Strategies for Enhancing Sepsis Survivorship

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Ohio Hospital Association
August 16, 2016
Disclosures

- I have no relevant financial conflicts of interest

- Key Funding
  - NIH/NIGMS
  - American Thoracic Society Foundation

- This talk does not necessarily represent the views of the U.S. Government or Department of Veterans Affairs
Last Time
July Conclusions

- Sepsis survivors face heightened risk for death. 1 in 5 sepsis survivors with a late death attributable to sepsis.
- Over half of patients acquire new physical disability.
- Cognitive decline common; ~15% with mod-severe impairment
- Anxiety, depression, PTSD each affect ~1/3 of survivors – but not necessarily worse after sepsis.
- Healthcare use and readmission are common. Often due to the same “usual suspects”—that we know how to treat: infection, CHF, AKI, COPD, aspiration.
- Risk for Infection, AKI, aspiration, and CV events are increased in sepsis survivors.
Question

What can we do to improve long-term survivorship after sepsis?
Outline

• Review the (small) evidence base of post-hospital interventions for survivors of sepsis / critical illness.
• My “Top 8” list
SMOOTH Study

- RCT of a primary care-based intervention
- 291 Sepsis survivors, recruited from 9 ICUs in Germany
- Intervention:
  - PCP & patient education
  - Case management by critical care nurses, focusing on symptoms
  - Clinical decision support by intensivist
- Primary Outcome: Mental Health-related QOL at 6 months
- Secondary: 32 measures as 6 and 12 months.
SMOOTH Study Results

• Primary Outcome (Mental Health) – no difference
• Secondary Outcomes
  – Survival
  – QOL (SF-36 Subscales)
  – Mental Health (depression, PTSD, cognition)
  – Self health-assessment
  – Healthcare Utilization
  – Functional outcomes → 5 measures with significant treatment effect
    • Median ADL capabilities at 6 and 12 months, ~1 ADL better
    • Lower disability and better physical function at 6 months
    • Less insomnia at 12 months
## RCTs of Post-Discharge Rehab

Improvements are generally small and not sustained. Studies were all <200 patients.

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Control</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jones, et al. 2003</td>
<td>6-wk self-help rehabilitation manual</td>
<td>ICU follow-up program with 2 ward visits, 3 calls, and ICU follow-up clinic visit at 2 and 6 mos.</td>
<td>Faster improvement in physical function (SF-36).</td>
</tr>
<tr>
<td>Elliot, et al. 2011</td>
<td>8-wk home PT (3 visits) and rehabilitation manual.</td>
<td>Routine PCP follow-up.</td>
<td>No significant treatment effect, but post-hoc analysis showed possible benefit.</td>
</tr>
</tbody>
</table>
## RCTs of ICU Follow-up, Case Mgmt

No treatment effect.

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<th>Control</th>
<th>Outcome</th>
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<tr>
<td>Daly, et al. 2005</td>
<td>2-month disease mgmt program including care coordination, family support,</td>
<td>Usual care</td>
<td>No difference in readmission or time to readmission. Fewer days spent</td>
</tr>
<tr>
<td>Douglas, et al. 2007</td>
<td>education, and treatment monitoring by APRN, with geriatrician and pulmonary</td>
<td></td>
<td>readmitted 11.4, vs 16.7, ( p = 0.03 ).</td>
</tr>
<tr>
<td></td>
<td>support.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cuthbertson, et al. 2009</td>
<td>RN-led ICU follow-up clinic at 3 and 9 mos.</td>
<td>Usual care</td>
<td>No significant treatment effect for mortality, QOL, anxiety, or depression.</td>
</tr>
<tr>
<td></td>
<td>RN-led ICU follow-up clinic at 1-3 mos. and 2 phone calls.</td>
<td>Usual care.</td>
<td>No significant treatment effect for QOL, anxiety, depression, or sense of</td>
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</table>
Association of Post-Discharge Rehabilitation with Mortality in Intensive Care Unit Survivors of Sepsis

Pei-wen Chao\textsuperscript{1,2*}, Chia-Jen Shih\textsuperscript{3,4*}, Yi-Jung Lee\textsuperscript{4,5}, Ching-Min Tseng\textsuperscript{4,6}, Shu-Chen Kuo\textsuperscript{4,7,8}, Yu-Ning Shih\textsuperscript{9}, Kun-Ta Chou\textsuperscript{4,10}, Der-Cherng Tamg\textsuperscript{4,11}, Szu-Yuan Li\textsuperscript{4,11}, Shuo-Ming Ou\textsuperscript{4,11,12}, and Yung-Tai Chen\textsuperscript{4,13}

- observational study of over 30,000 sepsis survivors
- rehabilitation associated with a survival benefit to 10-years (aHR=0.94, p<0.001)
Interim Conclusions

• Existing studies show possible, small benefits, largely isolated to functional outcomes.
• Best practices for enhancing sepsis survivorship have not been defined.
My “Top 8” List for enhancing survivorship after sepsis
1. Timely and Effective Sepsis Treatment

- Broad-spectrum Abx
- 30ml/kf IVF if SBP<90 or lactate>2
- Source control

_Evidence_: Time to treatment associated with ↓ mortality.
- Seymour, _et al._ *NEJM*. 2017
- Liu, _et al._ *AJRCCM*. 2017
1. Timely and Effective Sepsis Treatment, cont’d

- Broad-spectrum Abx
- 30ml/kf IVF if SBP<90 or lactate>2
- Source control

**Evidence:** Health system-wide QI targeting these elements is associated with reduced mortality.
- Miller, *et al.* AJRCCM. 2013
2. Avoidance of iatrogenic Harms

A: Assess and treat pain
B: Both SAT and SBT
C: Choice of sedation / analgesia
D: Delirium screening and prevention
E: Early mobility
F: Family Engagement and Empowerment

Evidence:
3. Early Mobility

Early mobility, to the goal of ambulation on mechanical ventilation, should be initiated as early as possible.

Evidence: Schweickert, et al. *Lancet*. 2009. Indep fxn in 58% vs 35%, p=0.02
4. Pay Attention to Discharge Medications
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- Chronic medications discontinued (e.g. synthroid, gastric acid suppression, anticoagulants, and statins.)
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• Chronic medications discontinued
  (e.g. synthroid, gastric acid suppression, anticoagulants, and statins.)

• Acute medications continued
  (eg. antipsychotics, antidepressants, benzodiazepines, gastric acid suppression, inhalers)

5. Prepare Patients

“Do medical teams in your ICU have formal discussions with patients or family members regarding challenges or changes to their lives after ICU discharge?”

- Almost Never: 17%
- Only for the Sickest Patients: 27%
- It varies widely across practitioners: 37%
- With many but not all patients: 17%
- With almost every patient: 2%
5. Prepare Patients, cont’d

Available videos on SCCM site:
“THRIVE: Redefining Recovery”
“Discharge from the ICU”
“Pediatric Post-Intensive Care Syndrome”
“Pediatric PICS and Family”
“Wellness after the ICU”
5. Prepare Patients: Other resources

What You Need To Know About Post-Intensive Care Syndrome (PICS)
What you can do to prevent and recognize the signs and symptoms of PICS

What is PICS?
Post-intensive care syndrome, also known as PICS, is a group of symptoms that may occur in people after discharge from an Intensive Care Unit (ICU). PICS can affect daily living, slow thinking, or cause difficulties with processing thoughts.

What are the Symptoms of PICS?
Symptoms are divided into three main groups: thinking (cognitive) problems, emotional problems and physical problems. Problems in one area may cause new or worsening function in another area.
Cognitive problems may include:
- Reduced attention and ability to concentrate
- Memory loss
- Slower thought processing speed
- Difficulty making decisions
These problems can lead to difficult communication

Emotional problems may include:
- Anxiety - excessive worry, irritability, sleepiness
- Depression - tiredness, loss of interest, lack of hunger
- Post-traumatic stress disorder - flashbacks, severe anxiety, touchiness

Physical problems may include:
- Slower movements
- Multiple falls
- Muscle weakness in entire body

PICS symptoms may occur before or after discharge from the ICU. Talk to your doctor if the patient is not able to do normal daily activities.
Pulmonary and Critical Care Medicine
5. Prepare Patients: Other resources, cont’d

Patient education websites:

Post-Sepsis:
Sepsis Alliance home page (www.sepsisalliance.org) Hundreds of patient profiles, indexed by key words.

Post-Critical Illness:
Health Talk home page (www.healthtalk.org) 27 video profiles and 87 articles on critical illness
ICUsteps home page (www.icusteps.org) informational site and ICU and common illnesses
6. Focus on the “Big 5” after discharge
6. Focus on the “Big 5” after discharge, 2

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Severe Sepsis (n = 2617)</th>
<th>No. of Survivors</th>
<th>% (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sepsis</td>
<td>167</td>
<td>6.4 (5.4-7.3)</td>
<td></td>
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<tr>
<td>Congestive heart failure</td>
<td>144</td>
<td>5.5 (4.6-6.4)</td>
<td></td>
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<tr>
<td>Pneumonia</td>
<td>92</td>
<td>3.5 (2.8-4.2)</td>
<td></td>
</tr>
<tr>
<td>Acute renal failure</td>
<td>87</td>
<td>3.3 (2.6-4.0)</td>
<td></td>
</tr>
<tr>
<td>Rehabilitation</td>
<td>74</td>
<td>2.8 (2.2-3.5)</td>
<td></td>
</tr>
<tr>
<td>Respiratory failure</td>
<td>65</td>
<td>2.5 (1.9-3.1)</td>
<td></td>
</tr>
<tr>
<td>Complication of device, implant, or graft</td>
<td>52</td>
<td>2.0 (1.5-2.5)</td>
<td></td>
</tr>
<tr>
<td>COPD exacerbation</td>
<td>49</td>
<td>1.9 (1.4-2.4)</td>
<td></td>
</tr>
<tr>
<td>Aspiration pneumonitis</td>
<td>47</td>
<td>1.8 (1.3-2.3)</td>
<td></td>
</tr>
<tr>
<td>Urinary tract infection</td>
<td>44</td>
<td>1.7 (1.2-2.2)</td>
<td></td>
</tr>
</tbody>
</table>
6. Focus on the “Big 5” after discharge,

- Infection
- CHF Exacerbation
- Acute Renal Failure
- COPD Exacerbation
- Aspiration Pneumonitis
6. Focus on the “Big 5” after discharge, 4

Infection → confirm/update vaccines, council patients, eval s/s of infection

CHF Exacerbation

Acute Renal Failure

COPD Exacerbation

Aspiration Pneumonitis
6. Focus on the “Big 5” after discharge,

Infection \( \rightarrow \) confirm/update vaccines, council patients, eval s/s of infection

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COPD Exacerbation

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Acute Renal Failure → med rec/titration, monitoring

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COPD Exacerbation $\rightarrow$ med rec/titration of inhalers, respiratory suppressants

Aspiration Pneumonitis
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Infection → confirm/update vaccines, council patients, eval s/s of infection

CHF Exacerbation → med rec/titration, consider change to gfr, LVEF

Acute Renal Failure → med rec/titration, monitoring

COPD Exacerbation → med rec/titration of inhalers, respiratory suppressants

Aspiration Pneumonitis → consider formal SLP eval/tx for dysphagia, weakness, cognitive impairment, and/or “recurrent pneumonia”
7. Empower Patients to Help Each Other

Peer Support Groups
7. Empower Patients to Help Each Other,

**Upcoming Virtual Support Groups**

Weekly virtual support groups offer an option to call in or use video conferencing, if your computer has a camera.

Every Wednesday

Join via Phone
Dial: +1 646 558 8656 (US Toll) or +1 408 638 0968 (US Toll)
  Meeting ID: 186 888 525
  International numbers available: [https://zoom.us/zoomconferencehtht](https://zoom.us/zoomconferencehtht)

Join via Video using Zoom
[https://zoom.us/j/186888525](https://zoom.us/j/186888525)

Closed group: “THRIVE for ICU patients/families”
8. Increase Function: Use It or Lose It

• Screen for functional impairment at hospital discharge and first outpatient follow-up:
  – E.g. ADL limitations, 6 minute walk, Timed Up and Go test

• Address new weakness and functional impairment
  – Structured exercise program
  – Physical therapy
  – Occupational therapy
  – Cardiac or pulmonary rehabilitation
Top 8 List for Enhancing Survivorship

1. Timely and effective inpatient sepsis treatment
2. Avoidance of iatrogenic harms
3. Early mobility
4. Attention to discharge meds (reconcile and titrate)
5. Prepare patients about what to expect
6. Focus on “Big 5” causes of preventable readmission
7. Peer Support
8. Promote functional recovery
Other Things to Keep in Mind....

- For patients declining prior to sepsis, it may be appropriate to focus on palliation.
Other Things to Keep in Mind …

- Be weary of the “kitchen sink” approach

**Plan:**
New psychotropic medications
Referral to mental health professionals
ICU follow-up Clinic
Cognitive Therapy
Physical Therapy
Occupational Therapy
Speech Therapy
Pulmonologist
PCP
Cardiologist
Nephrologist
Endocrinologist
Other Things to Keep in Mind ...

**Workload**: all the work of being a patient; efforts to understand and plan care, enroll support of others, access and use healthcare services

**Capacity**: quality and availability of resources to carry out the work of being a patient.

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**Figure 1. The Cumulative Complexity Model**

Patient context is represented as a balance between workload and capacity. This balance must be optimized to ensure care effectiveness and improve outcomes. In turn, the outcomes achieved feed back to affect the workload-capacity balance.
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9. Consider palliative approach
10. Avoid the “kitchen sink” approach
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Questions

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