Critically ill geriatrics

Marianne Kirrane
Staff Specialist Intensive Care
Royal Brisbane & Women’s Hospital
A typical conundrum at 2330...

- 92F – Nancy
- Alert and orientated
- Symptoms + signs consistent with UTI
- Investigations consistent with UTI
- PMH = myelodysplasia
- Assistance with heavy housework
  but ...
- SBP dipping to 90 despite fluid (MAP ~60)
Dilemma

To give vasopressors or not to give vasopressors...
but this entails:

• Admission to ICU
• Continuous blood pressure monitoring
• Arterial line
• Central access
Images “borrowed” from BASIC lecture “Basic haemodynamic monitoring”.
What is old?

- >65
- >70
- >80
- >85
- >90
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<tbody>
<tr>
<td>0 (birth)</td>
<td>47.2</td>
<td>67.9</td>
<td>80.4</td>
<td>50.8</td>
<td>74.2</td>
<td>84.5</td>
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<td>1</td>
<td>54.3</td>
<td>69.5</td>
<td>80.7</td>
<td>57.4</td>
<td>75.5</td>
<td>84.8</td>
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<tr>
<td>15</td>
<td>59.5</td>
<td>70.1</td>
<td>80.8</td>
<td>62.5</td>
<td>76.0</td>
<td>84.9</td>
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<tr>
<td>25</td>
<td>62.1</td>
<td>70.8</td>
<td>81.1</td>
<td>64.7</td>
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<td>85.1</td>
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<tr>
<td>45</td>
<td>68.0</td>
<td>72.4</td>
<td>82.1</td>
<td>70.6</td>
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<td>65</td>
<td>76.1</td>
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<td>88.9</td>
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<td>95</td>
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<td>98.0</td>
<td>97.3</td>
<td>97.6</td>
<td>98.3</td>
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Sources: ABS 2014a; ABS 2016 (Table S1).
The challenge of admitting the very elderly to intensive care

Yên-Lan Nguyen¹,²,³, Derek C. Angus⁴,⁵, Ariane Boumendil²,⁶ and Bertrand Guidet⁵,⁶,⁷

Abstract

The aging of the population has increased the demand for healthcare resources. The number of patients aged 80 years and older admitted to the intensive care unit (ICU) increased during the past decade, as has the intensity of care for such patients. Yet, many physicians remain reluctant to admit the oldest, arguing a “squandering” of societal resources, that ICU care could be deleterious, or that ICU care may not actually be what the patient or family wants in this instance. Other ICU physicians are strong advocates for admission of a selected elderly population. These discrepant opinions may partly be explained by the current lack of validated criteria to select accurately the patients (of any age) who will benefit most from ICU hospitalization. This review describes the epidemiology of the elderly aged 80 years and older admitted in the ICU, their long-term outcomes, and to discuss some of the solutions to cope with the burden of an aging population receiving acute care hospitalization.
In Australia, a dying person will have:
- 8 hospital admissions in the last year
- 2 ED visits
- A 60 – 70% chance of dying in hospital
The Very Elderly Admitted to ICU: A Quality Finish?*

Daren Heyland, MD, MSc¹; Deborah Cook, MD, MSc²,³; Sean M. Bagshaw, MD⁴; Allan Garland, MD⁵,⁶; Henry T. Stelfox, MD, PhD⁷,⁸; Sangeeta Mehta, MD⁹; Peter Dodek, MD, MHSc¹⁰; Jim Kutsogiannis, MD¹¹; Karen Burns, MD, MSc¹¹; John Muscedere, MD¹²; Alexis F. Turgeon, MD¹³; Rob Fowler, MDCM¹⁴; Xuran Jiang, MSc¹; Andrew G. Day, MSc¹; on behalf of the Canadian Critical Care Trials Group and the Canadian Researchers at the End of Life Network

**Design:** Multicenter, prospective cohort study.

**Setting:** ICUs of 24 Canadian hospitals.

**Participants/Setting:** Patients 80 years old or older admitted to the ICU.

**Conclusions:** In this multicenter study, one third of very elderly ICU patients died in hospital, many after a prolonged ICU stay while continuing to receive aggressive life-sustaining interventions. These findings raise questions about the use of critical care at the end of life for the very elderly. (*Crit Care Med* 2015; 43:1352–1360)
Very old patients urgently referred to the intensive care unit: long-term outcomes for admitted and declined patients

Kenneth R Hoffman, Bronwyn Loong and Frank Van Haren

>=80
Institutional variations in frequency of discharge of elderly intensive care survivors to postacute care facilities

Andrew A. Kramer, PhD; Jack E. Zimmerman, MD, FCCM

Objective: To examine variations in the frequency of discharge of elderly patients to postacute care facilities across multiple intensive care units and identify the influence of institutional and patient factors on the frequency of postacute care discharge.

Design: Observational cohort study.


Patients: A total of 13,370 admissions in patients aged ≥65 yrs who were alive at hospital discharge and met inclusion criteria.

Interventions: None.

Measurements and Main Results: Demographic, clinical, diagnostic, and physiological variables were obtained on all patients. In addition, information for each hospital and intensive care unit was recorded. Among hospital survivors, 46.2% were discharged to postacute care facilities with a range of 8.8–77.8%. A multivariable logistic regression model was developed that predicted discharge to a postacute care facility. The major variables affecting postacute care discharge were diagnosis, day 5 physiology, and day 5 therapy; these variables accounted for 61% of the model’s explanatory power. Patient age, hospital bed size, teaching status, and intensive care unit type also affected postacute care discharge. Physiology and therapy on day 1 had little impact on postacute care discharge. The model accounted for only 31% of the variation in rates across intensive care units, indicating that unmeasured factors play a part in dictating discharge location.

Conclusion: Discharge of elderly intensive care unit patients to postacute care facilities varies widely by institution. These variations are only partially explained by differences in patient and institutional characteristics and are affected more by diagnosis and physiology on day 5, respectively. Unmeasured factors such as admission from a postacute care facility, postacute care availability, patient preferences, and socioeconomic factors may account for unexplained variations in postacute care discharge. (Crit Care Med 2010; 38:2319–2326)

Key Words: intensive care units; elderly; rehabilitation; postacute care; nursing homes; Acute Physiology and Chronic Health evaluation; patient discharge planning
Recovery after critical illness in patients aged 80 years or older: a multi-center prospective observational cohort study

Take-home message: One-quarter of patients aged 80 years or older admitted to ICU survived and returned to baseline levels of physical function at one year. Routine assessment of baseline physical function and frailty status could aid in prognostication and informed decision-making for very old critically ill patients.
Very old patients urgently referred to the intensive care unit: long-term outcomes for admitted and declined patients

Kenneth R Hoffman, Bronwyn Loong and Frank Van Haren
Relationship Between ICU Length of Stay and Long-Term Mortality for Elderly ICU Survivors

Vivek K. Moitra, MD¹; Carmen Guerra, MPH¹; Walter T. Linde-Zwirble²; Hannah Wunsch, MD, MSc¹,3,4

Objectives: To evaluate the association between length of ICU stay and 1-year mortality for elderly patients who survived to hospital discharge in the United States.

Design: Retrospective cohort study of a random sample of Medicare beneficiaries who survived to hospital discharge, with 1- and 3-year follow-up, stratified by the number of days of intensive care and with additional stratification based on receipt of mechanical ventilation.

Interventions: None.

Patients: The cohort included 34,696 Medicare beneficiaries older than 65 years who received intensive care and survived to hospital discharge in 2005.

Measurements and Main Results: Among 34,696 patients who survived to hospital discharge, the mean ICU length of stay was 3.4 days (± 4.5 d). Patients (88.9%) were in the ICU for 1–6 days, representing 58.6% of ICU bed-days. Patients (1.3%) were in the ICU for 21 or more days, but these patients used 11.6% of bed-days. The percentage of mechanically ventilated patients increased with increasing length of stay (6.3% for 1–6 d in the ICU and 71.3% for ≥ 21 d). One-year mortality was 26.6%, ranging from 19.4% for patients in the ICU for 1 day, up to 57.8% for patients in the ICU for 21 or more days. For each day beyond 7 days in the ICU, there was an increased odds of death by 1 year of 1.04 (95% CI, 1.03–1.05) irrespective of the need for mechanical ventilation.

Conclusions: Increasing ICU length of stay is associated with higher 1-year mortality for both mechanically ventilated and non-mechanically ventilated patients. No specific cutoff was associated with a clear plateau or sharp increase in long-term risk. (Crit Care Med 2016; 44:655–662)
Outcome of elderly patients with circulatory failure

![Bar chart showing 28-day mortality (%) by age group. The x-axis represents age in years, ranging from <25 to 90+. The y-axis represents 28-day mortality percentage, ranging from 0 to 90%.](chart.png)
<table>
<thead>
<tr>
<th></th>
<th>Not old (&lt;75 years)</th>
<th>Old (75–84 years)</th>
<th>Very old (≥85 years)</th>
<th>p value</th>
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<tbody>
<tr>
<td></td>
<td>n = 1,157</td>
<td>n = 410</td>
<td>n = 84</td>
<td></td>
</tr>
<tr>
<td>ICU discharge</td>
<td>667 (58)</td>
<td>164 (40)</td>
<td>28 (33)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>28 days</td>
<td>649 (56)</td>
<td>146 (36)</td>
<td>21 (25)</td>
<td>&lt;0.001</td>
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<tr>
<td>Hospital discharge</td>
<td>546 (48)</td>
<td>121 (30)</td>
<td>19 (23)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>6-month survival</td>
<td>439 (41)</td>
<td>80 (21)</td>
<td>6 (8)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>12-month survival</td>
<td>311 (34)</td>
<td>57 (16)</td>
<td>2 (3)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

**Take-home message:** In patients with circulatory failure age is an independent factor associated with a poor outcome. At 1 year, most patients aged 85 year or older were dead.
Effect of Systematic Intensive Care Unit Triage on Long-term Mortality Among Critically Ill Elderly Patients in France: A Randomized Clinical Trial

Bertrand Guidet, MD; Guillaume Leblanc, MD; Tabassome Simon, MD, PhD; Maguy Woinant, MD; Jean-Pierre Quenot, MD; Olivier Ganansia, MD; Maxime Maignan, MD; Youri Yordanov, MD; Samuel Delerme, MD; Benoit Doumenc, MD; Muriel Fartoukh, MD; Pierre Charestan, MD; Pauline Trognon, MD; Bertrand Galichon, MD; Nicolas Javaud, MD; Anabela Patzak, MD; Maité Garrouste-Orgeas, MD; Caroline Thomas, MD; Sylvie Azerad, PharmD; Dominique Pateron, MD; Ariane Bournendil, PhD; for the ICE-CUB 2 Study Network

**IMPORTANCE** The high mortality rate in critically ill elderly patients has led to questioning of the beneficial effect of intensive care unit (ICU) admission and to a variable ICU use among this population.

**OBJECTIVE** To determine whether a recommendation for systematic ICU admission in critically ill elderly patients reduces 6-month mortality compared with usual practice.

**DESIGN, SETTING, AND PARTICIPANTS** Multicenter, cluster-randomized clinical trial of 3037 critically ill patients aged 75 years or older, free of cancer, with preserved functional status (Index of Independence in Activities of Daily Living ≥4) and nutritional status (absence of cachexia) who arrived at the emergency department of one of 24 hospitals in France between January 2012 and April 2015 and were followed up until November 2015.
The trial by Guidet et al demonstrates that a strategy designed to promote medical need successfully doubled the use of systematic ICU admission for older patients yet yielded no benefit in mortality but after adjustment for baseline characteristics had no significant effect on mortality for baseline functional status, or physical health-related quality of life at 6 months. The observed statistically significant difference in mortality rate and hospital stay was caused by a higher ICU admission rate and possibly led to a higher hospital stay rate and possibly led to a higher ICU admission rate and possibly led to a higher hospital stay rate and possibly led to a higher ICU admission rate and possibly led to a higher hospital stay rate.
Frailty

Usually described as

“a clinical state of increased vulnerability to poor resolution of homoeostasis after a stressor event which increases the risk of adverse outcomes, including falls, delirium, and disability”
Prevalence of frailty and disability: findings from the English Longitudinal Study of Ageing

Catharine R. Gale¹ ², Cyrus Cooper¹, Avan Aihie Sayer¹
The impact of frailty on ICU and 30-day mortality and the level of care in very elderly patients (≥ 80 years)

Hans Flaatten1,2*, Dylan W. De Lange3, Alessandro Morandi4,5, Finn H. Andersen6,7, Antonio Artigas8, Guido Bertolini10, Ariane Boumendil11, Maurizio Cecconi12, Steffen Christensen9, Loredana Faraldi13, Jesper Fjølner9, Christian Jung14, Brian Marsh15, Rui Moreno16, Sandra Oeyen17, Christina Agwald Öhman18, Bernardo Bollen Pinto19, Ivo W. Soliman20, Wojciech Szczeklik21, Andreas Valentín22, Ximena Watson12, Tilemachos Zaferidis23, Bertrand Guidet24,25,26 on behalf of the VIP1 study group

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Fig. 2  Association between frailty scale and 30-day outcome
**Clinical Frailty Scale**

1. **Very Fit** – People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.

2. **Well** – People who have no active disease symptoms but are less fit than category 1. Often, they exercise or are very active occasionally, e.g. seasonally.

3. **Managing Well** – People whose medical problems are well controlled, but are not regularly active beyond routine walking.

4. **Vulnerable** – While not dependent on others for daily help, often symptoms limit activities. A common complaint is being “slowed up”, and/or being tired during the day.

5. **Mildly Frail** – These people often have more evident slowing, and need help in high order IADLs (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.

6. **Moderately Frail** – People need help with all outside activities and with keeping house. Inside, they often have problems with stairs and need help with bathing and might need minimal assistance (cuing, standby) with dressing.

7. **Severely Frail** – Completely dependent for personal care, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~ 6 months).

8. **Very Severely Frail** – Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.

9. **Terminally Ill** - Approaching the end of life. This category applies to people with a life expectancy < 6 months, who are not otherwise evidently frail.

**Scoring frailty in people with dementia**

The degree of frailty corresponds to the degree of dementia. Common symptoms in mild dementia include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In moderate dementia, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In severe dementia, they cannot do personal care without help.

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A simple frailty screening tool such as the Clinical Frailty Scale adds value to the global assessment of VIPs, and frailty is a significant factor for reduced 30-day survival. However, we found that acute ICU admission had the strongest impact on survival, while age had a smaller impact. Future studies are required to clarify how we can include frailty and its significance in ICU predictive scores.
For frail patients

= 5 or more on Clinical Frailty Scale

• No difference in ICU LoS or mortality

• Hospital Mortality 33% vs 23%

• Discharge to NH 33% vs 12%

• 12m Mortality 55% vs 35%
Nancy

• 92F
• Alert and orientated
• Symptoms + signs consistent with UTI
• Investigations consistent with UTI
• PMH = myelodysplasia
• Assistance with heavy housework
  but ...
• SBP dipping to 90 despite fluid (MAP ~60)
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<td>3 Managing Well – People whose medical problems are well controlled, but are not regularly active beyond routine walking.</td>
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In severe dementia, they cannot do personal care without help.


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My approach...

• Benefit vs risk

  = What will the overall cost to her be?
  • Will she need an intervention?
  • If she needs an intervention, how long for?
  • What will her outcome be at ICU discharge?
  • What will her outcome be at hospital discharge?
  • What will her outcome be at 6 months?
  • What will her outcome be at 12 months?
Are elderly patients’ opinions sought before admission to an intensive care unit? Results of the ICE-CUB study

Julien Le Guen¹, Ariane Boumendil², Bertrand Guidet³, Aline Corvol⁴,⁵, Olivier Saint-Jean¹, Dominique Somme⁵

Key points

• Elderly patients’ wishes are rarely sought.
• Dementia and loss of functional autonomy are disadvantagous.
• Younger physicians do better.
So I ask... what they want from this healthcare episode and what they would accept.

FOR SOME PEOPLE THERE IS A FATE WORSE THAN DEATH!
Would I admit her?

• Yes
  – only if she wants it knowing the quality of life impact longer-term
  – only for a rapidly reversible condition eg urosepsis

PNEUMONIA  TRAUMA
MALIGNANCY COMPLICATIONS
PERITONITIS  BURNS
AFTER A #NOF  AFTER ELECTIVE SURGERY
State variations

2.2 Life-sustaining measures

Queensland’s legislation defines this as follows:

(1) A life-sustaining measure is health care intended to sustain or prolong life and that supplants or maintains the operation of vital bodily functions that are temporarily or permanently incapable of independent operation.

(2) Artificial nutrition and hydration.

(3) A blood transfusion is not a life-sustaining measure.

Life-sustaining measures may be withheld or withdrawn without consent only in exceptional circumstances, such as acute emergency situations, and only where the medical officer responsible for the patient’s care is not aware that the patient has made it clear that he or she ‘wanted everything done’ in the event that they lost capacity (in other words, that they have objected to the withholding or withdrawal of medical treatment).

This conversation is crucial. A rushed conversation and decision – the “do you want us to do everything” talk – is very hard to undo.
References

References (2)