Disparities in the ICU: The Elderly?

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Critical Care Is Care of the Elderly

15,757 consecutive adult patients, mechanically ventilated
361 ICUs in 20 countries

• Median Age 63 years IQR (48–73)

Esteban et al. JAMA 2002; 287: 345
Respiratory Failure and Age

Behrendt CE. Chest. 2000;118:1100-1105
Incidence of Mech Ventilation in NC, by Age

Patients Receiving Mechanical Ventilation

Year

Total Patients by Age Group


Age > 85
Age 75-84
Age 65-74
Age 55-64
Age 55-64
Age 35-54
Age 18-34

Carson et al. JICM 2006
Projected Growth of Prolonged Acute MV

Ageism

“Ageism, as a mind-set, amplifies a belief that intensive care for the elderly is ineffectual...A lack of outcome data, combined with ageism, may place older patients at risk for rationing of intensive care.”

Diane J. Mick and Michael H. Ackerman
1997, AACN Clinical Issues
Age is an independent risk factor for ICU mortality

Mechanically ventilated patients, 20 countries

<table>
<thead>
<tr>
<th>Age, yrs</th>
<th>ICU mortality</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;40</td>
<td>21%</td>
<td>1.00</td>
</tr>
<tr>
<td>40-70</td>
<td>30%</td>
<td>1.58 (1.27, 1.98)</td>
</tr>
<tr>
<td>&gt;70</td>
<td>36%</td>
<td>2.18 (1.71, 2.76)</td>
</tr>
</tbody>
</table>

Esteban et al. JAMA 2002; 287: 345
Acute Lung Injury and ARDS

**Figure 1.** Histogram of 28-day survival by decade of age.

HR for death 2.5 (CI, 2.0 – 3.2) if >70 yo, adjusted for illness severity

Age as a risk factor for ICU mortality

APACHE III

Mortality prediction model using acute physiology, comorbidities, age, primary diagnosis, origin of admission

• Age accounts for only 3% of explanatory power for risk of death
• Acute physiology accounts for up to 89% of risk

Age is a factor in withholding ICU care

SUPPORT

9105 patients with severe illnesses

- 64% age 70-79 chose mechanical ventilation
- 55% over age 80 chose mechanical ventilation
- HR 1.15 95% CI (1.12-1.19) for withholding mechanical ventilation with each decade of age

Withholding Life-sustaining Treatment -- SUPPORT

- HR 1.15 95% CI (1.12-1.19) for withholding mechanical ventilation with each decade of age
- RR for withholding ventilator care for patients ≥80 years old was 2.3 compared with patients <50 years old
- RR was 1.6 when adjusted for physicians reports of patients’ preferences
- Physician perceptions of patient’s wishes impacted age related differences in outcome

### Withholding Life-Sustaining Treatment -- SUPPORT

<table>
<thead>
<tr>
<th>Age</th>
<th>Patient wants intervention</th>
<th>Pt wants intervention, MD believes they do not</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;50</td>
<td>61%</td>
<td>36%</td>
</tr>
<tr>
<td>50-59</td>
<td>52%</td>
<td>50%</td>
</tr>
<tr>
<td>60-69</td>
<td>44%</td>
<td>61%</td>
</tr>
<tr>
<td>70-79</td>
<td>37%</td>
<td>70%</td>
</tr>
<tr>
<td>≥80</td>
<td>27%</td>
<td>79%</td>
</tr>
</tbody>
</table>

Impact of decisions to withhold therapies

- 2211 MICU patients in Manitoba
- 201 had orders for life sustaining therapies (LST) to be withheld
- Matched to patients without such orders by propensity score
- Patients with LST had higher 6 month mortality than matched patients
  - RR 2.0 (1.5, 2.6)
  - Hazard persisted until one year

Chen et al. Chest 2010; 133:1312
Withdrawal of Support

256 consecutive patients with ARDS

• Age >55 associated with higher risk of death
  – Controlled for sepsis, APACHE II, organ failures, gas exchange

• Patients >55 were more likely to have support withdrawn (73% vs 50%)
  – Fewer days of MV before withdrawal (11 vs 16)
  – Less likely to have chronic diseases (61% vs 91%)
  – Less likely to be on pressors (45% vs 63%)

Withdrawal of Support

851 patients receiving MV in 15 Canadian ICUs

- 63.3% liberated from MV
- 17.2% died during MV
- 19.5% had MV withdrawn

Cook et al. NEJM 2003; 349:12
## Risk Factors for Withdrawal

<table>
<thead>
<tr>
<th>Factor</th>
<th>HR (95% CI)</th>
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</thead>
<tbody>
<tr>
<td>Age</td>
<td>1.07 (0.95, 1.21)</td>
</tr>
<tr>
<td>Pressors</td>
<td>1.78 (1.2, 2.66)</td>
</tr>
<tr>
<td>Prediction of survival &lt;10%</td>
<td>3.49 (1.39, 8.79)</td>
</tr>
<tr>
<td>Poor predicted cognitive function</td>
<td>2.51 (1.28, 4.94)</td>
</tr>
<tr>
<td>Physician perception that life support was not desired</td>
<td>4.19 (2.57, 6.81)</td>
</tr>
</tbody>
</table>
Aggressiveness of Care

SUPPORT cohort. 9105 patients hospitalized with serious illnesses

Measured intensity of care
  TISS scores (resources), specific treatments
  • Resource intensity decreased with age
    – 29 points age <50, 23 points age >80
  • Rates of decisions to withhold treatments increased with age
Adjusted for sex, ethnicity, income, severity of illness, baseline functional status

Also adjusted for treatment intensity, DNR on day 1, Withholding ICU care

ICU care valued by survivors

193 survivors of MICU, mean age 69
- 74% were 100% willing to undergo intensive care again for any period of life prolongation
- 4% were unwilling for any period
- Not affected by age, functional status, length of ICU stay

* Self-selected cohort

Danis et al. JAMA 1988;260:797-802
Summary

• Much of critical care practice is acute geriatric care
• Age is a minor risk factor for death relative to acute physiology
• QOL perceived by survivors is generally good
• Age is a factor in withholding ICU care
  – In part due to physician underestimation of patient wishes for interventions
• Less aggressive care may have little impact on mortality
# Acute Lung Injury and ARDS

<table>
<thead>
<tr>
<th></th>
<th>Age &lt;70</th>
<th>Age ≥70</th>
<th>P Value</th>
</tr>
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<tbody>
<tr>
<td><strong>Days of MV</strong></td>
<td>10 (5 - 26)</td>
<td>19 (7 - &gt;28)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>ICU days</strong></td>
<td>16 (8 - &gt;28)</td>
<td>21 (11 - &gt;28)</td>
<td>0.004</td>
</tr>
<tr>
<td><strong>Reintubations</strong></td>
<td>7.5%</td>
<td>16.7%</td>
<td></td>
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<tr>
<td><strong>28-day Survival</strong></td>
<td>74.6</td>
<td>50.3</td>
<td>&lt;0.001</td>
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Acute Lung Injury and ARDS

Progress to Next Level of Recovery in Survivors