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Introduction:
Patients requiring prolonged acute mechanical ventilation (PAMV, defined as 4+ days on MV) are sicker and incur disproportionate morbidity and costs relative to patients on short-term MV (STMV, <4 days of MV). We quantified specific clinical outcomes among patients requiring PAMV vs. STMV in a contemporary database.

Methods:
We conducted a multicenter retrospective cohort study within ~700 hospitals in the Premier database, 2014-2018. Using ICD-9-CM and ICD-10 codes we identified PAMV and STMV patients, and compared their baseline characteristics and hospital events. Because of the large sample size, we omitted hypothesis testing.

Results:
A total of 691,961 patients met the enrollment criteria, of whom 266,374 (38.5%) received PAMV. At baseline, patients on PAMV were similar to STMV with regard to age (years: 62.0 ± 15.8 PAMV vs. 61.7 ± 17.2 STMV), gender (males: 55.6% PAMV vs. 53.9% STMV), and race (white: 69.1% PAMV vs. 72.4% STMV). PAMV group had a higher comorbidity burden than STMV (mean Charlson score 3.5 ± 2.7 vs. 3.1 ± 2.7). The prevalence of each of the indicators of acute illness severity – vasopressors (50.3% vs. 36.9%), dialysis (19.4% vs. 10.3%), severe sepsis (20.3% vs. 10.3%), and septic shock (33.5% vs. 15.9%) – was higher in PAMV than STMV, as were hospital mortality and combined mortality or discharge to hospice (Figure), extubation failure (12.3% vs. 6.1%), tracheostomy (21.6% vs. 4.5%), development of C. difficile (4.5% vs. 1.7%), and incidence density of ventilator-associated pneumonia (2.4/1,000 patient-days vs. 0.6/1,000 patient-days).

Conclusion:
Over 1/3 of all hospitalized patients on MV require it for 4 days or longer. PAMV patients exhibit a higher burden of both chronic and acute illness than those on STMV. Commensurately, all clinical outcomes examined are substantially worse in association with PAMV than STMV.

Image:

PAMV = prolonged acute mechanical ventilation; STMV = short-term mechanical ventilation