

Critical Care Volume 11 Suppl 2, 2007

27th International Symposium on Intensive Care and Emergency Medicine

Brussels, Belgium, 27–30 March 2007

Published online: 22 March 2007

These abstracts are available online at <http://ccforum.com/supplements/11/S2>

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Intensive care unit patients on mechanical ventilation at a university hospital in southern Brazil: characteristics, mortality, frequency, and mortality risk factors

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Critical Care 2007, **11(Suppl 2)**:P163 (doi: 10.1186/cc5323)

Introduction Acute respiratory failure (ARF) is a frequent cause of admission to ICUs and frequently necessitates mechanical ventilation (MV). Knowledge about the frequency and risk factors associated with requirements for MV is crucial to improve outcomes. The objectives of our study were to determine the characteristics, frequency of MV, overall and specific mortality rates and mortality risk factors in patients who required MV in the ICU of a general university hospital in southern Brazil.

Methods A prospective cohort of 751 adult patients admitted to the ICU who needed MV for at least 24 hours, between March 2004 and July 2006. Data were collected on each patient at the inclusion in the study and on a daily basis, during the course of MV for up to 28 days.

Results The frequency of MV was 30%; the overall and specific mortality rates were 15% and 50%, respectively. The mean (\pm SD) age was 57 ± 21 years; 52% were males; the mean APACHE II score was 22.2 ± 8.2 ; 69% were medical patients; the mean duration of MV was 11 ± 7.9 days; 93% were on invasive MV. A multivariable analysis was performed to identify the variables associated with death. These included sepsis ($P = 0.02$), MV duration ($P < 0.001$), renal failure ($P = 0.006$) prior to MV, and the following variables that occurred during the MV period: sepsis ($P = 0.004$), acute lung injury/acute respiratory distress syndrome ($P = 0.001$), renal failure ($P < 0.001$), haematological failure ($P = 0.02$) and vasoactive drug use ($P < 0.001$). It should be noted that selected ventilatory monitored variables were included in the multivariate model. However, they were not associated with mortality in our study sample.

Conclusions Our results indicate a frequency of patients on MV of 30% with an elevated specific mortality rate (50%). Sepsis, MV duration, renal failure prior to MV, and sepsis, acute lung injury/acute respiratory distress syndrome, renal failure, haematological failure and vasoactive drug use during the MV period are risk factors for mortality in 28 days after starting MV. Identification of these factors may allow early interventions to attempt to mitigate these poor outcomes.

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