

Under Pressure: Risks for Injury During Pediatric Noninvasive Ventilation

Children admitted to the pediatric ICU are at risk for pressure injury due to immobilization, malnutrition, and deranged perfusion, and the requirement for application of medical devices. Recent observational studies reported the prevalence of pressure injuries as being 8–10% in children who are critically ill.^{1,2} These studies demonstrated that medical device-associated pressure injuries are more common compared with the immobility-associated pressure injury.² A validated and reliable risk assessment tool for pressure injuries is imperative to reduce its incidence, apply preventive measures, and enhance care for patients at high risk.³ In 2003, the Braden Q scale was adjusted for children by using the Braden scale designed for adults.⁴ Although validated in a pediatric cohort,⁵ this scale was originally developed to predict only the immobility-associated pressure injury. Thus, the same investigators proposed the Braden QD scale as a risk assessment scale that covers both device- and immobilization-associated pressure injuries.¹

In this issue of the Journal, an important study performed by Lauderbaugh et al⁶ evaluated the usefulness of the Braden QD scale to assess the risk of noninvasive ventilation mask-related pressure injuries. The outcome setting in this study can be rationalized by the fact that respiratory devices have the highest risk of pressure injuries.^{2,7} In the study by Lauderbaugh et al,⁶ 45 children with pressure injuries were included to assess the sensitivity of the Braden QD scale at varying time points around the recognition of pressure injuries, which was compared with the Braden Q scale. The investigators concluded that the Braden QD scale provided a better ability to identify patients who were experiencing mask-related pressure injuries than did the Braden Q scale. This study indicated the potential usefulness of the Braden QD scale as a risk assessment of pressure injuries in children with noninvasive ventilation.

Here, we need to recognize the necessity of further evaluation of the Braden QD scale. First, because this study only included children who developed pressure injuries, the specificity of Braden QD was not evaluated. Second, the reliability of the Braden QD scale is unclear. For example, as one of

the criteria of the Braden QD scale, the judgment for the difficulty of repositioning devices could vary across assessors, which may compromise the reliability of the score. Future

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research on these aspects, including inter-rater agreement, are required.³ Those future studies should also focus on the application of the risk assessment scale and preventive measurements in children at high risk by using patient-oriented outcomes as a primary outcome. To our knowledge, no studies have demonstrated the reduced incidence of pressure injuries by implementing a pressure injury risk assessment on pediatric practices. In this sense, it is important to monitor the incidence of pressure injuries and patient outcomes related to the pressure injuries.

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