Improving Short and Long term outcomes for the elderly and frail critical care patient

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Considerations

• Current patient care pathways
• Relevant characteristics of the elderly ICU survivor “phenotype”
• What do ICU survivors need – a brief look at qualitative literature
• What do patients actually need: data from the PROFILE study?
• A post critical care survivor pathway
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The critical illness pathway: a progressive dilution of knowledge and focus
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- Specialist medical (and nursing staff)
- Low consistency of medical staff (especially junior)
- Competing with Allied Health Professionals time
- Low staff to patient and family ratio
**ICU**

- "Rare event" condition/illness
- High consistency of medical staff (patient and family)
- Ad hoc and limited access to Allied Health Professionals
  - Awareness
  - Resource

The critical illness pathway: a progressive dilution of knowledge and focus
Current pathways

• Following ICU discharge specialty-based
• The consequences of ICU survivorship largely anonymous among public, professionals, and public
• Lack of identity in public perception
• Marked contrast to well-recognised conditions such as cancer, stroke, or “rare disease”
• Little input from:
  – Charities
  – “third” sector organisations
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The Post-Intensive Care Syndrome


• Decline in physical, psychological, or cognitive status following a critical illness

• Characterised by:
  – **Physical**: fatigue, muscle weakness, joint stiffness, pain, mobility issues
  – **Psychological**: anxiety, depression, PTSD
  – **Cognitive**: Acute cognitive decline

• Reduced HRQoL and ADLs
The elderly

Characterised by higher prevalence of:

• Co-morbidity and multi-morbidity
• Frailty
• Impaired ADLs/function
• Lower Health-Related Quality of Life
Mortality among ICU survivors: Scottish population-level data

- Greatest mortality in older patients
- **Strongest predictors of excess mortality measures of chronic illness: comorbidity and previous hospital admissions**

Lone et al. AJRCCM 2016 PMID: 26815887
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Re-building life after ICU: A qualitative study of the patients’ perspective

Kate S. Deacon*

Figure 1 Model illustrating the three themes of rehabilitation need.
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Unplanned hospital readmission

- Widely used quality indicator
- Useful marker of potential "system failure"
- "Construct" that includes multiple factors
  - Acute medical drivers
  - Chronic health drivers
  - Social and health support
  - Organisational issues
- Economically relevant
Hospital resource use: unplanned readmissions during 5 years post index ICU admission
Lone et al. AJRCCM 2016 PMID: 26815887

Overall risk of unplanned hospital readmission:
≈25% within 90 days
≈55% within 1 year
Hospital resource use: unplanned readmissions during 5 years post index ICU admission
Lone et al. AJRCCM 2016 PMID: 26815887

- Cost dominated by hospital readmissions
- Greatest overall burden in older comorbid patients who required pre-ICU hospital admissions (“less modifiable”)
- Greatest attributable burden in younger non-comorbid patients (“possibly modifiable”?)
- Populations dominated by older comorbid patients
Preventing early unplanned hospital readmission after critical illness (PROFILE): protocol and analysis framework for a mixed methods study

Timothy S Walsh, Lisa Salisbury, Eddie Donaghy, Pamela Ramsay, Robert Lee, Janice Rattray, Nazir Lone

System Factors
- Preparation and discharge planning
- Support
- Health Board characteristics
- Communication and co-ordination of care
- Patient
- Health and Social Care Services

Clinical Factors
- ICU experience
- Length of ICU and hospital stay
- Diagnosis
- Illness severity
- Co-morbidities
- Previous hospitalisations
- Polypharmacy
- Adverse events

In Hospital

In Community

Patient Factors
- Age
- Social support
- Quality and presence of carer support
- Health behaviours (substance misuse)
- Physical & psychological problems
- Socio-economic status
- Educational level
- Literacy (health, numeracy etc.)
PROFILE: A Mixed Methods Approach

Quantitative Analysis
- Data acquisition, cleaning, linkage
- Definition of exposures
- Analysis and modelling
- Deductive identification of factors independently associated with greater risk of unplanned hospital readmission
- Final report of analysis of quantitative data

Integration
- Consultation with independent expert group
- Group triangulation and cross checking of qualitative and quantitative data
- Initial construct explaining readmission drivers
- Focus groups with patients/carers from six Scottish Health boards
- Focus group analysis and report
- Consultant with independent expert group
- Final construct explaining drivers to unplanned hospital readmission

Qualitative Analysis
- Recruitment of patients/carers
- Interviews, transcription
- Thematic analysis
- Inductive emergence of key themes describing issues associated with or responsible for unplanned hospital readmission
- Final report of analysis of qualitative data
‘Big data’ approach

- Outpatient database
  SMR00

- Prescribing database
  PRISM

- Hospital database
  SMR01

- ICU registry
  SICSAG

- Cancer registry
  SMR06

- Death records
  NRS

- Psychiatric admissions database
  SMR04

Walsh et al, 2016; BMJ Open 6:e012590 doi:10.1136/bmjopen-2016-012590
Analysis of Scottish Critical Care Population

- Scottish residents aged ≥16 admitted to and discharged from general ICUs in Scotland between 01/01/2005 to 31/12/2013 who survived to hospital discharge (index admission).
  - 55,975 patients
  - Median age was 60 years (IQR 45, 71),
  - 31.3% unplanned hospital admission during the year before their index hospital admission.
  - 56.4% had at least one comorbidity
Analysis of Scottish Critical Care Population

• Outcome: unplanned hospital readmission within 90 days

• Exposures/predictors:
  – **Demographic variables**: sex, age, Scottish Index of Multiple Deprivation, and remoteness of residence
  – **Pre-existing patient health**: admissions/attendances in year prior to index hospital stay; comorbidities (count and individual comorbidities)
  – **Indices of critical illness severity**: ICU admission type (elective surgery, unplanned surgery, non-operative); ICU diagnosis, acute physiology score (APS); Acute Physiology and Chronic Health Evaluation (APACHE) II score; organ support; length of stay variables
Identifying drivers for readmission
Qualitative study

Individual interviews
• Identified patients requiring early unplanned readmission from hospital records
  – 3 health board regions of Scotland
• Semi-structured interview with patient/carer
  – Based on literature review/expert panel input
  – Drivers and reasons for readmission and “failure” at home following discharge
• 29 patients/29 carers interviewed
• Thematic analysis until saturation

Confirmatory Focus groups
• 5 focus groups with different patients/carers across 5 Scottish Health Boards (n=43 participants)
Themes Driving Readmission

System-level factors

• Support Issues within hospital:
  – Preparing Patient & Carer on what to do/expect
  – Potential Physical, Psychological, Pharmaceutical, Lifestyle & Social Consequences of ICU Admission

• Communication Issues relating to care transition between Acute and Primary Care Services
  – Details of patient’s ICU admission and post ICU needs including support by community health and/or social service

• Lack of support in relation to Psychological and Pharmaceutical issues
Themes Driving Readmission

Patient-level factors

- Chronic illness and Multi-morbidity prior to admission
- Pre-existing Depression/Anxiety
- Pharmacy issues
  - Polypharmacy; changes in drug regimen
- Specialist equipment requirement following discharge
  - Adaptations/aids; delays in provision
- Reduced Mobility
  - Reliance on mobility aids
- Heavy reliance on single unpaid carer
  - Functioning; Social Support; Social Isolation
- Inadequate or unrealistic Goals and Targets for Recovery
- Low levels of resilience
Preventable Readmission

• Approximately 50% patients described medical drivers for readmission that were unavoidable (ie illness)
  – Considered readmission “unavoidable”

• Approximately 50%
  – Multiplicity of system and patient level factors
  – Strong theme of inadequate support and coordination focussed on their multiple problems
  – Lack of coordination from post-ICU hospital stay through to community
  – Considered readmission potentially preventable
Declining health trajectory
- Co-morbidities
- Previous hospitalisations
- Frailty
- Psychological impairments

Acute “hit” of critical illness

Step-decline
- Cognitive functioning
- Physical function

Psychological sequelae (patient and carer)
- Trauma
- Anxiety/depression
- Reduced resilience

“Chaotic” Survivorship pathway
Failure to maximise recovery potential
Reduced HRQoL (patient/carers)
High ongoing health-social care utilisation
## Screening for risk

<table>
<thead>
<tr>
<th>DOMAIN</th>
<th>RISK FEATURES</th>
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<tbody>
<tr>
<td>HISTORY OF HOSPITAL ADMISSIONS</td>
<td>Multiple hospitalisations over past 12 months</td>
</tr>
<tr>
<td></td>
<td>3 or more unplanned admissions “red flag” (&gt;40% risk)</td>
</tr>
</tbody>
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Improving outcomes among elderly ICU survivors

- System level recognition of the pre-critical illness health care trajectory vital:
  - Unplanned hospital admissions
  - Multi-morbidity
  - Polypharmacy
- The triad of “post-ICU syndrome” features is frequently superimposed on chronic illness and/or frailty
- Social factors and social care issues are important

- Patient pathways are needed that identify and support the “perfect storm” that can face the critical care survivor
  - Organisational/system-level
  - Patient level