



News Release

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Session C94: High Impact Clinical Trials in Critical Care

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Location: Colorado Convention Center

Mechanical Ventilation Associated with Long-Term Disability

ATS 2015, DENVER — Critically ill patients who have been mechanically ventilated for more than seven days are at greatly increased risk for functional impairment and mortality at one year following discharge from the intensive care unit (ICU), according to a new study presented at the 2015 American Thoracic Society International Conference.

“Prolonged mechanical ventilation has a significant impact on the long-term well-being of patients,” said lead author Margaret Herridge, MD, MPH, of the University of Toronto. “In our study of nearly 400 ICU patients, we were able to identify a number of characteristics that predicted subsequent disability. Knowing these risk factors can help guide their rehabilitation needs.”

The study involved 391 patients who had undergone at least one week of mechanical ventilation. Median ventilation time was 16 days, mean length of stay in the ICU was 22 days, and mean length of stay in the hospital was 29 days. Assessment included the Functional Independence Measure (FIM), an indicator of disability level, along with measures of physical capacity, neuropsychological status, quality of life, healthcare utilization, and mortality.

FIM score at seven days post post-ICU discharge was associated with patient age and length of stay in the ICU. The oldest patients with the longest ICU stays had the worst outcomes, with 40% of those patients aged 46-66 years with an ICU length of stay of 14 days or more dying within the first year of follow-up, 29% being readmitted to ICU, and most exhibiting severe impairments in daily activities, including bathing, dressing and climbing stairs. In contrast, patients younger than 42 years of age with an ICU length of stay of less than two weeks had the best functional outcomes.

The rate of hospital readmission was high for all patients, ranging from 36% to 43% for different age and length of stay patient groups. FIM score, Charlson score (a measure of comorbidities), and age independently predicted mortality at one year.

“A combination of FIM score at 7 days after ICU discharge, length of stay in the ICU, and patient age can be used to predict subsequent impairment in mechanically ventilated patients,” said Dr. Herridge. “Earlier intervention based on these predictions may improve outcomes for these high-risk patients.”

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** Please note that numbers in this release may differ slightly from those in the abstract. Many of these investigations are ongoing; the release represents the most up-to-date data available at press time.*

Abstract 68191

The RECOVER Program: One-Year Disability in Critically Ill Patients Mechanically Ventilated (MV) for 7 Days

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Scientific Abstract

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Abstract Body

Background: There are no data on one-year functional outcomes and risk stratification for disability after MV for 7 days.

Objective: The RECOVER Program (Phase 1: towards RECOVER) is a prospective multi-centre Canadian cohort study that evaluates outcomes to 2 years after ICU to inform risk stratification for disability and rehabilitation for patients and family caregivers.

Method: We evaluated 391 patients who survived ≥ 1 week of mechanical ventilation, at 7 days, 3, 6, and 12 months after intensive care unit (ICU) discharge. Functional Independence Measure (FIM), physical capacity, neuropsychological status, quality of life, healthcare utilization and mortality were assessed. We used recursive partitioning models to define disability risk groups 7 days (d) after ICU discharge to determine their 1-year recovery trajectories.

Results: Descriptive analysis showed mean age of 58; 69% M; mean APACHE II 25; median vent time of 16d (11-27); mean ICU LOS of 22d and hospital LOS 29d. FIM score at 7d post-ICU discharge was 54 and 110 at 12 months; 60% of patients were unable to walk at 7d and walk distances changed from 24% to 75% predicted after 12 months; means for SF-36 were 34 and 38 at 3 and 12 months respectively; depression scores were 17 at both 3 and 12 months. In recursive partitioning analysis (Figure), 7d FIM was associated with age and ICU LOS. Four disability risk groups were identified: Young Short LOS (<42yr; < 2wk); Mid age Variable LOS (blue line) (≥ 42 yr; <2wk + ≤ 45 yr; ≥ 14 d); Older Long LOS (green line) (46-66yr; ≥ 14 d), and Oldest Long LOS (red line) (> 66yr; ≥ 14 d). Younger patients with the shortest ICU LOS had the fewest deaths and best functional outcome at 1 year in contrast to the oldest patients who stayed longest in the ICU. In the latter group, 40% of patients died within the first year, 29% were readmitted to ICU, and activities including bathing, dressing and climbing stairs remained severely impaired. Hospital readmission was high for each group (36% to 43%) and specialist visits were most common in the youngest (64%). FIM, Charlson score and age were independent predictors of mortality at 1-year.

Conclusions: Patients have important disability after 1 week of mechanical ventilation. This is best captured by FIM with improvement but persistent impairment to 1 year post-ICU discharge. Patients may be risk stratified for disability and rehabilitation programs at 7 days post-ICU-discharge based on 7d FIM, age and ICU LOS.

FIM Motor Subscale

