Introduction:
Disrupted sleep in critically ill patients may be associated with delirium, prolonged stay in ICU and increased mortality. Polysomnography (PSG), the criterion standard method of sleep monitoring, is challenging in ICU due to interpretation difficulties, as the patterns defined by the standard classification for scoring sleep are absent in many critically ill patients. The aim of this study was to investigate if the presence of atypical patterns in critically ill patients’ PSG is associated with poor outcome measured by 90-days mortality in conscious critically ill patients on mechanical ventilation.

Methods:
70 PSGs (median duration 20 hours) recorded in conscious critically ill mechanically ventilated patients were scored by an expert in sleep medicine blinded to patient characteristics. Standard sleep scoring classification was used if possible. Otherwise, modified classification for scoring sleep in critically ill patients proposed by Watson et al. was applied [1]. The association of sleep patterns (normal or atypical) and micro-sleep phenomena (sleep spindles and K-complexes) with 90 days mortality was assessed using Weibull model by calculation of Hazard Ratios (HR).

Results:
HR analysis showed twice as high mortality risk in case of atypical sleep compared to normal sleep; this was however not significant (HR 2.5; 95% CI 0.95-4.44; p=0.08).
The presence of sleep spindles in PSG significantly reduced mortality risk to 1/3 (HR 0.33; 95% CI 0.13-0.86; p=0.02).
The presence of K-complexes in PSG reduced mortality risk to ½, though not significantly (HR 0.52; 95% CI 0.24-1.12; p=0.1).

Conclusion:
The absence of normal sleep characteristics in PSG in conscious critically ill patients on mechanical ventilation is associated with poor short-term outcome.

References: