(level 1 evidence). A total of 104 suctioning episodes were analyzed. Children experienced significantly greater oxygen desaturation after suctioning if NS was instilled. Sedigheh and Hossein (2011) also found that instillation of NS before suctioning can cause an adverse effect on oxygen saturation. Another study by Zahran and Abd El-Razik (2011) found a significant increase in arterial carbon dioxide ($PaCO_2$) after suctioning and a reduction in oxygen tension and arterial oxygen saturation (SaO_2) 5 minutes after suctioning. The authors advocate to educate caregivers to avoid using saline to liquefy secretions before suctioning and recommend adequate hydration and humidification, as well as the use of mucolytics.

- The American Thoracic Society states that routine use of NS is not recommended and adequate humidification should be maintained (Sherman, Davis, Albamonte-Petrick, et al, 2000).

- Gardner and Shirland (2009) evaluated 10 studies on the effects of instilling NS in intubated neonates and concluded that the evidence does not support routine instillation of NS; however, the evidence indicating adverse effect of NS instillation is abundant. Morrow and Argent (2008) suggest that despite evidence indicating the detriment of the use of saline for suctioning in adults, evidence is lacking in the pediatric population. They conclude, however, that saline should not be routinely used for suctioning infants and children.

Apply the Evidence: Nursing Implications

Studies support the contention that the adverse effects of NS instillation before suctioning in children are similar to those found for adults. This technique causes a significant reduction in oxygen saturation that can last up to 2 minutes after suctioning. The evidence does not support the use of NS instillation before ET suctioning in children.

References

Ackerman MH. The effect of saline lavage prior to suctioning.