PATIENT OUTCOMES IN THE ICU

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OBJECTIVES

- Discuss short and long term outcomes of critically ill patients
- Identify disparities in outcomes of critically ill patients
DISCLOSURES

- I have no potential financial interests to report
- Every picture in this presentation has a written consent from the patient and/or family
SHORT AND LONG TERM OUTCOMES OF CRITICALLY ILL PATIENTS

DISPARITIES IN CRITICAL CARE

• Design: Systematic review and meta-analysis of published studies
• Results:
  • 42 studies included 16,595 critically ill patients
• Conclusions:
  • Nearly a third of patients admitted to ICU develop Delirium
  • These patients are at increased risk of
    • Dying during admission
    • Longer stays in hospital
    • Cognitive impairment after discharge.
ARDS
ARDS


- 109 survivors of ARDS
- All patients reported poor function and attributed this to the loss of muscle bulk, proximal weakness, and fatigue.


- At 5 years, the median 6-minute walk distance was 436 m (76% of predicted distance)
- Exercise limitation, physical and psychological sequelae, decreased physical quality of life, and increased costs and use of health care services are important legacies of severe lung injury.
EXTRA-CORPOREAL MEMBRANE OXYGENATION (ECMO)

METHODS:
• Single-center, retrospective review of all adult patients treated with ECMO from 2005 through 2009.

RESULTS:
• 212 patients received ECMO for cardiac (n = 126) or respiratory (n = 86) failure.
• Mean age was 51 (SD, 14.5) years
• Support duration was 135 (SD, 149) hours
• Survival to discharge was 33% overall
  • 50% for respiratory
  • 21% for cardiac

CONCLUSIONS:

• Patients with respiratory indications for ECMO experienced better survival than did cardiac patients
• Increasing age was associated with poor outcome
• Complications, regardless of ECMO indication, were common and associated with poor outcome
SEPTIC SHOCK

- University of Copenhagen
- Physical outcome in survivors 1 year after septic shock
- 174 adult patients in a mixed ICU
- After 1 year:
  - Survivors were interviewed about physical function and socioeconomic status
  - 80 survivors
  - 2 still hospitalized

- After 12 months, 2/3 of the patients had NOT regained their pre-admission physical status
- 81% of patients attributed this to loss of muscle mass

**Conclusion:**

"Physical function is substantially reduced in survivors of septic shock one year after discharge."
PATIENT OUTCOMES AFTER ICU
PATIENT OUTCOMES AFTER ICU

• Survivors of critical illness experience a variety of impairments:
  • Physical
  • Cognitive
  • Mental

CritCareMed.2015; 43(6):1265-1275
IntensiveCareMed.2009;35(5):796-809
Published articles between 1970 and 2013 that included:

- 20 or more survivors of critical illness
- One or more post-discharge measure of a physical, cognitive, mental health, or quality of life outcome
• A total of 250 different measurement instruments were used in these 425 articles!
CONCLUSION

• The ability to compare results across studies remains impaired by the 250 different instruments used

• Development of a core outcome set of valid, reliable, and feasible measures is essential to improving the outcomes of critical illness survivors.
BURDEN OF PERSISTENT CRITICAL ILLNESS
Unroe M et al. One-year trajectories of care and resource utilization for recipients of prolonged mechanical ventilation: a cohort study.

Ann Intern Med. 2010 August 3; 153(3): 167–175

- Objectives—To describe one-year trajectories of care and resource utilization for prolonged mechanical ventilation patients
- Design—One-year prospective cohort study
- Setting—5 ICUs at Duke University Medical Center
- Participants—126 prolonged mechanical ventilation patients as well as their 126 surrogates and 54 ICU physicians were enrolled consecutively during one year
Figure 2. One-year patient trajectories by health outcomes groupings - *Ann Intern Med. 2010 August 3; 153(3): 167–175
Conclusions—Prolonged mechanical ventilation patients experience multiple transitions of care, resulting in extraordinary health care costs and persistent, profound disability.
PATIENT OUTCOMES IN THE ICU

DISPARITIES IN CRITICAL CARE

METHODS:

- Adults admitted to a medical or surgical ICU were assessed for:
  - Primary outcome of 30-day mortality
  - Secondary outcomes of in-hospital mortality and hospital length-of-stay

RESULTS: The study cohort consisted of 14,684 adult ICU patients:

- White: 10,562
- Black: 1311
- Asian: 363
- Other: 868
- Unknown race: 1580

CONCLUSIONS:

- In a large, racially diverse cohort of general ICU patients, White patients experienced significantly higher mortality than non-White patients.
METHODS:

* Retrospective prognostic study in adult patients receiving a tracheostomy after initial intubation.
* University HealthSystem Consortium (2007-2010)
* Time to tracheostomy: early (< 7 days) or late (> 10 days)

RESULTS: 49,191 patients underwent tracheostomy:

- 42% early (n = 21,029)
- 58% late (n = 28,162)
CONCLUSIONS:

• Early tracheostomy was associated with increased survival.
• There were significant disparities in time to tracheostomy according to sex, race, and type of insurance:
  • Women, blacks, hispanics, and patients receiving Medicaid were less likely to receive an early tracheostomy.

METHODS:

• Adult patients with severe sepsis or septic shock during 2008-2010
• Tertiary ICU - Aarhus University Hospital - Denmark
• Data from public registries on:
  • Educational level
  • Personal income
  • Cohabitation
  • Comorbidity
  • Readmissions
  • Mortality

RESULTS:

- A total of 387 patients were included:
  - 111 (29%) died within 30 days after ICU admission
  - 55 (20%) died within 180 days after hospital discharge

CONCLUSIONS:

- Among septic ICU patients:
  - Low income was significantly associated with increased 30-day mortality
  - There was a trend towards earlier readmission among surviving patients with low educational level and personal income
ASSESS, PREVENT, AND MANAGE PAIN
Understand pain and find tools for its assessment, treatment and prevention.

BOTH SAT AND SBT
Both Spontaneous Awakening Trials and Spontaneous Breathing Trials

CHOICE OF ANALGESIA AND SEDATION
Understand the importance of defining the depth of sedation choosing the right medication.

DELIRIUM: ASSESS, PREVENT AND MANAGE
Understand delirium risk factors and find tools for its assessment, treatment and prevention.

EARLY MOBILITY AND EXERCISE
ICU early mobility involves more than changing the patient’s position.

FAMILY ENGAGEMENT AND EMPOWERMENT
Involving the family in patient care can help recovery.
Implementation of the ABCDE Bundle to Improve Patient Outcomes in the Intensive Care Unit in a Rural Community Hospital. *Dimens Crit Care Nurs.* 2015 Sep-Oct;34(5):250-8

- ABCDE bundle was implemented in a six-bed general adult ICU of a rural community hospital
- Implementation of the bundle:
  - Decreased average patient hospital length of stay by 1.8 days
  - Reduced length of mechanical ventilation by an average of 1 day
  - Established a baseline delirium prevalence of 19% over a 3-month time period
LEARNING ASSESSMENT QUESTIONS
• Which of the following is not an impairment resulting from an admission to the ICU?
   A. Physical impairment  
   B. Cognitive impairment  
   C. Visual impairment  
   D. Psychological impairment

Answer “C” is the correct answer because it is well established that admission to ICU can cause physical, cognitive, and psychological impairments.
• There are currently less than 10 tools available for post-ICU outcome measurement.
  • True
  • False

Answer “FALSE” is the correct answer because there are currently more than 250 tools available
WHAT IS THE FUTURE?
How do we improve outcomes of patients in ICU?

**PREVENTION** is a much better option than any treatment currently available!
THANK YOU

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