

Abstracts' Service

## Potential Influence of Advance Care Planning and Palliative Care Consultation on ICU Costs for Patients With Chronic and Serious Illness

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**Objectives.** To estimate the potential ICU-related cost savings if in-hospital advance care planning and ICU-based palliative care consultation became standard of care for patients with chronic and serious illness.

**Design and Setting.** Decision analysis using literature estimates and inpatient administrative data from Premier.

**Patients.** Patients with chronic, life-limiting illness admitted to a hospital within the Premier network.

**Interventions.** None.

**Measurements and Main Results.** Using Premier data (2008–2012), ICU resource utilization and costs were tracked over a 1-year time horizon for 2,097,563 patients with chronic life-limiting illness. Using a Markov microsimulation model, we explored the potential cost savings from the hospital system perspective under a variety of scenarios by varying

the interventions' efficacies and availabilities. Of 2,097,563 patients, 657,825 (31%) used the ICU during the 1-year time horizon; mean ICU spending per patient was 11.3k (SD, 17.6k). In the base-case analysis, if in-hospital advance care planning and ICU-based palliative care consultation were systematically provided, we estimated a mean reduction in ICU costs of 2.8k (SD, 14.5k) per patient and an ICU cost saving of 25%. Among the simulated patients who used the ICU, the receipt of both interventions could have resulted in ICU cost savings of 1.9 billion, representing a 6% reduction in total hospital costs for these patients.

**Conclusions.** In-hospital advance care planning and palliative care consultation have the potential to result in significant cost savings. Studies are needed to confirm these findings, but our results provide guidance for hospitals and policymakers.

## Low Tidal Volume Ventilation Use in Acute Respiratory Distress Syndrome

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**Objective.** Low tidal volume ventilation lowers mortality in the acute respiratory distress syndrome. Previous studies reported poor low tidal volume ventilation implementation. We sought to determine the rate, quality, and predictors of low tidal volume ventilation use.

**Design.** Retrospective cross-sectional study.

**Setting.** One academic and three community hospitals in the Chicago region.

**Patients.** A total of 362 adults meeting the Berlin Definition of acute respiratory distress syndrome consecutively admitted between June and December 2013.

**Measurements and Main Results.** Seventy patients (19.3%) were treated with low tidal volume ventilation (tidal volume < 6.5 mL/kg predicted body weight) at some time during mechanical ventilation. In total, 22.2% of patients requiring an FIO<sub>2</sub> greater than 40% and 37.3% of patients with FIO<sub>2</sub> greater than 40% and plateau pressure greater than 30 cm H<sub>2</sub>O received low tidal volume ventilation. The entire cohort received low tidal volume ventilation 11.4% of the time patients had acute respiratory distress syndrome. Among patients

who received low tidal volume ventilation, the mean (SD) percentage of acute respiratory distress syndrome time it was used was 59.1% (38.2%), and 34% waited more than 72 hours prior to low tidal volume ventilation initiation. Women were less likely to receive low tidal volume ventilation, whereas sepsis and FIO<sub>2</sub> greater than 40% were associated with increased odds of low tidal volume ventilation use. Four attending physicians (6.2%) initiated low tidal volume ventilation within 1 day of acute respiratory distress syndrome onset for greater than or equal to 50% of their patients, whereas 34 physicians (52.3%) never initiated low tidal volume ventilation within 1 day of acute respiratory distress syndrome onset. In total, 54.4% of patients received a tidal volume less than 8 mL/kg predicted body weight, and the mean tidal volume during the first 72 hours after acute respiratory distress syndrome onset was never less than 8 mL/kg predicted body weight.

**Conclusions.** More than 12 years after publication of the landmark low tidal volume ventilation study, use remains poor. Interventions that improve adoption of low tidal volume ventilation are needed.

## ICU Admission, Discharge, and Triage Guidelines: A Framework to Enhance Clinical Operations, Development of Institutional Policies, and Further Research

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**Objectives.** To update the Society of Critical Care Medicine's guidelines for ICU admission, discharge, and triage, providing a framework for clinical practice, the development of institutional policies, and further research.

**Design.** An appointed Task Force followed a standard, systematic, and evidence-based approach in reviewing the literature to develop these guidelines.

**Measurements and Main Results.** The assessment of the evidence and recommendations was based on the principles of the Grading of Recommendations Assessment, Development and Evaluation system. The general subject was addressed in sections: admission criteria and benefits of different levels of care, triage, discharge timing and strategies, use of outreach programs to supplement ICU care, quality assurance/improvement and metrics, nonbeneficial treatment in the ICU, and rationing considerations. The literature searches yielded 2,404 articles published from January 1998 to October 2013 for review. Following the

appraisal of the literature, discussion, and consensus, recommendations were written.

**Conclusion.** Although these are administrative guidelines, the subjects addressed encompass complex ethical and medico-legal aspects of patient care that affect daily clinical practice. A limited amount of high-quality evidence made it difficult to answer all the questions asked related to ICU admission, discharge, and triage. Despite these limitations, the members of the Task Force believe that these recommendations provide a comprehensive framework to guide practitioners in making informed decisions during the admission, discharge, and triage process as well as in resolving issues of nonbeneficial treatment and rationing. We need to further develop preventive strategies to reduce the burden of critical illness, educate our noncritical care colleagues about these interventions, and improve our outreach, developing early identification and intervention systems.

## Telehealthcare for Chronic Obstructive Pulmonary Disease in Switzerland Is Feasible and Appreciated by Patients

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**Background.** Earlier detection of acute exacerbations (AE) of chronic obstructive pulmonary disease (COPD) could reduce emergency admissions and hospitalisations. Studies investigating COPD management programs supported by telehealthcare (THC) have shown conflicting results.

**Objectives.** To test the feasibility, safety and acceptance of THC for COPD.

**Methods.** Patients daily filled out an online questionnaire focused on the detection of AECOPD. The THC platform is integrated in a comprehensive electronic patient data repository, which has to be available for all patients in Switzerland by law by 2017. The study team called the patient by phone in case of suspected AECOPD.

**Results.** Of 339 screened patients, 14% were included. Main reasons for exclusion were missing technical equipment and unwillingness to participate in a study (50%). Data completeness was 88%; 94% completed

the study. The current THC approach triggered 230 telephone calls, which led to the verification of 60 AECOPD in 22 patients. Three AECOPD were not detected. Sensitivity, specificity, positive and negative predictive value of the questionnaire-based THC approach in detecting AECOPD was 95, 98, 26 and 99.9%, respectively. Overall patient satisfaction in respect to their health condition improved significantly (VAS 8-8.7;  $p = 0.002$ ).

**Conclusions.** Adding THC to state-of-the-art COPD management is feasible in a selected subgroup of patients. We estimate that up to 50% of COPD patients could be eligible for a THC strategy. Patient compliance, acceptance and satisfaction were very high. With the proposed approach, we missed only very few AECOPD events. However, a telephone-based verification of THC alerts was required. Overall, in this proof-of-concept study, we experienced a positive effort-to-benefit ratio.