



**Unavoidable Pressure Injury during COVID-19 Pandemic:  
A Position Paper from the National Pressure Injury Advisory Panel**

The purposes of this National Pressure Injury Advisory Panel (NPIAP) Position Paper are to:

1. Summarize the current NPIAP position regarding unavoidable pressure injuries.
2. Examine the effects of the COVID-19 crisis on the scope of what is considered an unavoidable pressure injury.
3. State the position of the NPIAP regarding determinations of unavoidable pressure injuries during the COVID-19 crisis.
4. Renew the NPIAP call to collaborate on the development of criteria for the determination of unavoidable pressure injuries in acute care.

**Background**

The initial definitions of *avoidable and unavoidable pressure ulcers* originated from The Centers for Medicaid and Medicare Services (CMS) as part of its inspection of long-term care facilities. *Avoidable pressure injury* has been defined by CMS as those pressure injuries that develop in [patients] for whom the [healthcare provider(s)] did not do one or more of the following: [properly] evaluate the [patient's] clinical condition and pressure injury risk factors; define and implement interventions that were consistent with [patient's] needs, goals for care, and recognized standards of practice; monitor and evaluate the outcome of the interventions; and/or revise the interventions as appropriate.<sup>1</sup> *Unavoidable pressure injury* occurs when the [healthcare provider(s)] “had [properly] evaluated the [patient's] clinical condition and pressure injury risk factors; defined and implemented interventions that were consistent with the [patient's] needs, goals, and recognized standards of practice; monitored and evaluated the outcome of the interventions; and/or revised the approaches as appropriate” and a pressure injury developed despite reasonable care.<sup>1</sup>

In 2010, National Pressure Injury Advisory Panel (NPIAP)<sup>a</sup> expanded the clinical circumstances it included in the consideration of the formation of pressure injury deemed unavoidable to include situations in acute care that rendered the delivery of pressure injury prevention clinically unsafe. Unsafe clinical situations are those in which harm may come to the patient by doing the preventive care, particularly turning and repositioning. Clinical situations involving cognitively intact patients’ refusal of preventive care (despite counseling of the risks of refusal) were also addressed.<sup>2</sup>

In 2014, NPIAP addressed how comorbid conditions can contribute to an unavoidable pressure injury.<sup>3</sup> Many comorbid conditions (e.g., peripheral vascular disease, shock states) constitute risk factors for

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<sup>a</sup>Previously the National Pressure Ulcer Advisory Panel (NPUAP)

pressure injury development that are either non-modifiable or extremely difficult to modify. In some cases, treatments designed to stabilize physiologically unstable patients may add to pressure injury risk (e.g., vasopressors, medical devices). NPIAP concluded that some cases of pressure injury are unavoidable because the magnitude and severity of risk are overpoweringly high and/or preventive measures are either contraindicated or inadequate to overcome the magnitude and severity of non-modifiable risk.

The magnitude and severity of non-modifiable risk factors can undoubtedly play a major role in pressure injury outcomes but should not be the sole determinant of unavoidability. Any determination of unavoidability requires an honest and thorough review of the documentation, the appropriateness and the adequacy of the evidence-based preventive measures<sup>4</sup> that were implemented.

Unavoidable pressure injuries have long been recognized in long-term care settings. However, there has never been a mechanism for determining unavoidability of pressure injuries in acute care. Establishing the criteria applicable in acute care settings for determining whether a pressure injury is unavoidable is long overdue and has become a critical priority in the current environment of the COVID-19 pandemic.

### **During the COVID-19 Pandemic**

The COVID-19 crisis has dramatically changed significant aspects of pressure injury prevention in acute care hospitals. The first aspect focuses on the intrinsic condition of the patient and the second aspect addresses the extrinsic conditions in the environment of care.

#### **Intrinsic Factors**

1. The virus itself creates a systemic coagulopathy including hypercoagulation and microvascular occlusion which has led to ischemic stroke, myocardial infarction, venous thromboembolism, acute limb ischemia and pulmonary embolism.<sup>5-9</sup> While the overall mechanism of this hypercoagulable state is still not completely understood at this time, it does involve the skin. The changes in the skin with COVID-19 have been addressed by NPIAP in a separate paper.<sup>10</sup> These skin changes appear purpuric and quickly become necrotic. They mimic the appearance of deep tissue pressure injury (DTPI), especially when they occur over tissue exposed to pressure and/or shear stress (e.g., sacrum, buttocks, heels) or under medical devices. If the vessels are significantly or fully occluded, then adequate reperfusion is not achievable even in the presence of reasonable repositioning and turning of the patient and the use of appropriate support surfaces. In addition, there are reports of true pressure injuries that underwent rapid deterioration presumably from microvascular thrombosis caused by the COVID-19 virus, although the full pathophysiology of their rapid deterioration is yet to be identified.

The NPIAP's evolving understanding of the pathophysiology of COVID-19 leads to these conclusions:

- Purple skin discoloration on tissue not exposed to pressure and/or shear stress are not pressure injuries; In patients with COVID-19, a differential diagnosis should include consideration of whether these areas were precipitated by the virus and should be more accurately characterized as COVID-19 skin manifestations, and
- The microvascular occlusions of COVID-19 on tissue exposed to pressure and/or shear stress may increase the magnitude and severity of non-modifiable risk to a level that is unable to be overcome even with reasonable efforts at pressure injury prevention.

2. During COVID-19 infection, microvascular occlusion also impairs other organs contributing to multiple organ dysfunction. Multiple organ dysfunction may be the result of various other pathophysiologic mechanisms in critically ill patients; however, COVID-19-initiated microvascular occlusion probably exacerbates this process. Additionally, the attempt to provide more optimal functioning for one organ often predisposes another organ to dysfunction. The effect of treatment for the lungs on the kidneys is an example. While the pathologic relationship between these two organs occurs for various reasons,<sup>12-13</sup> one particular issue is the fluid overload in the lungs due to inflammatory responses. In attempts to reduce the fluid overload and improve oxygenation, fluids are restricted rather than balanced and lead to compromised renal function due to restricted fluid volume. Ultimately, the skin as an organ is affected by fluid shifting that may be the result of other organs trying to obtain homeostasis. In particular, a state of interstitial fluid overload (edema) can deprive the skin of adequate circulation and the needed nutrients, thus diminishing the skin's ability to protect and be more resilient to injuries and trauma including pressure injury formation.<sup>4</sup>
3. Nutrition is paramount to the prevention of pressure injuries<sup>4</sup> and has a significant role in the critically ill. It is well known that infections, such as COVID-19, lead to a hypermetabolic state and place patients at a higher risk of nutritional deficiency.<sup>13</sup> Of particular importance is the need for increased protein intake, either via oral nutritional supplements or enteral/parenteral nutrition.<sup>14-16</sup> As a result, it is recommended that patients should be started on enteral nutrition within 12 hours of intubation or 24-36 hours after admission to critical care if the patient is hemodynamically stable.<sup>17-18</sup> However, many COVID-19 patients arrive at the hospital in acute respiratory distress requiring immediate intubation or rapidly deteriorate into hemodynamic instability after admission, and therefore, the provision of nutrition is necessarily delayed. Also problematic to nutritional support is the need to place the patient in the prone position to improve ventilation and perfusion. Patients in the prone position often receive large amounts of sedation and paralytic agents which slow digestive function. This results in decreased absorption of nutrients and occasional holding of enteral feedings due to large residual volumes of formula in the stomach and risk of aspiration. Another issue in tube fed patients is the development of diarrhea which can damage the skin, create incontinence associated dermatitis (IAD), and further increase the risk for pressure injury. Some patients ultimately require fecal incontinence devices which can lead to medical device related pressure injury in the perineum and anus. Shortages of enteral feeding pumps/tubing also created challenges with the delivery of continuous tube feedings, which lead to the need for alternative feeding methods such as bolus feedings in some clinical settings.
4. In the context of the critically ill COVID-19 patient, there is a greater potential of being unable to safely turn the patient due to the profound hypoxia and/or hemodynamic instability. Turning critically ill patients from side-to-side is within the standard of care when it can be done without causing harm to the patient. For example, in certain situations it is not only challenging but sometimes not possible to reach an angle allowing adequate reperfusion of skin and soft tissue while maintaining adequate oxygenation, hemodynamic status and a safe airway for patients. For the COVID-19 patient with acute respiratory distress syndrome, prone positioning is often used for many hours and/or days and "turning" is limited to microshifts and changing the position of the head, arms and upper body according to "swimmer position" protocols.<sup>19</sup>

5. Survivors of severe cases of COVID-19 often undergo prolonged recoveries of weeks to months. These patients are often malnourished, severely debilitated or chronically critically ill and require intensive care and rehabilitation. The risk of pressure injuries remains high and continued vigilance in pressure injury prevention is required, particularly in relation to device related injuries from tracheostomy tubes, feeding tubes and oxygen delivery devices.

### **Extrinsic Factors**

1. The standard of care for critically ill patients includes support surfaces designed to redistribute pressure, reduce shear forces and manage humidity on the skin and soft tissues. Support surfaces that offer pressure redistribution and humidity management, such as alternating pressure and low air loss, aide in keeping the skin intact during times when the patient cannot be safely turned or repositioned. The unique complexities of the COVID-19 patient, combined with the rapid volume of their admissions outpacing the available critical care support surfaces, places the COVID-19 patient at heightened risk for the development of unavoidable pressure injury.
2. As the COVID-19 pandemic peaked in various “hotspots” throughout the country, hospitals were forced to change and change rapidly. As discussed throughout this position paper, there was an overwhelming influx of patients admitted with COVID-19 that inundated our hospitals and depleted the equipment that would customarily be available for patient care. This included everything from support surfaces to tube feeding systems. In certain situations, the high volume of patients required repurposing the general patient care units, that previously had no need for support surfaces used for the critically ill, and the influx of patients across the country limited the availability of obtaining any upgraded support surfaces. Patients placed in these repurposed units were often necessarily placed on support surfaces designed for lower risk patients despite their heightened risk due to COVID-19. Unfortunately, in certain situations, the equipment supply was so strained and volume of patients so high, that some patients had to be placed on a gurney or medical cot.
3. The unprecedented need to supplement staffing with nurses from other specialties as well as agency and travelling nurses further contributed to care challenges. Hospitals were also left with little to no information about training the staff on COVID-19, and they had limited time for cross-training on what was known, such as the critical care competencies of ventilator management, vasopressor titration, and pressure injury prevention with limited equipment and prone positioning.
4. The COVID-19 crisis also forced providers into unknown territory and crisis care mode. At the onset of the COVID-19 pandemic, providers were not able to access evidence-based guidelines; there were no studies on COVID-19 pathophysiology or treatment; there was little known about prevention and no known cure. While treating COVID-19, providers themselves were at risk of acquiring the virus. Health care workers have also experienced moral distress, anxiety, sleeplessness, and other emotional responses because of battling an unknown disease without the supplies, time, and information they normally would have had to combat a known disease process. The lack of information about this rapidly evolving disease process amplified the already complex care of these critically ill patients. The complex care needed by many, many patients combined with resource and personnel shortages and

the emotional toll faced by these health care providers inevitably and understandably affected the ability to prevent skin injury.

Nurses have a time-honored duty to implement evidence-based practices at the bedside, but this duty depends on the expectation that their health systems are adequately prepared to supply the materials and resources that support these practices. The overwhelming time commitment to handle COVID-19 patient surges in combination with the distraction from fundamental practices and the lack of resources to support the care of these acute patients' needs or best practices has resulted in an abnormal level of moral distress for many healthcare providers. "Moral outrage" emerged as the crisis continued without adequate material and personnel support to ensure patient needs (and professional standards designed to address those needs) were being met. This moral outrage is distracting to pressure injury prevention as it comes in direct competition with basic support and resources necessary for caregivers to provide appropriate evidence-based practice.<sup>20</sup>

### **Position Statements**

Although the NPIAP does not consider this time the "new normal," we need to recognize that the preventive measures possible in pre-COVID-19 times may not have been feasible in the middle of the COVID-19 crisis. Pressure injury prevention was challenged during the early part of the COVID-19 crisis in some hotspots and the demand for appropriate equipment (support surfaces, mattresses, heel offloading devices, pressure redistribution cushions and positioners) and the skin and wound care products required may have been difficult to obtain. Additionally, despite reasonable attempts made to incorporate prevention strategies into the critically ill COVID-19 patient's care, the COVID-19 crisis rendered some of them impossible to achieve and pressure injury formation was unavoidable. Our hope is that we have learned from our experiences and can be better prepared for future waves of COVID-19 with better information, improved equipment, and adequate quantities of equipment, supplies and personnel to maximize our ability to prevent pressure injury formation in future COVID-19 patients.

**The NPIAP takes the following positions on the development of pressure injury during COVID-19 crisis situations.**

1. Before any decision is made about the avoidability or unavailability of a pressure injury that developed during the COVID-19 crisis, all factors should be considered on a case-by-case basis, including both the intrinsic issues in the critically ill patient and the extrinsic issues in the health care facility at the time of the injury.
2. Before labeling purpuric skin manifestations in COVID-19 patients, consider that the skin manifestations of COVID-19 may mimic the appearance of pressure injuries and should be considered in the differential diagnosis.
3. Areas of skin discoloration or tissue injury on non-loaded anatomic locations (i.e. no history of pressure and/or shear stress, no use of a medical device) are most likely not pressure injuries.
4. When pressure injuries occur on anatomical locations likely subjected to pressure and/or shear stress in patients with COVID-19, the pressure injury may be unavoidable IF:
  - a. Microvascular occlusions from COVID-19 increased the magnitude and severity of non-modifiable risk to a level that preventive interventions were not able to be overcome despite reasonable efforts at prevention;

- b. Multiorgan dysfunction issues from critical illness ultimately affected the skin's normal abilities to protect the body and remain resilient to injuries and trauma including pressure injuries; and,
- c. All reasonable efforts to provide evidence-based preventive care were attempted within the context of a health care system determined to be at crisis capacity.

### **Conclusions**

The NPIAP remains fully committed to its mission to improve patient outcomes in pressure injury prevention and management through education, public policy, and research. Every reasonable effort should be taken to prevent pressure injuries. The mere diagnosis of COVID-19 does not make a pressure injury inevitable or unavoidable. However, some pressure injuries are unavoidable. Intrinsic factors with the COVID-19 virus pathophysiology and extrinsic factors during the COVID-19 pandemic associated with its propensity to overwhelm health care systems should be taken into consideration when determining whether a pressure injury was unavoidable. It is imperative that we prepare for future pandemics with adequate supplies of functioning equipment, supply chain management to ensure timely and appropriate distribution of supplies<sup>21-22</sup> and pressure injury prevention protocols designed to be effective in crisis situations. Criteria for unavoidable pressure injury determinations require clarification for all patients with pressure injuries, whether or not they are affected by the COVID-19 crisis.

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#### **Disclaimers**

This document is intended for educational and informational purposes only. It does not constitute medical advice. Follow institutional policies, manufacturer recommendations and principles of sound clinical judgment.

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## References

1. Department of Health and Human Services. CMS Manual System. Centers for Medicare and Medicaid Services Guidance to Surveyors for Long-Term Care Facilities. Transmittal 4. DHHS Pub. 100-07. November 12, 2004.
2. Black JM, Edsberg LE, Baharestani MM, Langemo D, Goldberg M, McNichol L, Cuddigan, J. National Pressure Ulcer Advisory Panel. Pressure ulcers: avoidable or unavoidable? Results of the national pressure ulcer advisory panel consensus conference. *Ostomy/Wound Management*. 2011;57(2):24-37.
3. Edsberg LE, Langemo D, Baharestani MM, Posthauer ME, Goldberg M. Unavoidable pressure injury: state of the science and consensus outcomes. *Journal Of Wound, Ostomy, And Continence Nursing: Official Publication Of The Wound, Ostomy And Continence Nurses Society / WOCN*. 2014;41(4):313-34.
4. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel, and Pan Pacific Pressure Injury Advisory Panel, Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice Guideline. The International Guideline. Emily Haesler (Ed.). EPUAP-NPIAP-PPPIA: 2019.
5. Bellosta R, Luzzani L, Natalini G, Pegorer MA, Attisani L, Cossu LG, et al. Acute limb ischemia in patients with COVID-19 pneumonia. *J Vasc Surg*. 2020. Accessed at: [https://www.jvascsurg.org/article/S0741-5214\(20\)31080-6/pdf](https://www.jvascsurg.org/article/S0741-5214(20)31080-6/pdf)
6. Bonow RO, Fonarow GC, O'Gara PT, Yancy CW. Association of Coronavirus Disease 2019 (COVID-19) With Myocardial Injury and Mortality. *JAMA Cardiol*. 2020.
7. Cuker A, Peyvandi F. Coronavirus disease 2019 (COVID-19): Hypercoagulability. 2020. Accessed at: [www.uptodate.com](http://www.uptodate.com) on April 2020.
8. Oxley TJ, Mocco J, Majidi S, Kellner CP, Shoirah H, Singh IP, et al. Large-Vessel Stroke as a Presenting Feature of Covid-19 in the Young. *N Engl J Med*. 2020;382(20):e60.

9. Poissy J, Goutay J, Caplan M, Parmentier E, Duburcq T, Lassalle F, et al. Pulmonary Embolism in COVID-19 Patients: Awareness of an Increased Prevalence. *Circulation*. 2020.
10. Black J, Cuddigan J, National Pressure Injury Advisory. Skin Manifestations with COVID-19: The Purple Skin and Toes That You Are Seeing May Not Be Deep Tissue Injury. An NPIAP White Paper 2020. Accessed at: [https://cdn.ymaws.com/npiap.com/resource/resmgr/white\\_papers/COVID\\_Skin\\_Manifestations\\_An.pdf2020](https://cdn.ymaws.com/npiap.com/resource/resmgr/white_papers/COVID_Skin_Manifestations_An.pdf2020).
11. Hirsch JS, Ng JH, Ross DW, Sharma P, Shah HH, Barnett RL, Hazzan, AD, Fishbane, S, Jhaveri, KD. Acute kidney injury in patients hospitalized with COVID-19. *Kidney Int*. 2020.
12. Ronco C, Reis T, Husain-Syed F. Management of acute kidney injury in patients with COVID-19. *Lancet Respir Med*. 2020. [https://doi.org/10.1016/s2213-2600\(20\)30229-0](https://doi.org/10.1016/s2213-2600(20)30229-0)
13. Zhang L, Liu Y. Potential interventions for novel coronavirus in China: A systematic review. *J Med Virol*. 2020;92(5):479-9.
14. Caccialanza R, Laviano A, Lobascio F, Montagna E, Bruno R, Ludovisi S, Corsico AG, Di Sabatino A, Belliato M, Calvi M, Iacona I, Grugnetti G, Bonadeo E, Muzzi A, Cereda E. Early nutritional supplementation in non-critically ill patients hospitalized for the 2019 novel coronavirus disease (COVID-19): Rationale and feasibility of a shared pragmatic protocol. *Nutrition*. 2020;74:110835.
15. Jin YH, Cai L, Cheng ZS, Cheng H, Deng T, Fan YP, et al. A rapid advice guideline for the diagnosis and treatment of 2019 novel coronavirus (2019-nCoV) infected pneumonia (standard version). *Mil Med Res*. 2020;7(1):4.
16. Mulherin DL, Walker R, Holcombe B, Guenter P, ASPEN Clinical Practice Committee. ASPEN Report on Nutrition Support Practice Processes with COVID-19: The First Response. 2020.
17. Barazzoni R, Bischoff SC, Breda J, Wickramasinghe K, Krznaric Z, Nitzan D, et al. ESPEN expert statements and practical guidance for nutritional management of individuals with SARS-CoV-2 infection. *Clin Nutr*. 2020;39(6):1631-8. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7138149/pdf/main.pdf>
18. McClave SA, Taylor BE, Martindale RG, Warren MM, Johnson DR, Braunschweig C, et al. Guidelines for the Provision and Assessment of Nutrition Support Therapy in the Adult Critically Ill Patient: Society of Critical Care Medicine (SCCM) and American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.). *JPEN J Parenter Enteral Nutr*. 2016;40(2):159-211.
19. National Pressure Injury Advisory Panel, Capasso V, Cox J, Cuddigan J, Delmore B, Tescher A, Solmos S. May 2020. Accessed at NPIAP at [https://cdn.ymaws.com/npiap.com/resource/resmgr/online\\_store/posters/npiap\\_pip\\_tips\\_-\\_proning\\_202.pdf2020](https://cdn.ymaws.com/npiap.com/resource/resmgr/online_store/posters/npiap_pip_tips_-_proning_202.pdf2020).
20. Davidson PM, Padula WV, Daly J, Jackson D. Moral Outrage in COVID19 – Understandable but not a strategy. *J Clinical Nursing*, 2020 (Epub Ahead of Print).
21. Centers for Disease Control. Strategies to Mitigate Healthcare Personnel Staffing Shortages. 2020. Accessed at: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/mitigating-staff-shortages.html>.
22. Dai T, Zaman MH, Padula WV, Davidson PM. Supply Chain Failures Amid COVID-19 Signal a New Pillar for Global Health Preparedness. *J Clinical Nursing*, 2020 (In Press).