**ICU MANAGEMENT**

Impact of intensive insulin therapy on neuromuscular complications and ventilator dependency in the medical intensive care unit


*Am J Respir Crit Care Med. 2007;175:480-9.*

**RATIONALE**

Critical illness polyneuropathy/myopathy causes limb and respiratory muscle weakness, prolongs mechanical ventilation, and extends hospitalization of intensive care patients. Besides controlling risk factors, no specific prevention or treatment exists. Recently, intensive insulin therapy prevented critical illness polyneuropathy in a surgical ICU.

**OBJECTIVES**

To investigate the impact of intensive insulin therapy on polyneuropathy/myopathy and treatment with prolonged mechanical ventilation in medical patients in the ICU for at least 7 days.

**METHODS**

This was a prospectively planned subanalysis of an RCT evaluating the effect of intensive insulin versus conventional therapy on morbidity and mortality in critically ill medical patients. All patients who were still in intensive care on day 7 were screened weekly by electroneuromyography. The effect of intensive insulin therapy on critical illness polyneuropathy/myopathy and the relationship with duration of mechanical ventilation were assessed.

**MEASUREMENTS AND MAIN RESULTS**

Independent of risk factors, intensive insulin therapy reduced incidence of critical illness polyneuropathy/myopathy (107/212 [50.5%] to 81/208 [38.9%], P = 0.02). Treatment with prolonged (> or = 14 d) mechanical ventilation was only partially explained by prevention of critical illness polyneuropathy/myopathy.

**CONCLUSION**

In a subset of medical patients in the ICU for at least 7 days who were enrolled in an RCT of intensive insulin therapy, those assigned to intensive insulin therapy had reduced incidence of polyneuropathy/myopathy and were treated with prolonged mechanical ventilation less frequently.

This is a retrospective subset analysis of previous research in which intensive insulin therapy reduced the incidence of critical illness polyneuropathy and was associated with a lower incidence of prolonged mechanical ventilation. This was specifically noted among patients with prolonged (> 7 d) ICU hospitalization. The extremely high rates for critical illness polyneuropathy/myopathy are noteworthy. The details are certainly important – how does one best predict which patients are likely to require prolonged ICU hospitalization, and how does one provide intensive insulin therapy without causing hypoglycemia? A recent German RCT found that intensive insulin therapy was associated with no difference in mortality, despite lower mean morning blood glucose (112 vs 151 mg/dL), but was associated with a 4-fold higher rate of serious hypoglycemia and 2-fold higher rate of overall serious adverse events (1). In contrast to previous studies that were predominantly either surgical or medical—and arrived at dissimilar conclusions—this study had nearly equal numbers of surgical and nonsurgical patients.

**REFERENCE**


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**Prokinetic therapy for feed intolerance in critical illness: one drug or two?**

Nguyen NQ, Chapman M, Fraser RJ, Bryant LK, Burgstad C, Holloway RH.

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**OBJECTIVE**

To compare the efficacy of combination therapy, with erythromycin and metoclopramide, to erythromycin alone in the treatment of intolerance to feeding in critically ill patients.

**DESIGN**

Randomized, controlled, double-blind trial.
SETTING
Mixed medical and surgical ICU.

PATIENTS
Seventy-five mechanically ventilated, medical patients with intolerance to feeding (gastric residual volume \( \geq 20 \text{ mL} \)).

INTERVENTIONS
Patients received either combination therapy (200 mg of intravenous erythromycin twice daily + 10 mg of intravenous metoclopramide four times daily) \((n = 37)\) or erythromycin alone (200 mg of intravenous erythromycin twice daily) \((n = 38)\) in a prospective, randomized fashion. Gastric feeding was recommenced and 6-hourly gastric residual volume \( \geq 40 \text{ mL/hr} \) over 7 days. Secondary outcomes included daily caloric intake, vomiting, postpyloric feeding, length of stay, and mortality.

MEASUREMENTS AND MAIN RESULTS
Demographic data; use of inotropes, opioids, or benzodiazepines; and pretreatment gastric residual volume were similar between the two groups. The gastric residual volume was significantly lower after 24 hours of treatment with combination therapy, compared with erythromycin alone (136 +/- 23 mL vs. 293 +/- 45 mL, \( P = 0.04 \)). Over the 7 days, patients treated with combination therapy had greater feeding success, received more daily calories, and had a lower requirement for postpyloric feeding compared with those receiving erythromycin alone. Tachyphylaxis occurred in both groups but was reduced in the group receiving combination therapy. Sedation, higher pretreatment gastric residual volume, and hypoalbuminemia were significantly associated with a poor response. There was no difference in the length of hospital stay or mortality rate between the groups. Watery diarrhea was more common with combination therapy (20 of 37 vs. 10 of 38, \( P = 0.01 \)) but was not associated with enteric infections, including Clostridium difficile.

CONCLUSIONS
In critically ill patients with feed intolerance, combination therapy with erythromycin and metoclopramide is more effective than erythromycin alone in improving the delivery of nasogastric nutrition and should be considered as the first-line treatment.

Effect of sedation with dexmedetomidine vs lorazepam on acute brain dysfunction in mechanically ventilated patients: the MENDS randomized controlled trial

CONTEXT
Lorazepam is currently recommended for sustained sedation of mechanically ventilated ICU patients, but this and other benzodiazepine drugs may contribute to acute brain dysfunction, such as delirium and coma, which are associated with prolonged hospital stays, costs, and increased mortality. Dexmedetomidine induces sedation via different central nervous system receptors than the benzodiazepine drugs and may lower the risk for acute brain dysfunction.

OBJECTIVE
To determine whether dexmedetomidine reduces the duration of delirium and coma in mechanically ventilated ICU patients while providing adequate sedation as compared with lorazepam.

DESIGN, SETTING, PATIENTS, AND INTERVENTION
Double-blind RCT of 106 adult mechanically ventilated medical and surgical ICU patients at 2 tertiary care centers between August 2004 and April 2006. Patients were sedated with dexmedetomidine or lorazepam for as many as 120 hours. Study drugs were titrated to achieve the desired level of sedation, measured using the Richmond Agitation-Sedation Scale (RASS). Patients were monitored twice daily for delirium using the Confusion Assessment Method for the ICU (CAM-ICU).