

## CLINICAL SUMMARY

**In the ICU, the most significant independent risk factor for pneumonia is aspiration of gastric contents. This can result in increased pulmonary complications, greater time on ventilation, increased length of stay and a significant draw on hospital resources.**

Metheny NA, Clouse RE, Chang YH, Stewart BJ, Oliver DA, Kollef MH. Tracheobronchial aspiration of gastric contents in critically ill tube-fed patients: frequency, outcomes, and risk factors. *Crit Care Med.* 2006;34(4):1007-1015.

### Objective

- Prospective, descriptive study conducted during a two-year period
- Describes the frequency of pepsin-positive tracheal secretions (a proxy for the aspiration of gastric contents), outcomes associated with aspiration and risk factors associated with aspiration and pneumonia in a population of critically ill, tube-fed patients

### Methods

- 360 adult patients from five intensive care units in an academic Level I trauma medical center
- Each patient participated for three days

### Results

- Of the 5,857 tracheal secretions assayed for pepsin from 360 patients during a three-day period, 31.3% were positive
- At least one aspiration event was identified in 88.9% (n=320) of the participants
- The mean number of pepsin-positive tracheal secretions per patient per day was 1.6 on each of the three observation days
- Fewer than 1% (n=3) of the 360 patients had an overt aspiration event that had been witnessed; the remaining aspirations were clinically silent
- The most significant independent risk factors for pneumonia were aspiration ( $p<.001$ ), use of paralytic agents ( $p=.002$ ) and a high sedation level ( $p=.039$ )
- As the number of aspiration events accumulated during the study period, the incidence of pneumonia steadily increased from 24% on day one, 36% on day two and 44% on day three

### Conclusion

Aspiration of gastric contents is common in critically ill, tube-fed patients and is a major risk factor for pneumonia. Furthermore, it leads to greater use of hospital resources. As the number of aspiration events accumulated over the study period, the incidence of pneumonia steadily increased. Modifiable risk factors for aspiration need to be addressed.



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