Introduction:
Studies investigating nurse staffing and outcomes were often conducted in high-income countries with low bed/nurse ratios. Our objective was to investigate the association between nurse staffing patterns, outcomes and resource use in Brazilian ICUs.

Methods:
Retrospective cohort study in 129,680 (68% medical) patients admitted to 93 medical-surgical ICUs during 2014-15. We retrieved patients’ data from an ICU registry (Epimed Monitor System) and surveyed participating ICUs about characteristics related to ICU organization. We used multilevel logistic regression analysis to identify factors associated with hospital mortality. We evaluated efficiency in resource use using standardized mortality rates (SMR) and resource use (SRU) based on SAPS 3.

Results:
SAPS 3 score was 44 (34-54) points and hospital mortality was 18.2%. Intensivists were present 24/7 in 83% ICUs. Median bed/nurse ratio was 5.8 (4.2-7.3) and at least the chief nurse was board-certified in critical care (BCCC) in 47% ICUs. Bed/nurse technicians ratio was 1.9 (1.8-2.1). Adjusting for relevant characteristics at patient-level (age, admission type, SOFA, performance status, comorbidities, hospital days before ICU) and ICU-level (hospital type, checklist use, 24/7 intensivist, protocols), bed/nurse ratio was not associated with mortality [OR=0.99 (95% CI, 0.95-1.03)]. However, mortality was lower in ICUs with at least the chief nurse BCCC [OR=0.78 (0.65-0.74)]. In multivariate analysis, bed/nurse ratios <=6 [OR=3.53 (1.19-10.53)] and having the chief nurse BCCC [OR=6.36 (2.13-19.02)] were associated with higher efficiency.

Conclusion:
In a “low intensity” nurse staffing scenario, bed/nurse ratios were not associated with mortality. However, having at least the nurse chief BCCC was associated with higher survival. Moreover, bed/nurse ratios <=6 and presence of chief nurse BCCC were associated with higher efficiency in resource use.

References:
Funded by IDOR, CNPq and FAPERJ. Endorsed by BRICNet.