correlation in this study. Duration of surgery is a significant contributor to the risk of tissue damage. Hypothermia is significantly correlated with development of pressure injury. Implemented a sacral dressing protocol.	IIIB
6	Gefen A, Creehan S, Black J. Critical biomechanical and clinical insights concerning tissue protection when positioning patients in the operating room: A scoping review. <i>Int Wound J.</i> 2020;17(5):1405-1423. https://doi.org/10.1111/iwj.13408 . doi: https://doi.org/10.1111/iwj.13408 .	Literature Review	n/a	n/a	n/a	n/a	Comprehensive review of positioning and related injuries.	VB
7	Gao L, Yang L, Li X, et al. The use of a logistic regression model to develop a risk assessment of intraoperatively acquired pressure ulcer. <i>Journal of Clinical Nursing (John Wiley & Sons, Inc).</i> 2018;27(15-16):2984-2992.	Nonexperimental	1963 patients undergoing neuro, ortho, peds and cardia surgery in one hospital for one year. Clinical parameters were collected prospectively.	n/a	n/a	The risk factors of intraoperatively acquired pressure ulcer.	Factors of intraoperatively acquired pressure injury were reviewed and the researchers established a risk assessment model.	IIIA
8	Shafipour V, Ramezanpour E, Gorji MA, Moosazadeh M. Prevalence of postoperative pressure ulcer: A systematic review and meta-analysis. <i>Electron Physician.</i> 2016;8(11):3170-3176. doi: 10.19082/3170 [doi].	Systematic Review w/ Meta-Analysis	n/a	n/a	n/a	n/a	Postoperative pressure injury incidence was found to be 18.96%, Patients with prolonged OR times and those with postoperative UTIs are at the greatest risk.	IA
9	Liang M, Chen Q, Zhang Y, et al. Impact of diabetes on the risk of bedsore in patients undergoing surgery: an updated quantitative analysis of cohort studies. <i>Oncotarget.</i> 2017;8(9):14516-14524.	Systematic Review w/ Meta-Analysis	n/a	n/a	n/a	n/a	This meta-analysis provides indications that diabetic patients undergoing surgery could have a higher risk of developing bedsores.	IVA
10	Bulfone G, Bressan V, Morandini A, Stevanin S. Perioperative Pressure Injuries: A Systematic Literature Review. <i>Adv Skin Wound Care.</i> 2018;31(12):556-564.	Systematic Review	n/a	n/a	n/a	n/a	This review identified pressure injury, incidence and characteristics of PI in the perioperative environment, risk factors and strategies to prevent injury.	IIIB

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11	Kim JM, Lee H, Ha T, Na S. Perioperative factors associated with pressure ulcer development after major surgery. <i>Korean J Anesthesiol.</i> 2018;71(1):48-56.	Nonexperimental	2498 case control patients who underwent major surgery	n/a	n/a	Pressure injury risk	study revealed that preoperative low albumin levels and high lactate levels were significantly associated with pressure ulcer development after surgery.	VA
12	Peixoto C.A., Ferreira M.B.G., Felix M.M.D.S., Pires P.D.S., Barichello E., Barbosa M.H. Risk assessment for perioperative pressure injuries. <i>Rev Lat Am Enfermagem.</i> 2019;27:e3117.	Nonexperimental	278 surgical patients	n/a	n/a	Pressure injuries	Female patients, elderly and altered BMI were significant factors that increased risk of PI.	VA
13	Luo M, Long X, Wu J, Huang S, Zeng Y. Incidence and Risk Factors of Pressure Injuries in Surgical Spinal Patients: A Retrospective Study. <i>J WOCN.</i> 2019;46(5):397-400.	Nonexperimental	3834 patients who underwent spinal surgery in the prone position.	n/a	n/a	Study looked at demographic data, Braden Scale score, BMI, duration of surgery, preoperative time, postoperative time, and development of pressure injury	184 patients developed a pressure injury. Factors associated with this were over 60 years, BMI under 18, Braden score 13 or less, prolonged preoperative time, and prolonged postoperative time.	IIIB
14	Grap M.J., Schubert C.M., Munro C.L., et al. OR Time and Sacral Pressure Injuries in Critically Ill Surgical Patients. <i>AORN J.</i> 2019;109(2):229-239.	Nonexperimental	41 patients selected from a primary study who had any recorded time in the OR, OR bed time and pressure injury.	n/a	n/a	Demographic variables, patient related variables, OR related variables- predictive ability of each of the variable for pressure injury	OR bed time, BMI, and Braden scale score produced the best prediction of pressure injury. High frequency ultrasound was used to identify tissue changes before observable skin changes leading to earlier pressure injury prevention strategies.	VB
15	Celik B., Karayurt O., Ogc F. The Effect of Selected Risk Factors on Perioperative Pressure Injury Development. <i>AORN J.</i> 2019;110(1):29-38.	Nonexperimental	151 patients who underwent surgical procedures lasting two hours or more.	n/a	n/a	Development of pressure injury.	40% of surgical patients developed a pressure injury, poor skin turgor, intraoperative diastolic blood pressure less than 60 mm Hg and intraoperative vasopressor use were associated with the development of pressure injuries.	IVB
16	Wu,Bing-Bing; Gu,Dong-Zhou; Yu,Jia-Ning; Feng,Li-Ping; Xu,Rong; Zha,Man-Li; Shen,Wang-Qin; Chen,Hong-Lin. Relationship Between Smoking and Pressure Injury Risk: A Systematic Review and Meta-Analysis. <i>Wound management & prevention,</i> 2021, 67, 9, 34-46	Systematic Review w/ Meta-Analysis	n/a	n/a	n/a	n/a	This study found that individuals who are current or former smokers have an almost 1.5 times higher risk of PI development than do those who do not smoke	IIIA
17	Hayes RM, Spear ME, Lee SI, et al. Relationship between time in the operating room and incident pressure ulcers: a matched case-control study. <i>Am J Med Qual.</i> 2015;30(6):591-7.	Nonexperimental	931 patients with pressure injury following surgery	n/a	n/a	Time in the OR	OR time in the 24 hours prior to PU documentation was associated with PUs. Only 5% of HAPUs occurred within 24 hours of extended (>4 hours) surgery and 58% occurred after hospital day 5	VB
18	Wang I, Walker R, Gillespie BM. Pressure injury prevention for surgery: Results from a prospective, observational study in a tertiary hospital: Implementing pressure injury prevention in a perioperative setting. <i>Journal of Perioperative Nursing.</i> 2018;31(3):25-28.	Nonexperimental	278 staff during surgery of 73 patients	n/a	n/a	PIP strategies used by perioperative health professionals	At risk patients have a higher number of PIP strategies implemented, patients having surgeries lasting over 2 hours are at greater risk, postop PIs that occur as a result of using medical devices or equipment should not be overlooked and periOperative professionals should be vigilant and monitor the use of devices and equipment during the intra-operative period.	VB
19	Bithal PK, Ravees J, Daniel WV, Samar E, Alaa AT, Yanbawi AA. Incidence of Pressure-Related Skin Injuries in Patients Operated for Spine Surgery in Prone: A Retrospective Analysis of 307 Patients. <i>Anesth Essays Res.</i> 2020;14(1):33-37.	Nonexperimental	307 patients in the prone position, retrospective review	n/a	n/a	Pressure injury	Pressure injury occurs frequently in the prone position the incidence is proportional to the duration of the surgery and the patient's weight, face was the most common effected area.	IIIB
20	Rowen L, Rowen L, Hunt D, Johnson KL. Managing obese patients in the OR. <i>OR NURSE.</i> 2012;6(2):26-36 11p.	Expert Opinion	n/a	n/a	n/a	n/a	Perioperative patients who are obese require an evidence-based, integrated approach to their care.	VB

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21	Padula WV, Delarmente BA. The national cost of hospital-acquired pressure injuries in the United States. <i>Int Wound J</i> . 2019;16(3):634-640. doi:10.1111/iwj.13071 [doi].	Nonexperimental	Markov model to simulate the daily accumulation of costs attributed to treating patients with HAPIs based on state transitions between different HAPI stages and death within acute care	n/a	n/a	Cost of a HAPI.	US HAPI costs could exceed \$26.8 billion. About 59% of these costs are disproportionately attributable to a small rate of Stages 3 and 4 full-thickness wounds, which occupy clinician time and hospital resources. HAPIs remain a concern with regard to hospital quality in addition to being a major source of economic burden on the US health care system. Hospitals should invest more in quality improvement of early detection and care for pressure injury to avoid higher costs.	IIIA
22	Centers for Medicare and Medicaid Services (CMS),HHS. Medicaid program; payment adjustment for provider-preventable conditions including health care-acquired conditions. Final rule. <i>Fed Regist</i> . 2011;76(108):32816-32838.	Regulatory	n/a	n/a	n/a	n/a	n/a	n/a
23	Jacobs A, Rose S. Assessment is more than skin deep in older adults. <i>OR NURSE</i> . 2011;5(4):29-29 1p.	Expert Opinion	n/a	n/a	n/a	n/a	Gives an overview of risk factors, the Braden Scale and preventive measures.	VC
24	Practice Advisory for the Prevention of Perioperative Peripheral Neuropathies 2018: An Updated Report by the American Society of Anesthesiologists Task Force on Prevention of Perioperative Peripheral Neuropathies. <i>Anesthesiology</i> . 2018;128(1):11-26.	Systematic Review	n/a	n/a	n/a	n/a	Positioning strategies for the patient's body to prevent peripheral neuropathies.	IIIA
25	Sewchuk D, Padula C, Osborne E. Prevention and Early Detection of Pressure Ulcers in Patients Undergoing Cardiac Surgery. <i>AORN Journal</i> . 2006;84(1):75-96.	Quasi-experimental	150 patients undergoing cardiac surgery, 50 patients enrolled in 3 groups	50 patients were placed on a fluid, pressure reducing mattress, 50 patients were placed on a fluid, pressure reducing mattress and received care in the PACU by nurses who also had participated in a comprehensive, ulcer-prevention education session.	50 patients placed on a regular OR bed mattress.	Development of pressure injury.	The number of pressure ulcers decreased when the fluid, pressure-reducing OR bed mat-tresses were used in conjunction with the comprehensive RN education program.	IIA
26	Cherry C, Moss J. Best practices for preventing hospital-acquired pressure injuries in surgical patients. <i>Can Oper Room Nurs J</i> . 2011;29(1):6-8.	Expert Opinion	n/a	n/a	n/a	n/a	All surgical patients should be considered at risk for pressure injury, a comprehensive approach is essential to prevent perioperative pressure injuries.	VB
27	Curley MA, Razmus IS, Roberts KE, Wypij D. Predicting pressure ulcer risk in pediatric patients: the Braden Q Scale. <i>Nurs Res</i> . 2003;52(1):22-33	Nonexperimental	322 patients on bedrest for at least 24hours without pre-existing pressure ulcers from 3 pediatric ICUs	n/a	n/a	Pressure injury development.	The performance of the Braden Q Scale in a pediatric population is similar to that consistently reported for the Braden Scale in adult patients. The Modified Braden Q Scale, with 3 subscales, provides a shorter yet comparable tool.	IIIB
28	Guideline for positioning the patient. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2022	Guideline	n/a	n/a	n/a	n/a	AORN guideline for positioning perioperative patients, guidance given.	IVA
29	Oozageer Gunowa N, Hutchinson M, Brooke J, Jackson D. Pressure injuries in people with darker skin tones: A literature review. <i>Journal of Clinical Nursing (John Wiley & Sons, Inc)</i> . 2018;27(17-18):3266-3275.	Literature Review	n/a	n/a	n/a	n/a	There is a lack of guidance and evidence and people with darker skin tones are more likely in comparison to Caucasians to develop higher stage pressure injuries.	VA

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30	ICD-10 HAC [Hospital Acquired Condition] List. https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/HospitalAcqCond/icd10_hacs . Updated 2021. Accessed 10/8, 2021.	Regulatory	n/a	n/a	n/a	n/a	n/a	n/a
31	Pressure ulcer prevention in the operating room: recommendations and guidance. Minnesota Hospital Association. https://www.mnhospitals.org/Portals/0/Documents/patientsafety/Pressure%20Ulcers/MHA_perioperative_recommendations.pdf . Published March 2013. Accessed March 4, 2022.	Guideline	n/a	n/a	n/a	n/a	Recommendations are provided for safe patient positioning and PI prevention	VC
32	Nilsson UG. Intraoperative positioning of patients under general anesthesia and the risk of postoperative pain and pressure ulcers. <i>Journal of PeriAnesthesia Nursing</i> . 2013;28(3):137-143.	Nonexperimental	86 Patients undergoing elective surgery in the supine position who had normal BMI and were ASA class I or II	n/a	n/a	Risk factors associated with intraoperative positioning/ Development of postoperative pain or pressure injury	The risk for positioning pain seems to be greater in patients suffering from preoperative pain.	IIA
33	Schultz A. Predicting and preventing pressure ulcers in surgical patients. <i>AORN J</i> . 2005;81(5):986-1006.	Systematic Review	31 studies	n/a	n/a	Development of a new pressure ulcer within 72 hours after surgery	Contradictory findings with limited sample sizes and questionable internal validity provide only weak support for recommendations to predict and prevent pressure injury in surgical patients.	IIIB
34	Galvin PA, Curley MA. The Braden Q+P: a pediatric perioperative pressure ulcer risk assessment and intervention tool. <i>AORN J</i> . 2012;96(3):261-270.	Organizational Experience	n/a	n/a	n/a	Number of pressure injury events	The use of a risk assessment tool may not decrease overall incidence of pressure injury, but an increased focus on skin assessment and pressure injury prevention strategies can improve outcomes.	IIIB
35	Quigley SM, Curley MA. WILEY Skin integrity in the pediatric population: preventing and managing pressure ulcers. <i>J Soc Pediatr Nurs</i> . 1996;1(1):7-18	Organizational Experience	n/a	n/a	n/a	Number of pressure injury events	The Skin Care Task Force recommended the use of the Braden Q Scale for pediatric risk assessment.	VA
36	Meehan AJ, Beinlich NR, Bena JF, Mangira C. Revalidation of a Perioperative Risk Assessment Measure for Skin. <i>Nurs Res</i> . 2019;68(5):398-404.	Nonexperimental	1609 patients who underwent surgery in the supine or lateral decubitus position	n/a	n/a	Post surgical pressure injures, evaluating the effectiveness of the PRAMS score in identifying surgical patients at risk for PI.	PRAMS is effective in identifying patients who developed a postsurgical PI.	VC
37	Kimsey DB. A Change in Focus: Shifting From Treatment to Prevention of Perioperative Pressure Injuries. <i>AORN J</i> . 2019;110(4):379-393.	Organizational Experience	10 ORs in a 174 bed acute care facility	n/a	n/a	n/a	Implemented a perioperative pressure injury prevention bundle. Evidence based and included skin and risk assessments, protection of all at risk skin with protocols and products, improved communication, extensive staff education and compliance audits. The program was successful in reducing the occurrence os perioperative pressure injuries.	IIIA
38	Fritzen T, Kremer M, Biddle C. The AANA Foundation Closed Malpractice Claims Study on nerve injuries during anesthesia care. <i>AANA J</i> . 2003;71(5):347-352. File:///;	Nonexperimental	44 Cases of nerve injury contained within the total AANA Closed Malpractice Claims Database (N = 223)	n/a	n/a	Mechanisms of neurologic injury	The most common injury was to the brachial plexus. Documentation was lacking or inadequate in a majority of the claims. Abnormal body habitus, comorbidities, anesthesia technique, lack of adequate padding, and tourniquet use were implicated as risk factors for positioning injuries.	VB
39	Strasser LA. Improving Skin Integrity in the Perioperative Environment Using an Evidence-Based Protocol. <i>J DERMATOL NURSES ASSOC</i> . 2012;4(6):351-362 12p.	Organizational Experience	n/a	n/a	n/a	Number of skin events	Data indicated that skin events decreased after implementation of the standardized protocol. Most of the skin tears were associated with removal of the drapes and the high volume of patients with fragile skin.	IIIA
40	Winfree CJ, Kline DG. Intraoperative positioning nerve injuries. <i>Surg Neurol</i> . 2005;63(1):5-18; discussion 18.	Expert Opinion	n/a	n/a	n/a	n/a	Intraoperative positioning nerve injuries are largely preventable, yet they continue to occur.	VA

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41	Agostini J, Goasguen N, Mosnier H. Patient positioning in laparoscopic surgery: tricks and tips. <i>Journal of visceral surgery</i> . 2010;147(4):e227-32	Expert Opinion	n/a	n/a	n/a	n/a	Strategies to prevent injuries associated with patient positioning including nerve injury due to stretching or compression, rhabdomyolysis, and compartment syndrome are provided.	n/a
42	Penprase B, Johnson C. Optimizing the perioperative nursing role for the older adult surgical patient. <i>OR Nurse</i> . 2014;8(4):26-33.	Expert Opinion	n/a	n/a	n/a	n/a	Early identification and interventions for older adult surgical patients through preoperative assessments, careful positioning, maintaining normothermia, managing pain, and providing education is essential.	IIIA
43	Giachetta-Ryan D. Perioperative pressure ulcers: How can they be prevented? <i>OR NURSE</i> . 2015;9(4):22-28.	Expert Opinion	n/a	n/a	n/a	n/a	A broad overview of how pressure injury occurs and how it can be prevented in the perioperative setting.	IIIA
44	Fletcher HC. Preventing skin injury in the OR. <i>OR Nurse</i> . 2014;8(3):28-34.	Expert Opinion	n/a	n/a	n/a	n/a	Preoperative assessment can prevent skin injury and reduce hospital length of stay. Prolonged surgery is a risk factor for pressure injury development in surgical patients.	IB
45	Fleisch MC, Bader W, Balzer K, et al. The Prevention of Positioning Injuries During Gynecologic Surgery. Guideline of the DGGG, OEGGG and SGGG (S2k Level, AWMF Registry Number 015/077, October 2020). <i>Geburtshilfe Frauenheilkd</i> . 2021;81(4):447-468.	Guideline	n/a	n/a	n/a	n/a	The recommendations address information provided to the patient, documentation, injury prevention, monitoring and diagnosis of positioning injuries.	IIIA
46	Walton-Geer PS. Prevention of pressure ulcers in the surgical patient. <i>AORN J</i> . 2009;89(3):538-552 15p.	Expert Opinion	n/a	n/a	n/a	n/a	All surgical patients should be considered at risk of pressure injury; therefore, perioperative team members should develop and implement strategic plans to prevent pressure injury.	IIB
47	McNichol L, Lund C, Rosen T, Gray M. Medical adhesives and patient safety: state of the science: consensus statements for the assessment, prevention, and treatment of adhesive-related skin injuries. <i>J Wound Ostomy Continence Nurs</i> . 2013;40(4):365-80; quiz E1-2.	Guideline	n/a	n/a	n/a	n/a	An algorithm has been developed to provide guidance for selecting support surfaces that uses the Braden subscales of mobility and moisture to drive surface selection.	VB
48	Larkin BG. The ins and outs of body piercing. <i>AORN J</i> . 2004;79(2):333-342.	Expert Opinion	n/a	n/a	n/a	n/a	Jewelry should be removed from surgical patients to prevent pressure injuries.	VB
49	Smith FD. Caring for Surgical Patients With Piercings. <i>AORN J</i> . 2016;103(6):583-596.	Expert Opinion	n/a	n/a	n/a	n/a	The presence of piercings and dermal implants places patients at risk for surgical site infection, electrical burns, trauma, and airway obstruction.	IIIB
50	Cho JK, Han JH, Park SW, Kim KS. Deep vein thrombosis after spine operation in prone position with subclavian venous catheterization: A case report. <i>Korean Journal of Anesthesiology</i> . 2014;67(1):61-65.	Case Report	73-year-old woman undergoing spinal surgery	n/a	n/a	n/a	The existence of a factor affecting blood flow, such as the prone position may increase the risk of thrombus formation.	VB
51	Wanzer LJ, Hicks RW. Identifying and minimizing risks for surgical patients with dermal implants. <i>AORN J</i> . 2012;96(4):C5-C6.	Expert Opinion	n/a	n/a	n/a	n/a	When caring for patients with dermal implants, special attention should be paid to risks posed during positioning, patient transfers, and electrocautery use.	IIB
52	AORN Position Statement on Prevention of Perioperative Pressure Injury. AORN, Inc. https://aorn.org/guidelines/clinical-resources/position-statements . Accessed March 17, 2022.	Position Statement	n/a	n/a	n/a	n/a	AORNs position on the prevention of perioperative pressure injury	IIIB
53	Nascimento F.C.L.D., Rodrigues M.C.S. Risk for surgical positioning injuries: scale validation in a rehabilitation hospital. <i>Rev Lat Am Enfermagem</i> . 2020;28:e3261.	Quasi-experimental	106 surgical patients	ELPO risk assessment tool with real surgical time.	Estimated surgical time.	Postoperative injury	most patients showed high risk for perioperative injuries, both in the scale score with estimated time and in the real-time score, with a mean of 19.97 (±3.02) and 19.96 (±3.12), respectively. ELPO is a valid and reliable tool	IIB
54	Lopes CM, Haas VJ, Dantas RA, Oliveira CG, Galvão CM. Assessment scale of risk for surgical positioning injuries. <i>Rev Lat Am Enfermagem</i> . 2016;24:e2704.	Nonexperimental	115 surgical patients.	n/a	n/a	Validation study for the ELPO scale-the scale is a valid are reliable tool but research is needed to assess its use in clinical practice.	Risk Assessment Scale for the Development of Injuries due to Surgical Positioning (ELPO)	IIIA

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55	Li T, Tang J, Gan X. Reliability and validity Munro Scale on the assessment of pressure ulcer risks in adult perioperative patients: a cross-sectional study. <i>Int J Clin Exp Med</i> . 2018;11(9):9811-9818.	Nonexperimental	246 surgical patients	n/a	n/a	patient data using the Munro scale	the Munro scale has high interrater reliability, content validity, and appropriate build validity	VC
56	Gul A, Sengul T, Yavuz HÖ. Assessment of the risk of pressure ulcer during the perioperative period: Adaptation of the Munro scale to Turkish. <i>J Tissue Viability</i> . 2021.	Quasi-experimental	188 surgical patients	Munro scale	Braden and patient identification form	Scale reliability and validity	the Munro scale is reliable and valid	IVC
57	Park SK, Park HA, Hwang H. Development and Comparison of Predictive Models for Pressure Injuries in Surgical Patients: A Retrospective Case-Control Study. <i>J Wound Ostomy Continence Nurs</i> . 2019;46(4):291-297. doi:10.1097/WON.0000000000000544 [doi].	Nonexperimental	Retrospective data from patients 18 years or older who underwent surgery between Jan 2015-May 2016	n/a	n/a	Risk factors from the Braden Scale, Scott's Triggers tool, and Scott's Triggers	Findings showed there were no significant factors in model 1, the estimated surgery time and serum albumin level were significant in model 2, and the estimated surgery time, serum albumin level, and brain disease were significant in model 3. The model performance evaluation revealed that model 2 was the best fitting model, demonstrating the highest sensitivity (84.4%), highest negative predictive value (94.6%), and lowest Akaike information criterion (302.03).	VB
58	Goudas L, Bruni S. Pressure injury risk assessment and prevention strategies in operating room patients -- findings from a study tour of novel practices in American hospitals. <i>Journal of Perioperative Nursing</i> . 2019;1(32):33-38.	Expert Opinion	n/a	n/a	n/a	n/a	Australian team of nurses took a study tour of novel practices in American hospitals to review PI prevention risk assessments and strategies to create an Australian toolkit.	VB
59	Black J, Fawcett D, Scott S. Ten top tips: preventing pressure ulcers in the surgical patient. <i>WOUNDS INT</i> . 2014;5(4):14-18.	Expert Opinion	n/a	n/a	n/a	n/a	Top 10 tips on pressure injury prevention in the surgical patient, includes a risk assessment, skin assessment, additional protection, padding, equipment, safe patient handling, protecting the occiput and heels and postoperative communication.	VA
60	Bouyer-Ferullo S. Preventing perioperative peripheral nerve injuries. <i>AORN J</i> . 2013;97(1):110-124.e9.	Literature Review	n/a	n/a	n/a	n/a	No standard exists to identify, document, or monitor peripheral nerve injuries; however, increasing awareness of the potential for injury and implementing safe positioning practices has the potential to decrease the incidence of peripheral nerve injury.	VB
61	Chitlik A. Safe positioning for robotic-assisted laparoscopic prostatectomy. <i>AORN J</i> . 2011;94(1):37-45.	Expert Opinion	n/a	n/a	n/a	n/a	The lithotomy with Trendelenburg position used for robotic procedures creates unique challenges. Using a beanbag positioning device designed for use with this position helps prevent complications.	VA
62	Stechmiller JK, Cowan L, Whitney JD, et al. Guidelines for the prevention of pressure ulcers. <i>Wound Repair Regen</i> . 2008;16(2):151-168 18p.	Guideline	n/a	n/a	n/a	n/a	These guidelines were developed to provide consensus and evidence-based recommendations for preventing pressure injury.	VB
63	He W, Liu P, Chen HL. The Braden Scale cannot be used alone for assessing pressure ulcer risk in surgical patients: a meta-analysis. <i>Ostomy Wound Manage</i> . 2012;58(2):34-40.	Systematic Review w/ Meta-Analysis	3 Studies evaluating the use of the Braden Scale in surgical patients	n/a	n/a	Predictive validity of the Braden Scale in surgical patients	The Braden Scale has a low predictive validity for pressure injury risk in surgical patients.	VB
64	Instructions for the Munro Pressure Ulcer Risk Assessment. In: <i>Prevention of Perioperative Pressure Injury Tool Kit</i> . AORN, Inc. et al. Accessed March 17, 2022.	n/a	n/a	n/a	n/a	n/a	Detailed instructions on using the Munro Pressure Ulcer Risk Assessment Scale.	n/a
65	Munro Pressure Ulcer Risk Assessment Scale for Perioperative Patients – Adult. In: <i>Prevention of Perioperative Pressure Injury Tool Kit</i> . AORN, Inc. et al. Accessed March 17, 2022	n/a	n/a	n/a	n/a	n/a	n/a	IVA
66	Scott SM. Progress and Challenges in Perioperative Pressure Ulcer Prevention. <i>J Wound Ostomy Continence Nurs</i> . 2015;42(5):480-485.	Expert Opinion	n/a	n/a	n/a	n/a	The cause and effect of pressure injuries is presented.	VC
67	Munro CA. The development of a pressure ulcer risk-assessment scale for perioperative patients. <i>AORN J</i> . 2010;92(3):272-287. doi:10.1016/j.aorn.2009.09.035 [doi].	Nonexperimental	12 perioperative RNs and 2 anesthesiologists	questions related to pressure injury risk development to be used in the Munro Risk Assessment scale	n/a	Risk factors were rated for inclusion in the scale	The risk factors identified in the Munro scale are significant to the development of pressure ulcers according to the expert opinions obtained	VC
68	Clayton JL. Special needs of older adults undergoing surgery. <i>AORN J</i> . 2008;87(3):557-574 18p.	Expert Opinion	n/a	n/a	n/a	n/a	Successful surgical management of an older adult depends on the perioperative RN's understanding of age-related factors that may affect the outcome of the procedure.	VA

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REFERENCE #	CITATION	EVIDENCE TYPE	SAMPLE SIZE/ POPULATION	INTERVENTION(S)	CONTROL/ COMPARISON	OUTCOME MEASURE(S)	CONCLUSION(S)	CONSENSUS SCORE
69	O'Connell MP. Positioning impact on the surgical patient. <i>Nurs Clin North Am</i> . 2006;41(2):173-192.	Expert Opinion	n/a	n/a	n/a	n/a	There are many challenges and physiologic risks associated with surgical positioning.	VB
70	Adedeji R, Oragui E, Khan W, Maruthainar N. The importance of correct patient positioning in theatres and implications of mal-positioning. <i>Journal of Perioperative Practice</i> . 2010;20(4):143-147	Expert Opinion	n/a	n/a	n/a	n/a	Correct patient positioning in the OR is crucial to avoid the preventable complications of pressure injury, nerve compression, DVT, and compartment syndrome.	VC
71	Price MC, Whitney JD, King CA. Wound care. Development of a risk assessment tool for intraoperative pressure ulcers. <i>J WOCN</i> . 2005;32(1):19-32.	Case Report	45-year-old man undergoing deep partial- and full-thickness autografting in the prone position	n/a	n/a	n/a	Intraoperative contributors for the postoperative vision loss in this patient included prone positioning, Wilson frame use, prolonged duration of operation, extensive blood loss, and anemia.	VB
72	Bushard S. Trauma in patients who are morbidly obese. <i>AORN J</i> . 2002;76(4):585-589.	Expert Opinion	n/a	n/a	n/a	n/a	Perioperative nurses should be prepared to deal with the multiple issues presented by obese patients.	VB
73	Mackey D. Support surfaces: beds, mattresses, overlays-oh my! <i>Nurs Clin North Am</i> . 2005;40(2):251-265.	Expert Opinion	n/a	n/a	n/a	n/a	The selection of a support surface is an important component of a pressure injury prevention program.	IIC
74	Armstrong D, Bortz P. An integrative review of pressure relief in surgical patients. <i>AORN J</i> . 2001;73(3):645-657.	Literature Review	n/a	n/a	n/a	n/a	All surgical patients should be considered at risk for pressure injury development. Effective perioperative nursing interventions should be implemented to prevent pressure injury.	VB
75	Hoshowsky VM, Schramm CA. Intraoperative pressure sore prevention: an analysis of bedding materials. <i>Res Nurs Health</i> . 1994;17(5):333-339.	RCT	505 Patients undergoing surgery in the supine or prone position	Postoperative inspection using the Hemphill tool after placement on standard vinyl-covered, 2-inch thick mattress; nylon fabric-covered, 2-inch thick foam and gel OR bed mattress; or a viscoelastic dry polymer mattress overlay in both prone and supine positions	Paired comparisons of patients' right and left heels or knees	Pressure injury development	The viscoelastic overlay was more effective than either the foam and gel or standard foam mattress for preventing pressure injury.	IA
76	King CA, Bridges E. Comparison of Pressure Relief Properties of Operating Room Surfaces. <i>Perioperative Nursing Clinics</i> . 2006;1(3):261-265.	Quasi-experimental	11 Perioperative team members	Pressure measurements of occiput, sacrum, heels, and trochanter in supine and lateral positions	Standard OR bed mattress compared with OR bed mattress with foam overlay, and OR bed mattress with gel overlay	Differences in pressure measurements	The peak skin interface pressures exceeded the mean of 32 mm Hg for all participants, suggesting that the peak skin interface may be tolerated without ischemic injury upward of four to six hours by some patients.	VC
77	Reddy M. Pressure ulcers. <i>BMJ Clin Evid</i> . 2011;2011:1901	Systematic Review w/ Meta-Analysis	64 Systematic reviews, randomized controlled trials, and observational studies	n/a	n/a	Pressure injury development	Pressure-relieving overlays on OR beds may be more effective than no overlays in preventing pressure injury.	VB
78	Wu T, Wang ST, Lin PC, Liu CL, Chao YF. PURCH/ ILL Effects of using a high-density foam pad versus a viscoelastic polymer pad on the incidence of pressure ulcer development during spinal surgery. <i>Biol Res Nurs</i> . 2011;13(4):419-424.	Quasi-experimental	30 Patients who underwent spinal surgery for more than three hours in the prone position	Average and peak pressure measurements when one side of the chest is padded with high-density foam pad, and the other side is padded with viscoelastic polymer pad	Paired comparisons of patients' right and left chest	Differences in pressure measurements	The average and peak pressures measured at the points padded with the viscoelastic polymer pads were significantly lower than those padded with high-density foam pads; however, there was no significant differences between the pads with regard to prevention of pressure ulcers.	IIIB

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79	McNichol L, Watts C, Mackey D, Beitz JM, Gray M. Identifying the right surface for the right patient at the right time: generation and content validation of an algorithm for support surface selection. <i>J Wound Ostomy Continence Nurs.</i> 2015;42(1):19-37.	Consensus	n/a	n/a	n/a	n/a	A task force of clinical experts developed the algorithm for selecting support surfaces and convened a consensus panel for review and modification.	IIIB
80	Sutton S., Link T., Makic M.B.F. A Quality Improvement Project for Safe and Effective Patient Positioning During Robot-Assisted Surgery. <i>AORN J.</i> 2013;97(4):448-456.	Organizational Experience	n/a	n/a	n/a	Physician satisfaction	The surgeons preferred the high-density foam padding.	n/a
81	Kirkland-Walsh H, Teleten O, Wilson M, Raingruber B. Pressure Mapping Comparison of Four OR Surfaces. <i>AORN J.</i> 2015;102(1):e1.e1-9.	Quasi-experimental	51 volunteers	air inflated static seat cushion over a standard surgical table surface, two layer OR surface consisting of a top layer of non-powered self-contouring copolymer gel and a bottom layer of high density foam, and a fluid immersion simulation surgical surface.	standard 3 layer viscoelastic memory foam surgical table surface	Full body interface pressure testing to evaluate pressure redistribution properties of OR surfaces	Although all surfaces had similar average interface pressures, the air-inflated static seat cushion had the best pressure redistribution properties in the sacral region compared with the other surfaces tested	VC
82	Oliveira KF, Pires PDS, De-Mattia AL, et al. Influence of support surfaces on the distribution of body interface pressure in surgical positioning. <i>Rev Lat Am Enfermagem.</i> 2018;26:e3083.	Quasi-experimental	20 healthy adult volunteers placed in supine position	viscoelastic polymer, soft foam, or sealed foam	Standard operating table	Interface pressure	IP was relatively lower on foam-based Support surfaces, especially on density-18 soft foam and density-33 sealed foam. Nonetheless, IP was not reduced on the viscoelastic polymer support surface compared to the control SS.	VB
83	de Oliveira KF, Nascimento KG, Nicolussi AC, Chavaglia SRR, de Araujo CA, Barbosa MH. Support surfaces in the prevention of pressure ulcers in surgical patients: An integrative review. <i>Int J Nurs Pract.</i> 2017;23(4).	Systematic Review	n/a	n/a	n/a	n/a	Viscoelastic polymer was most often recommended for reduction of interface pressure and cost benefit, followed by polyether and gel-based support surfaces. Terminology used for support surfaces needs to be standardized.	VC
84	de Oliveira KF, da Silva Pires P, De-Mattia A, et al. Influence of support surfaces on the distribution of body interface pressure in surgical positioning. <i>REV LAT AM ENFERMAGEM.</i> 2018;26:1-9.	Quasi-experimental	20 healthy adult volunteers	7 Participants were placed supine on a standard operating table for evaluation of interface pressure on the body prominences of the occiput, subscapular, sacral and heel regions using sensors.	Compared with the other participants who were placed on support surfaces made of viscoelastic polymer, soft foam and sealed foam.	Interface pressure	IP was relatively lower on foam-based SSs, especially on density-18 soft foam and density-33 sealed foam. Nonetheless, IP was not reduced on the viscoelastic polymer SS compared to the control SS.	IIIB
85	Han MJ, Ko S. Comparison of Interface Pressures and Subjective Comfort of Pressure-Relieving Overlays on the Operating Table for Healthy Volunteers. <i>Int J Environ Res Public Health.</i> 2021;18(5):2640. doi: 10.3390/ijerph18052640.	Quasi-experimental	30 healthy volunteers aged 19-57.	Polyurethane foam, gel pad and egg crate foam	none	Interface pressure	Polyurethane foam was recommended as the most satisfactory pressure relief.	VA
86	Shi C, Dumville JC, Cullum N, et al. Beds, overlays and mattresses for preventing and treating pressure ulcers: an overview of Cochrane Reviews and network meta-analysis. <i>Cochrane Database of Systematic Reviews.</i> 2021(8).	Systematic Review w/ Meta-Analysis	n/a	n/a	n/a	n/a	Compared with foam surfaces, reactive air surfaces may reduce pressure ulcer risk and may increase complete ulcer healing. Compared with foam surfaces, alternating pressure air surfaces may reduce pressure ulcer risk and are probably more cost-effective in preventing pressure ulcers. Compared with foam surfaces, reactive gel surfaces may reduce pressure ulcer risk, particularly for people in operating rooms and long-term care settings. There are uncertainties for the relative effectiveness of other support surfaces for preventing and treating pressure ulcers, and their efficacy ranking.	IIIB

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87	Teleten O, Prevatt J, Peterson L, Burleson C, Wilson M, Kirkland-Kyhn H. Use of Pressure Mapping to Compare Two Operating Room Surfaces in the Supine With Bent Knees Position and the Supine in Lithotomy Position. <i>Wounds</i> . 2021;33(4):86-90.	Organizational Experience	5 volunteers on the standard OR surface and 5 with static, air filled cushion on top	n/a	n/a	n/a	the use of the static, air filled cushion on top of the standard OR surface resulted in superior pressure redistribution properties in the positions described.	IIA
88	Pham B, Teague L, Mahoney J, et al. Support surfaces for intraoperative prevention of pressure ulcers in patients undergoing surgery: a cost-effectiveness analysis. <i>Surgery</i> . 2011;150(1):122-132.	Nonexperimental	Not specified/Simulated patients undergoing scheduled surgical procedures lasting ≥ 90 minutes	n/a	n/a	Cost and effectiveness of support surface in preventing pressure injury	In patients undergoing scheduled surgical procedures lasting ≥ 90 minutes, implementing effective support surfaces could prevent patient injury and reduce costs.	VA
89	Bonnaig N, Dailey S, Archdeacon M. Proper Patient Positioning and Complication Prevention in Orthopaedic Surgery. <i>J Bone Joint Surg Am</i> . 2014;96(13):1135-1140.	Expert Opinion	n/a	n/a	n/a	n/a	Negative outcomes such as peripheral neuropraxia, fracture malrotation, and soft tissue injuries can often be avoided with careful positioning.	VB
90	Whitney J, Phillips L, Aslam R, et al. Guidelines for the treatment of pressure ulcers. <i>Wound Repair Regen</i> . 2006;14(6):663-679.	Guideline	n/a	n/a	n/a	n/a	Static pressure-reducing devices are superior to standard hospital mattresses. However, if the patient "bottoms out," the device may be ineffective.	IIIB
91	Malkoun M, Huber J, Huber D. A comparative assessment of interface pressures generated by four surgical theatre heel pressure ulcer prophylactics. <i>Int Wound J</i> . 2012;9(3):259-263.	Nonexperimental	116 Patient volunteers from an outpatient vascular laboratory	n/a	n/a	Interface pressure measurements	The device protects the heel without causing hyperextension of the knee and popliteal vein compression.	VB
92	Bai DL, Liu TW, Chou HL, Hsu YL. Relationship between a pressure redistributing foam mattress and pressure injuries: An observational prospective cohort study. <i>PLoS One</i> . 2020;15(11):e0241276.	Quasi-experimental	30 ICU patients who had an identified risk using the Braden scale.	pressure reducing foam mattress	standard foam mattress	pressure injury	Using a pressure reducing foam mattress was associated with a significantly reduced incidence of PI	IIB
93	Karg P, Ranganathan VK, Churilla M, Brienza D. Sacral skin blood flow response to alternating pressure operating room overlay. <i>J Tissue Viability</i> . 2019;28(2):75-80.	Quasi-experimental	Healthy participants (20) one group 18-40 years old and one group 60+ years old.	Low profile AP surgical overlay	50mm thick OR foam pad without the overlay	Blood flow to the sacrum	Body mass index was a significant predictor to the effectiveness of the AP overlay, patients at risk for pressure injury due to prolonged ischemia may benefit from the addition of an alternating pressure mattress.	IVB
94	Fletcher J, Harris C, Mahoney K. A small-scale evaluation of the Dolphin Fluid Immersion Simulation® Mattress. <i>Wounds UK</i> . 2014;10(1):97-100.	Organizational Experience	n/a	n/a	n/a	Interface pressure measurements	The fluid immersion simulation system seems to be an effective pressure-redistributing surface. Further research is warranted.	VB
95	Worsley PR, Parsons B, Bader DL. An evaluation of fluid immersion therapy for the prevention of pressure ulcers. <i>Clin Biomech</i> . 2016;40:27-32.	Nonexperimental	51 hospital personnel	n/a	n/a	Interface pressure measurements	All surfaces had similar average interface pressures; however, the air-inflated static seat cushion had the best pressure redistribution properties in the sacral area.	VB
96	Gefen A. Minimising the risk for pressure ulcers in the operating room using a specialised low-profile alternating pressure overlay. <i>Wounds Int</i> . 2020;11(2):10-16.	Expert Opinion	n/a	n/a	n/a	n/a	Main focus of this opinion piece is to recommend a low-profile alternating pressure overlay.	VB
97	Joseph J, McLaughlin D, Darian V, Hayes L, Siddiqui A. Alternating Pressure Overlay for Prevention of Intraoperative Pressure Injury. <i>J Wound Ostomy Continence Nurs</i> . 2019;46(1):13-17.	Quasi-experimental	292 neurosurgery patients in the control group and 100 neurosurgery patients in the intervention group.	Low profile alternating support surface placed over the OR pad.	Regular OR mattress	HAPI	18 HAPIs in the control group and 0 in the intervention group.	IVB
98	Neo TG, Koo SH, Chew STH, et al. A randomized controlled trial to compare the interface pressures of alternating pressure overlay with gel pad versus gel pad alone during prolonged surgery. <i>J Tissue Viability</i> . 2021;30(2):222-230.	RCT	180 patients, 90 in each group	Alternating Pressure (AP) overlay with gel	Gel only	Interface pressure	The AP and gel suggests a potential effectiveness in preventing pressure ulcer formation in patients undergoing prolonged surgery	VA
99	Owers CE, Abbas Y, Ackroyd R, Barron N, Khan M. Perioperative Optimization of Patients Undergoing Bariatric Surgery. <i>J Obes</i> . 2012;1-6 pp.	Expert Opinion	n/a	n/a	n/a	n/a	Optimal management of the obese patient undergoing bariatric surgery is complex.	VB
100	Optimal Perioperative Management of the Geriatric Patient: Best Practices Guideline from ACS NSQIP/ American Geriatrics Society. https://www.facs.org/quality-programs/acs-nsqip/geriatric-periop-guideline ed. American College of Surgeons (ACS).	Guideline	n/a	n/a	n/a	n/a	Older adult surgical patients often require a higher level of care than other patients during the perioperative period.	IIA

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101	MacDonald JJ, Washington SJ. Positioning the surgical patient. <i>Anaesthesia and Intensive Care Medicine</i> . 2012;13(11):528-532.	Expert Opinion	n/a	n/a	n/a	n/a	Recommendations are provided for patient positioning and the physiological changes associated with different positions.	VB
102	Akhavan A, Gainsburg DM, Stock JA. Complications associated with patient positioning in urologic surgery. <i>Urology</i> . 2010;76(6):1309-1316.	Expert Opinion	n/a	n/a	n/a	n/a	Perioperative team members should be familiar with the potential injuries that can result from incorrect positioning.	IIIB
103	Dybec RB. Intraoperative positioning and care of the obese patient. <i>Plastic Surgical Nursing</i> . 2004;24(3):118-122.	Expert Opinion	n/a	n/a	n/a	n/a	Safe positioning of surgical patients requires a combination of current and basic knowledge.	IB
104	Doerflinger DMC. Older Adult Surgical Patients: Presentation and Challenges. <i>AORN Journal</i> . 2009;90(2):223-244.	Expert Opinion	n/a	n/a	n/a	n/a	The older surgical patient presents a greater challenge for prevention of positioning injury because of risk factors, loss of physiologic reserves, and comorbid diseases.	VA
105	Bots TCM, Apotheke BFG. The prevention of heel pressure ulcers using a hydrolymer dressing in surgical patients. <i>J Wound Care</i> . 2004;13(9):375-8.	Quasi-experimental	140 surgical patients	Surgery greater than 90 minutes and pressure injury risk received a foam heel dressing before surgery	Surgery less than 90 minutes and risk of pressure injury received no heel dressing	Pressure injury	76.7% reduction in heel pressure injury with a foam dressing.	IIIB
106	Eberhardt T.D., de Lima S.B.S., de Avila Soares R.S., et al. Prevention of pressure injury in the operating room: Heels operating room pressure injury trial. <i>Int Wound J</i> . 2020.	RCT	135-intervention group, 135 control group- adults over the age of 18	multi-layered silicone foam applied to the heels	transparent polyurethane film applied to the heels	presence of pressure injury	the pressure injury incidence was significantly lower in the intervention group compared with the control group-the researchers concluded that multi-layered silicone foam is more effective than transparent polyurethane film in the prevention of pressure injury-heel.	IA
107	Lai Q., Xu X., Liu C., Man J. The effects of perioperative nursing intervention on the postoperative complications in patients undergoing laparoscopic vertical banded gastroplasty. <i>Int J Clin Exp Med</i> . 2020;13(3):1851-1857.	RCT	Patients undergoing laparoscopic vertical banded gastroplasty, Control group 69, intervention group 70	Vaseline and foam applied to vulnerable pressure areas	Routine nursing care	Incidence of pressure injury	Control group had 8 pressure injuries (11.6%) and the intervention group had 2 pressure injuries (2.9%)	IIIA
108	Moore ZE, Webster J. Dressings and topical agents for preventing pressure ulcers. <i>Cochrane Database Syst Rev</i> . 2018;12(12):CD009362.	Systematic Review	n/a	n/a	n/a	n/a	The researchers concluded that although prophylactic dressings reduced the incidence of pressure injury, the results were compromised by the low quality of the trials included.	IIIA
109	Riemenschneider KJ. Prevention of Pressure Injuries in the Operating Room: A Quality Improvement Project. <i>J Wound Ostomy Continence Nurs</i> . 2018;45(2):141-145.	Quasi-experimental	37 patients in the standard pressure injury group and 44 in the intervention group	5 layer silicone foam dressing	Standard care	Pressure injuries	The silicone dressing significantly reduced the likelihood of development of a new pressure injury.	VB
110	Santamaria N, Gerdtz M, Sage S, et al. A randomised controlled trial of the effectiveness of soft silicone multi-layered foam dressings in the prevention of sacral and heel pressure ulcers in trauma and critically ill patients: the border trial. <i>Int Wound J</i> . 2015;12(3):302-308.	RCT	440/Trauma and critically ill patients	Application of silicone multilayered foam dressings to the heels and sacrum	Standard care	Pressure injury development	Multilayered soft silicone foam dressings are effective in preventing pressure injury in critically ill patients when applied in the ED before transfer to the ICU.	IA
111	Call E, Pedersen J, Bill B, Oberg C, Ferguson-Pell M. Microclimate impact of prophylactic dressings using in vitro body analog method. <i>Wounds</i> . 2013;25(4):94-103.	Nonexperimental	8 Commercially available dressings	n/a	n/a	Temperature and humidity measurements	Dressings should be evaluated for suitable characteristics before use. Temperature and humidity can negatively affect dressing effectiveness.	VB
112	Call E, Pedersen J, Bill B et al. Enhancing pressure ulcer prevention using wound dressings: what are the modes of action? <i>Int Wound J</i> . 2015;12(4):408-413.	Qualitative	9 commercially available dressings	ISO laboratory controls for friction outputs	n/a	friction and shear measures	Dressings can be used to enhance but not replace pressure injury strategies.	IIIB
113	Chaiken N. Reduction of sacral pressure ulcers in the intensive care unit using a silicone border foam dressing. <i>J Wound Ostomy Continence Nurs</i> . 2012;39(2):143-145.	Organizational Experience	n/a	n/a	n/a	Pressure injury development	The use of the dressing diminished the incidence of sacral pressure injury in ICU patients.	VB
114	Clay P, Cruz C, Ayotte K, Jones J, Fowler SB. Device Related Pressure Ulcers Pre and Post Identification and Intervention. <i>J Pediatr Nurs</i> . 2018;41:77-79.	Organizational Experience	Orthopedic spinal surgery peds patients in one hospital	n/a	n/a	n/a	Adhesive foal dressing were applied to patients receiving BIPAP or CPAP masks prior to surgery, no pressure injuries reported after this preventative intervention	VC

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115	Yoshimura M, Ohura N, Santamaria N, Watanabe Y, Akizuki T, Gefen A. High body mass index is a strong predictor of intraoperative acquired pressure injury in spinal surgery patients when prophylactic film dressings are applied: a retrospective analysis prior to the BOSS Trial. <i>Int Wound J</i> . 2020;17(3):660–669.	Nonexperimental	80 patients- retrospective chart review.	n/a	n/a	Intraoperatively acquired pressure injury	7 patients developed a PI within 24 hours after surgery. Six risks were identified, hypertension, diastolic blood pressure <50, BMI, length of surgery, blood loss and core temp at the end of surgery. The authors concluded that the application of soft silicone, multi-layer foam dressings are important for preventing the development of pressure injuries in patient with high BMIs	VB
116	Galetto SGDS, Nascimento ERPD, Hermida PMV, Malfussi LBH. Medical device-related pressure injuries: an integrative literature review. <i>Rev Bras Enferm</i> . 2019;72(2):505–512.	Systematic Review	n/a	n/a	n/a	n/a	Medical device related pressure injury are frequent and can be prevented. Article offers some recommendations	IIIB
117	Choi MA, Kim MS, Kim C. Incidence and risk factors of medical device-related pressure injuries among patients undergoing prone position spine surgery in the operating room. <i>J Tissue Viability</i> . 2021;30(3):331–338.	Nonexperimental	147 patients who underwent spine surgery in an orthopaedic hospital	n/a	n/a	Incidence of medical device related pressure injuries	MDRPIs occur frequently during spine surgery in the prone position; this may be due to the use of various medical devices, prolonged immobility, and difficulty of device repositioning during surgery. The common significant risk factor for MDRPIs was operation time. The Wilson frame was associated with the highest risk for MDRPIs.	IIIA
118	Peko L, Barakat-Johnson M, Gefen A. Protecting prone positioned patients from facial pressure ulcers using prophylactic dressings: A timely biomechanical analysis in the context of the COVID-19 pandemic. <i>Int Wound J</i> . 2020;17(6):1595-1606.	Quasi-experimental	two model heads	facial dressing	No dressing	Interface pressure	Decreased tissue loading.	n/a
119	Owens L, Stamps H. Eliminating medical device-related pressure injury from blood pressure cuffs during continuous monitoring in the perioperative setting: a novel approach J Perianesth Nurs. 2018;33(4):444–447.	Organizational Experience	Perioperative patients in one hospital	n/a	n/a	n/a	A stockinette was applied under the blood pressure cuffs of surgical patients to prevent pressure injury from the blood pressure cuff. There were no pressure injuries over 3 years.	VB
120	Chen HL, Chen XY, Wu J. The incidence of pressure ulcers in surgical patients of the last 5 years: a systematic review. <i>Wounds</i> . 2012;24(9):234-241.	Systematic Review w/ Meta-Analysis	17 studies	n/a	n/a	Pressure injury development	The pooled incidence of pressure injury in surgical patients was 0.15. This pooled incidence data may provide a benchmark to evaluate surgery-related pressure	VC
121	Haldar R, Kaushal A, Srivastava S, Singh PK. PURCH/ ILL Paediatric Intravenous Splint: A Cause of Pressure Injury during Neurosurgery in Prone Position. <i>Pediatr Neurosurg</i> . 2016;51(1):55-56.	Case Report	7-month-old infant undergoing neurosurgery in prone position	n/a	n/a	n/a	Splints used to protect IV lines have the potential for causing pressure injuries.	IVA
122	Connor T, Sledge JA, Bryant-Wiersema L, Stamm L, Potter P. Identification of pre-operative and intra-operative variables predictive of pressure ulcer development in patients undergoing urologic surgical procedures. <i>Urol Nurs</i> . 2010;30(5):289-95, 305.	Quasi-experimental	498 Patients undergoing urologic surgery under general anesthesia	Preoperative, intraoperative, and postoperative assessments of patients for pressure injury by perioperative RNs who completed an educational program	Standard care	Pressure injury development	The ability to monitor patient's blood pressure and correspondingly adjust the dynamic pressure of a support surface could be a link to preventing intraoperative pressure injury.	IIIB
123	Campbell K. Pressure point measures in the operating room. <i>J Enterostomal Ther</i> . 1989;16(3):119-124.	Organizational Experience	n/a	n/a	n/a	Pressure measurements	Factors associated with development of sacral ulcers included multiple layers of materials under the patient, increased metabolism, pressure, shear, time, and type of anesthesia.	IIIB
124	Aronovitch SA. Intraoperatively acquired pressure ulcers: are there common risk factors? <i>Ostomy Wound Manage</i> . 2007;53(2):57-69.	Nonexperimental	281 Members of the Wound, Ostomy, and Continence Nurses Society	n/a	n/a	Pressure injury development	The results of the study showed that 3.5% of patients developed a pressure injury within seven days of their operation. Factors that may increase patient risk for developing intraoperative pressure ulcers include positioning, use of positioning and thermoregulatory devices, length of surgery, type of anesthesia, and comorbidities. Current risk assessment tools to predict intraoperatively-acquired pressure injury are not adequate.	IVB
125	Martin, John T., Warner, Mark A., <i>Positioning in Anesthesia and Surgery</i> . Saunders; 1997.	Expert Opinion	n/a	n/a	n/a	n/a	Meticulous adherence to safe positioning practices will minimize patient injury.	VA
126	Stephenson LL, Webb NA, Smithers CJ, Sager SL, Seefelder C. Lateral femoral cutaneous neuropathy following lateral positioning on a bean bag. <i>J Clin Anesth</i> . 2009;21(5):383-384.	Case Report	14-year-old boy undergoing thoracoscopic surgery in the lateral position	n/a	n/a	n/a	Three hours of positioning on a hard surface, possibly with an abnormal course of the nerve, is sufficient to explain the development of a neurological deficit. No padding was provided to the area where the nerve damage occurred.	IIIA

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127	Guideline for safe patient handling and movement. In: <i>Guidelines for Perioperative Practice</i> . Denver, CO: AORN, Inc; 2022:895–946.	Guideline	n/a	n/a	n/a	n/a	This document provides guidance to perioperative professionals for developing, implementing, and maintaining an effective safe patient handling and movement (SPHM) program to reduce the incidence and minimize the severity of injuries to patients and health care workers related to performance of high-risk tasks in the perioperative environment.	IVA
128	Khokhar RS, Baaj J, Alhazmi HH, Dammas FA, Aldalati AM. Pressure induced alopecia in pediatric patients following prolonged urological surgeries: The case reports and a review of literature. <i>Anesth Essays Res</i> . 2015;9(3):430-432.	Case Report	2 Pediatric patients undergoing prolonged surgical procedures	n/a	n/a	n/a	Regular repositioning of the patient's head during surgical procedures may help to prevent postoperative alopecia.	IIIB
129	Davies KE, Yesudian P. Pressure alopecia. <i>Int J Trichology</i> . 2012;4(2):64-68.	Literature Review	n/a	n/a	n/a	n/a	Regular repositioning of the patient's head during surgical procedures may help to prevent postoperative alopecia.	IIIB
130	Gollapalli L, Papapetrou P, Gupta D, Fuleihan SF. Post-operative alopecia after robotic surgery in steep Trendelenburg position: a restated observation of pressure alopecia. <i>Middle East J Anesthesiol</i> . 2013;22(3):343-345.	Case Report	53-year-old woman undergoing robotic-assisted gynecological surgery	n/a	n/a	n/a	Repositioning the head, avoiding mechanical compression, and maintaining intraoperative hemodynamics may help to prevent postoperative alopecia.	IIIB
131	Keidan I, Ben-Menchem E. Postoperative occipital nerve injury in a child. <i>Anaesth Intensive Care</i> . 2012;40(2):355-356.	Case Report	7-year-old boy undergoing a free-flap graft of the latissimus dorsi muscle to the right forearm	n/a	n/a	n/a	This case reinforces the need for meticulous care when positioning children and the risk of nerve compression at unusual sites.	IIIB
132	Lee C, Choi PD, Scott G, Arkader A. Postoperative alopecia in children after orthopaedic surgery. <i>Journal of Pediatric Orthopaedics</i> . 2012;32(7):e53-e55.	Case Report	3 Adolescent patients (two females [16 years; 13 years], and one male [12 years]) undergoing orthopedic surgery in the supine position	n/a	n/a	n/a	Postoperative alopecia can occur in children and may be prevented by padding of the head during surgery.	VA
133	Goodenough J, Highgate J, Shaaban H. Under pressure? Alopecia related to surgical duration. <i>Br J Anaesth</i> . 2014;113(2):306-307.	Expert Opinion	n/a	n/a	n/a	n/a	Regular pressure relieving maneuvers, such as head repositioning and scalp massage may guard against postoperative alopecia.	VC
134	Matsushita K, Inoue N, Ooi K, Totsuka Y. Postoperative pressure-induced alopecia after segmental osteotomy at the upper and lower frontal edentulous areas for distraction osteogenesis. <i>Oral & Maxillofacial Surgery</i> . 2011;15(3):161-163.	Case Report	29-year-old man undergoing osteotomy in the supine position	n/a	n/a	n/a	Scalp massages and head repositioning during the procedure may help prevent postoperative alopecia.	VA
135	Bagaria M, Luck AM. Postoperative (pressure) alopecia following sacrocolpopexy. <i>J Robot Surg</i> . 2015;9(2):149–151.	Case Report	57-year-old woman undergoing robotic-assisted sacrocolpopexy in the lithotomy position	n/a	n/a	n/a	The patient's postoperative alopecia resulted from pressure-induced ischemia caused by the static position of the head for a prolonged period of time.	IIIA
136	Dumiel-Peeters IGP, Halfens RJG, Berger MPF, Snoeckx LHEH. The effects of massage as a method to prevent pressure ulcers. A review of the literature. <i>Ostomy Wound Manage</i> . 2005;51(4):70–80.	Literature Review	n/a	n/a	n/a	n/a	The evidence regarding the use of massage for preventing pressure injury is inconclusive.	IIIC
137	St-Arnaud D, Paquin MJ. Safe positioning for neurosurgical patients. <i>AORN J</i> . 2008;87(6):1156-1168.	Expert Opinion	n/a	n/a	n/a	n/a	The neurosurgical perioperative team faces additional challenges related to patient positioning because of the potential for complications during prolonged and complex procedures.	IIIB
138	Donnelly J, Winder J, Kernohan WG, Stevenson M. An RCT to determine the effect of a heel elevation device in pressure ulcer prevention post-hip fracture. <i>J Wound Care</i> . 2011;20(7):309-12, 314-8.	RCT	239 Patients with fractured hips	Pressure reducing surfaces with heel elevation	Pressure reducing surfaces without heel elevation	Pressure injury development	The findings suggest that offloading reduces the incidence of heel pressure injuries.	IIIB

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REFERENCE #	CITATION	EVIDENCE TYPE	SAMPLE SIZE/ POPULATION	INTERVENTION(S)	CONTROL/ COMPARISON	OUTCOME MEASURE(S)	CONCLUSION(S)	CONSENSUS SCORE
139	Wong VK, Stotts NA, Hopf HW, Dowling GA, Froelicher ES. Changes in heel skin temperature under pressure in hip surgery patients. <i>Adv Skin Wound Care</i> . 2011;24(12):562-570.	Quasi-experimental	18 Patients who underwent hip surgery in one of two different hospitals	Measurement of heel temperature when heels were returned to the bed surface for 15 minutes, and suspended again above the bed surface for 15 minutes	Measurement of heel temperature after heel suspension above the bed surface for 20 minutes	Changes in measurements	Heel temperature increased with postoperative loading and unloading. Keeping the heels off the bed surface at all times may avoid heel skin temperature changes and prevent tissue damage.	IIIB
142	Huber D. Preventing deep tissue injury of the foot and ankle in the operating theatre. <i>Wounds UK</i> . 2013;9(2):34-38.	Expert Opinion	n/a	n/a	n/a	n/a	Preventing heel and ankle pressure injury requires offloading the heels, flexing the knees 5° to 10° while preventing popliteal compression, distributing the weight of the legs along the calf with minimal pressure on the Achilles tendon, and preventing pressure on the lateral malleolus.	VC
143	O'Connor D, Breslin D, Barry M. Well-leg compartment syndrome following supine position surgery. <i>Anaesth Intensive Care</i> . 2010;38(3):595.	well-leg compartment syndrome in a 27-year-old man following surgery in the supine position.	n/a	n/a	n/a	n/a	WLCS occurred with significant morbidity. We propose that anesthetists and surgeons must have a high index of suspicion for WLCS in patients with lower limb symptoms after prolonged operations in both the lithotomy and supine position.	VB
144	O'Shea E, Power K. Well leg compartment syndrome following prolonged surgery in the supine position. <i>Can J Anaesth</i> . 2008;55(11):794-795.	Case Report	43-year-old woman undergoing prolonged surgery in the supine position	n/a	n/a	n/a	The injury may have resulted from the use of latex-covered heel positioners.	VC
145	Guideline for team communication. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2022:155–186.	Guideline	n/a	n/a	n/a	n/a	This document provides guidance for improving perioperative team communication through a culture of safety that incorporates team training, simulation training, standardized transfer of patient information (commonly referred to as hand overs or hand offs), briefings, time outs, surgical safety checklists, and debriefings.	IVA
146	Bouyer-Ferullo S, O'Connor C, Kinnealey E, Wrigley P, Osgood PM. Adding a Visual Communication Tool to the Electronic Health Record to Prevent Pressure Injuries. <i>AORN J</i> . 2021;113(3):253-262.	Organizational Experience	3016 computerized OR records.	n/a	n/a	n/a	the addition of an anatomical image embedded in the electronic communication hand-over tool that indicates areas of potential skin breakdown related to intraoperative positioning to inform inpatient nursing and other HCPs of increased PPI risk and enhance hand-over communication.	IIIA

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147	Shaw LF, Chang PC, Lee JF, Kung HY, Tung TH. Incidence and predicted risk factors of pressure ulcers in surgical patients: experience at a medical center in Taipei, Taiwan. <i>Biomed Res Int</i> . 2014;2014:416896.	Nonexperimental	297 patients admitted to a teaching hospital for a surgical procedure	n/a	n/a	Pressure injury development	Older age, type of anesthesia, surgical position, and type of surgery are associated with pressure injury development.	IIIB
148	Banicek J, McGarvey D. The effect of patient positioning during lengthy surgery on postoperative health. <i>Nurs Times</i> . 2010;106(3):15.	Case Report	53-year-old man undergoing colon resection in the lithotomy position	n/a	n/a	n/a	Assess patients who have received epidural anesthesia for sensory and motor block pain and unusual symptoms such as pins and needles, or numbness in the legs.	VB
149	O'Brien DD, Shanks AM, Talsma A, Brenner PS, Ramachandran SK. Intraoperative risk factors associated with postoperative pressure ulcers in critically ill patients: a retrospective observational study. <i>Crit Care Med</i> . 2014;42(1):40-47.	Nonexperimental	2695 Patients undergoing surgical procedures and receiving care in one of three ICUs using an electronic documentation application	n/a	n/a	Pressure injury development	Postoperative pressure injury occurred in 10.7% of critically ill patients. Intraoperative use of blood products was associated with postoperative pressure injury.	VA
150	Borzdynski CJ, McGuinness W, Miller C. Emerging technology for enhanced assessment of skin status. <i>J Wound Ostomy Continence Nurs</i> . 2017;44(1):48-54.	Literature Review	n/a	n/a	n/a	n/a	The accurate identification of PI risk status is paramount to holistic nursing care. The clinical application of biophysical skin analysis instruments in the assessment PI-related skin parameters could provide a feasible alternative to subjective assessment.	VA
151	2021-2022 Perianesthesia Nursing Standards, Practice Recommendations and Interpretive Statements. Cherry Hill, NJ: American Society of PeriAnesthesia Nurses; 2020.	Guideline	n/a	n/a	n/a	n/a	These standards provide a framework for care of a diverse patient population in all perianesthesia settings.	IVB
152	Minnich L, Bennett J, Mercer J. Partnering for perioperative skin assessment: a time to change a practice culture. <i>J Perianesth Nurs</i> . 2014;29(5):361-366.	Organizational Experience	n/a	n/a	n/a	Pressure injury development	After implementation of a new process to prevent pressure injury, the incidence of hospital acquired pressure injury dropped from 7.1% to 3.3%.	IIA
153	Black J. Using thermography to assess pressure injuries in patients with dark skin. <i>Nursing</i> . 2018;48(9):60-61.	Expert Opinion	n/a	n/a	n/a	n/a	Early signs of pressure injury such as erythema or purple hue are not easily identified in darkly pigmented skin. Infrared thermography can help clinicians identify stage 1 pressure injury and deep tissue pressure injury in patients with darkly pigmented skin. Evidence reports that black patients have a higher rate of pressure injury than other races.	IIIB
154	Vangilder C, Macfarlane GD, Meyer S. Results of nine international pressure ulcer prevalence surveys: 1989 to 2005. <i>Ostomy Wound Manage</i> . 2008;54(2):40-54.	Nonexperimental	651 facilities with 85,838 patients	n/a	n/a	Number of pressure injuries	Data on number of PIs presented	IIIA
155	Stansby G, Avital L, Jones K, Marsden G. Prevention and management of pressure ulcers in primary and secondary care: summary of NICE guidance. <i>BMJ</i> . 2014;348:g2592.	Guideline	n/a	n/a	n/a	n/a	Guidance includes five detailed algorithms on identifying who is at risk; prevention of pressure injury in adults at risk and high risk; prevention of pressure ulcers in neonates, infants, children, and young people; management of pressure injury in adults; and management of pressure injury in neonates, infants, children, and young people.	IVA
156	Anthony D, Willock J, Baharestani M. A comparison of Braden Q, Garvin and Glamorgan risk assessment scales in paediatrics. <i>J Tissue Viability</i> . 2010;19(3):98-105.	Nonexperimental	15 Pediatric-specialty R	n/a	n/a	Consistency of predictive risk factors with risk assessment scale measurements	The Glamorgan risk assessment scale had a higher predictive ability than either the Braden Q or the Garvin, and was the most valid tool.	IB
157	Chamblee T.B., Pasek T.A., Caillouette C.N., Stellar J.J., Quigley S.M., Curley M.A.Q. CE: How to Predict Pediatric Pressure Injury Risk with the Braden QD Scale. <i>Am J Nurs</i> . 2018;118(11):34-43.	Expert Opinion	n/a	n/a	n/a	n/a	A revision of the Braden Scale for pediatric patients the Braden QD Scale, additionally identifies medical device use/risk of PI.	IVA
158	Willock J, Anthony D, Richardson J. Inter-rater reliability of Glamorgan Paediatric Pressure Ulcer Risk Assessment Scale. <i>Paediatr Nurs</i> . 2008;20(7):14-19.	Nonexperimental	236 Children who developed pressure injury after surgery	n/a	n/a	Inter-rater reliability on Glamorgan Scale scores	The risk assessment scale is reliable. More research on the reliability and validity of this tool with specific pediatric patient groups is needed.	IVA

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159	Huffines B, Logsdon MC. The Neonatal Skin Risk Assessment Scale for predicting skin breakdown in neonates. <i>Issues Compr Pediatr Nurs.</i> 1997;20(2):103–114.	Nonexperimental	32 Neonates	n/a	n/a	Inter-rater reliability on Neonatal Skin Risk Assessment Scale scores	The Neonatal Skin Risk Assessment Scale is useful in predicting days most likely for skin breakdown to occur.	IIIB
160	Parchem, K. A Multiphase Approach to Safer Pediatric Patient Positioning. <i>AORN J.</i> 2019;110(6):651-655.	Expert Opinion	n/a	n/a	n/a	n/a	Best care practices in the mobilization of pediatric patients.	VC
161	Kulik LA, Hasbani NR, Stellar JJ et al. Hospital-acquired pressure injuries in children with congenital heart disease: prevalence and associated factors. <i>Pediatr Crit Care Med.</i> 2019;20(11):1048–1056.	Nonexperimental	Patients were preterm to 21 years old with congenital heart disease and on bed rest for at least 24 hours after hospital admission with a medical device attached to or traversing the skin or mucous membrane.	n/a	n/a	Device related pressure injury	75% of injuries related to medical devices. target interventions to decrease pressure injury risk and prevent pressure injuries in this vulnerable pediatric population.	IIIB
162	Kulik LA, Connor JA, Graham DA, Hickey PA. Pressure injury prevention for paediatric cardiac surgical patients using a nurse-driven standardized clinical assessment and management plan. <i>Cardiol Young.</i> 2018;28(9):1151–1162.	Organizational Experience	Pediatric cardiac surgical patients were started on a nurse driven pressure injury program that included standardized clinical assessments and a management plan on admission and before surgery.	n/a	n/a	Number of skin assessments completed by nurses, number of pressure injury and causes	Nurse driven prevention plan improved practice and nursing practice.	IIIA
163	Lupe L, Zambrana D, Cooper L. Prevention of hospital-acquired pressure ulcers in the operating room and beyond: a successful monitoring and intervention strategy program. <i>Int Anesthesiol Clin.</i> 2013;51(1):128-146.	Organizational Experience	implemented a multidisciplinary process improvement program to identify the incidence of pressure ulcers and to implement interventions aimed at reducing the rate of HAPIs.	n/a	n/a	n/a	Improved compliance and overall reduction of HAPI	VB
164	<i>State Operations Manual</i> Appendix A. Survey Protocol, Regulations and Interpretive Guidelines for Hospitals. Rev 200. 02-21 -20. Centers for Medicare & Medicaid Services. https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/som107ap_a_hospitals.pdf . Accessed March 9, 2022.	Regulatory	n/a	n/a	n/a	n/a	n/a	n/a
165	<i>State Operations Manual</i> Appendix L. Guidance for Surveyors: Ambulatory Surgical Centers. Rev 200. 02-21 -20. Centers for Medicare & Medicaid Services. https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/som107ap_l_ambulatory.pdf . Accessed March 9, 2022.	Regulatory	n/a	n/a	n/a	n/a	n/a	n/a
166	42 CFR 416. Ambulatory surgical services. Code of Federal Regulations. https://www.ecfr.gov/current/title-42/chapter-IV/subchapter-B/part-416 . Accessed March 9, 2022.	Regulatory	n/a	n/a	n/a	n/a	n/a	n/a

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167	42 CFR 482. Conditions of participation for hospitals. Code of Federal Regulations. https://www.ecfr.gov/current/title-42/chapter-IV/subchapter-G/part-482 . Accessed March 9, 2022.	Regulatory	n/a	n/a	n/a	n/a	n/a	n/a
168	Program: Hospital. Chapter: Performance Improvement. PI.03.01.01: The hospital compiles and analyzes data. In: <i>The Joint Commission Comprehensive Accreditation and Certification Manual</i> E-dition Oakbrook Terrace, IL: The Joint Commission; 2022.	Accreditation	n/a	n/a	n/a	n/a	n/a	n/a
169	Quality management system (QM). In: <i>NIAHO Accreditation Requirements, Interpretive Guidelines & Surveyor Guidance for Hospitals</i> . Revision 20-1. Katy TX: DNV Healthcare; 2020:11–17.	Accreditation	n/a	n/a	n/a	n/a	n/a	n/a
170	Quality management and improvement. In: <i>Accreditation Handbook for Ambulatory Health Care</i> . v41. Skokie, IL: Accreditation Association for Ambulatory Health Care, Inc; 2020:47–52.	Accreditation	n/a	n/a	n/a	n/a	n/a	n/a
171	Program: Ambulatory. Chapter: Performance Improvement. PI.03.01.01: The organization compiles and analyzes data. In: <i>The Joint Commission Comprehensive Accreditation and Certification Manual</i> . E-dition. Oakbrook Terrace, IL: The Joint Commission; 2022.	Accreditation	n/a	n/a	n/a	n/a	n/a	n/a
172	Quality assessment/quality improvement: quality improvement. In: <i>Regular Standards and Checklists for Accreditation of Ambulatory Surgery Facilities</i> . Version 14.5. Gurnee, IL: American Association for Accreditation of Ambulatory Surgery Facilities, Inc (AAAASF); 2017:64.	Accreditation	n/a	n/a	n/a	n/a	n/a	n/a
173	Quality assessment/quality improvement: unanticipated operative sequelae. In: <i>Regular Standards and Checklists for Accreditation of Ambulatory Surgery Facilities</i> . Version 14.5. Gurnee, IL: American Association for Accreditation of Ambulatory Surgery Facilities, Inc (AAAASF); 2017:66–69.	Accreditation	n/a	n/a	n/a	n/a	n/a	n/a
174	Root Cause Analysis Toolkit. National Pressure Injury Advisory Panel. https://npiap.com/page/RCAToolkit . Accessed March 17, 2022.	Accreditation	n/a	n/a	n/a	n/a	n/a	n/a
175	Oozageer Gunowa N, Brooke J, Hutchinson M, Jackson D. Embedding skin tone diversity into undergraduate nurse education: through the lens of pressure injury. <i>J Clin Nurs</i> . 2020;29(21-22):4358–4367.	Nonexperimental	5 higher education institutions-quantitative documentary analysis followed by a structured teaching observation.	n/a	n/a	The Diversity Observation Teaching tool was used to gather data about written teaching material and observation of classroom teaching.	The study explored the content of on-campus graduate nurse education related to skin tone diversity and pressure injuries. Limited inclusion of information around skin tone diversity related to pressure injury was evident and there were not specific introduction of the risk factors for people with darker skin tones.	IIIB
176	Bos BS, Wangen TM, Elbing Jr. CE, et al. Pressure Ulcer Prevention. <i>J NURSES PROF DEV</i> . 2016;32(2):94-98.	Organizational Experience	Nurses who cared for adults, children, and neonates	n/a	n/a	n/a	Pressure ulcer prevention education program for nurses-hospital wide. Surgical services should develop specific educational initiatives to meet their identified needs.	IVA