

Evidence-based Humidification

Al Dorzi et al. (2022)

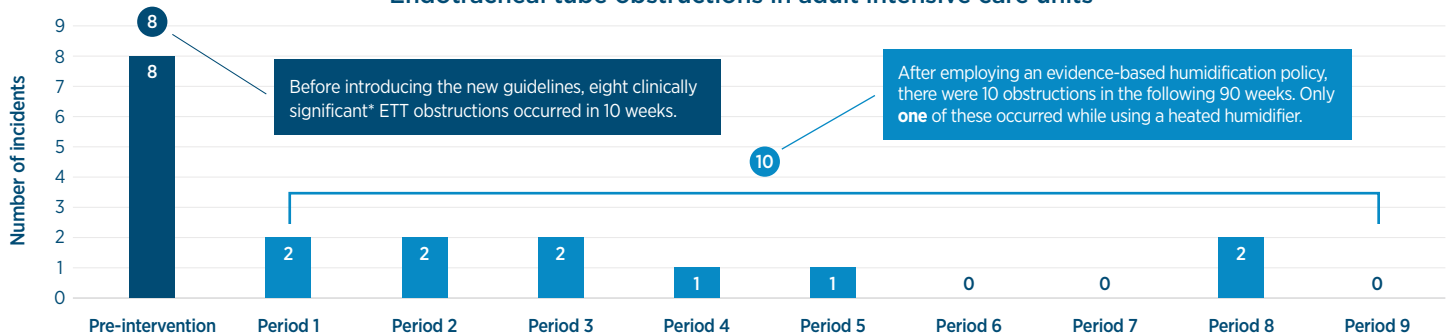


2022



Al Dorzi et al. (2022) showed how an evidence-based humidification strategy could alter patient outcomes.¹

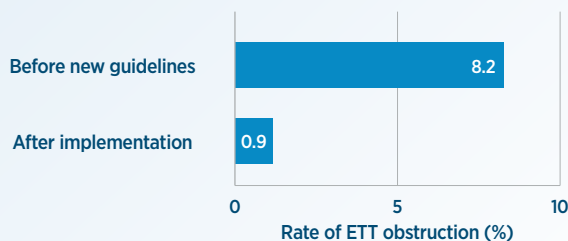
Endotracheal tube obstructions in adult intensive care units



Study context

This 100-week case-control study took place in six non-cardiac intensive care units as a quality improvement project after a cluster of endotracheal tube (ETT) occlusions. The authors identified the root cause as the overuse of passive humidification of inspired gases via heat and moisture exchangers (HMEs).

Incidence of ETT obstructions in patients mechanically ventilated for ≥ 24 hours



Implemented guidelines

Implemented guidelines for humidification of inhaled gases for patients with invasive mechanical ventilation, per Al Dorzi et al. (2022) and based on those by the American Association for Respiratory Care (AARC).²

Guidelines for active humidification

- Expected duration of mechanical ventilation > 96 hours
- Duration of mechanical ventilation of 72 hours with no plan for extubation on next day
- Acute respiratory distress syndrome (ARDS) patients managed by lung-protective low tidal volume strategy (a contraindication to HME due to dead space elevation)
- Patients with bloody secretions from the ETT (a contraindication for HME)
- Patients with minute ventilation > 10 L/min
- Hypothermic patients with temperature < 32 °C
- Patients with bronchopulmonary fistula (exhaled tidal volume < 70% of inhaled tidal volume)

Guidelines for passive humidification

- Expected intubation duration < 96 hours
- Absence of contraindication

The new guideline reduced ETT obstruction by **7.1 incidents per 1000 ventilator days**.

* Clinically significant was defined as the requirement to change the ETT and replace with a new tube.

1. Al Dorzi HM, Ghanem AG, Hegazy MM, Almatrood A, Alchin J, Mutairi M, et al. Humidification during mechanical ventilation to prevent endotracheal tube occlusion in critically ill patients: A case control study. *Ann Thorac Med*. 2022;17(1):37-43.

2. Restrepo RD, Walsh BK. AARC Clinical Practice Guideline. Humidification during invasive and noninvasive mechanical ventilation: 2012. *Respir Care*. 2012 May;57(5):782-8.