



Adverse Outcomes Associated with Enteral Nutrition in Children with Bronchiolitis Admitted to the PICU and Requiring Non-Invasive Ventilation

Megan Williams, Scott Hagen

Department of Pediatrics

University of Wisconsin – Madison School of Medicine and Public Health



Department of Pediatrics
UNIVERSITY OF WISCONSIN
SCHOOL OF MEDICINE AND PUBLIC HEALTH

BACKGROUND

- Bronchiolitis is a common cause of hospitalization in children, with the mainstay of treatment being supportive therapy including adequate respiratory and nutritional support
- While the use of non-invasive ventilation has greatly reduced the incidence of intubation for bronchiolitis, its use is strongly associated with delay in enteral nutrition despite the well documented benefits of early enteral nutrition in critically ill children^{1,2,3,4}

METHODS

- Retrospective chart review of patients admitted to the PICU with bronchiolitis requiring noninvasive ventilation between 7/1/2016 and 7/1/2019
- Data collected during a 12 hour nursing shift
- During each shift the highest level of respiratory support, whether or not the patient was fed, the route which they were being fed and the respiratory support they were receiving while being fed was recorded
- Adverse events were recorded as documented by a physician or radiographic findings
- Adverse events defined as aspiration events or any intolerance to feeds as defined by the AFCH PICU feeding protocol

In our single center retrospective study, adverse events are rarely seen in patients with bronchiolitis on non-invasive ventilation who receive enteral nutrition

RESULTS

- 231 patients were included in the study
- 215 (93.1%) of patients were fed during PICU stay
- Data collected over 1497 shifts in total and patients were fed during 1020 (68.1%) of those shifts

Respiratory Support Per Shift		Respiratory Support While Receiving EN	
LFNC	59 (3.9%)	LFNC	77 (7.6%)
HFNC	669 (44.7%)	HFNC	359 (35.3%)
CPAP	147 (9.8%)	CPAP	87 (8.5%)
BiPAP	180 (12%)	BiPAP	67 (6.6%)
Other	442 (29.5%)	Other	428 (42%)

Table 1. Highest level of respiratory support during a shift and level of respiratory support while receiving enteral nutrition (EN)

Adverse Events	
Yes	11 (1.1%)
Aspiration	0 (0%)
Vomiting	7 (63.6%)
Feeding intolerance	5 (45.5%)
Other	0 (0%)
No	1009 (98.9%)

Table 2. Total adverse events and types of adverse events

CONCLUSIONS

- Data collected over 1497 shifts in total and patients were fed during 1020 (68.1%) of those shifts
- There were only 11 documented adverse events during 1020 feedings
- No aspiration events while being fed on NIV

ADDITIONAL KEY INFORMATION

It is likely safe to provide enteral nutrition to patients admitted with bronchiolitis on non-invasive ventilation

These results are descriptive

Next steps

- Statistical analysis to determine significance of results
- Determining if adverse events are related to type of non-invasive ventilation or route of nutrition

Author Contact Information

- mwilliams4@uwhealth.org

References

- Ganu SS, Gautam A, Wilkins B, Egan J. Increase in use of non-invasive ventilation for infants with severe bronchiolitis is associated with decline in intubation rates over a decade. *Intensive Care Med.* 2012;38(7): 1177–1183
- Mehta NM, Bechard LJ, Cahill N, et al. Nutritional practices and their relationship to clinical outcomes in critically ill children—an international multicenter cohort study. *Crit Care Med.* 2012;40(7):2204–2211
- Weisgerber MC, Lye PS, Nugent M, et al. Relationship between caloric intake and length of hospital stay for infants with bronchiolitis. *Hosp Pediatr.* 2013;3(1): 24–30
- Canarie MF, Barry S, Carroll CL, et al. Risk Factors for Delayed Enteral Nutrition in Critically Ill Children. *Pediatr Crit Care Med.* 2015;16(8):e283–e289