ICU SURVIVORSHIP

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Pulmonary and Critical Care
M Health Fairview
June 11, 2020
Background

• Greater than five million individuals are admitted to ICUs in the United States (U.S.) annually, and those numbers are only expected to rise given our aging population.

• With the decrease in ICU mortality, more patients are surviving their critical illnesses, and subsequently face prolonged and complicated recoveries.
Opinion

My I.C.U. Patient Lived. Is That Enough?

By Daniela J. Lamas

April 1, 2017

Surviving ventilators, only to find lives diminished

Amid widespread use for coronavirus, breathing machines’ long-term effects on patients raise concern

By Felice J. Freyer Globe Staff, Updated April 25, 2020, 2:37 p.m.

THE CORONAVIRUS CRISIS

After The ICU, Many COVID-19 Survivors Face A Long Recovery

April 21, 2020 · 4:15 PM ET
Definition

• Post-Intensive Care Syndrome (PICS) describes new or worsening impairments in mental, cognitive, or physical health after critical illness that persist beyond an acute care hospitalization, and in some patients, for months to years after an ICU stay.
ICU Survivorship

50–70% cognitively impaired
60–80% functionally impaired
?% psychiatric conditions

Case Presentation

• 58 yo self-employed builder presents to Glasgow Royal Infirmary with gall stone pancreatitis.
  – 19 day ICU stay, including 3 days vent.
  – At discharge:
    o Could do < 2.5 mets of exercise
    o Grip strength less than half of normal
    o NGT with enteral feeding
    o 2 months later, he and his wife had not returned to work
    o Felt abandoned by care team, no idea where to turn for help

Recent communication from an ICU survivor

The following are selected comments from a 40-year-old college-educated ICU survivor (acute respiratory distress syndrome) writing to her internist (E.W.E.) 2 years after her discharge:

I hate to be a bother, but I have some questions about the problems that I am having. Since you cared for me in the ICU, I have been out of the hospital and trying to get on with my life for the past 2 years. Primarily, how long my memory will be effected? I am having daily problems with many different things. I have trouble with people’s names that I have worked with for years. I can’t remember where I put things at home. I can’t help my children with their homework because I don’t remember how to do simple multiplication problems. It is so embarrassing that I cant balance my check book and keep having these bounced checks. Goodness, I am a college graduate! This is really effecting my day to day life. Is there any way I can find out to what extent this will effect my memory and for how long? I just want to know what to expect and is there any way for me to improve my situation? Please contact me with any information regarding my condition.
<table>
<thead>
<tr>
<th>Reference</th>
<th>Population</th>
<th>Age (years)</th>
<th>Test Interval</th>
<th>No. of tests</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jackson et al. [6]</td>
<td>34 ICU survivors</td>
<td>53.2±15.3</td>
<td>6 months after hospital discharge</td>
<td>9</td>
<td>30% of patients experienced generalized cognitive decline at 1 year on at least one of the following: memory, attention/concentration, processing speed</td>
</tr>
<tr>
<td>Rothenhausler et al. [13]</td>
<td>46 ARDS survivors</td>
<td>41.5±14.7</td>
<td>Median 6 years after ICU discharge</td>
<td>1 with 9 subtests</td>
<td>24% of patients displayed moderate/severe cognitive impairment in attention and memory, 100% of whom were disabled (unable to work)</td>
</tr>
<tr>
<td>Hopkins et al. [12]</td>
<td>55 ARDS survivors</td>
<td>45.5±16.0</td>
<td>12 months after hospital discharge</td>
<td>6 with multiple subtests</td>
<td>32% of patients were cognitively impaired to a degree consistent with at least mild dementia</td>
</tr>
</tbody>
</table>

### Abstractions

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Al-Saidi et al. [61]</td>
<td>87 ARDS survivors</td>
<td>Median 44</td>
<td>12 months after hospital discharge</td>
<td>1</td>
<td>20% rated memory as poor, 38% reported severe depression</td>
</tr>
<tr>
<td>Hopkins et al. [65]</td>
<td>67 ARDS survivors</td>
<td>45.9±16.4</td>
<td>Hospital discharge, 12 and 24 months after hospital discharge</td>
<td>6 (3 with multiple subtests)</td>
<td>Impaired in general intelligence, memory, attention/concentration, processing speed or executive function at 1 and 2 years; significant improvement in cognitive function in 1 year; little additional improvement from 1 to 2 years</td>
</tr>
<tr>
<td>Marquis et al. [66]</td>
<td>33 ARDS survivors and 23 critically ill controls</td>
<td>NA</td>
<td>At least 1 year after ARDS</td>
<td>NA</td>
<td>Cognitive impairments in attention, visual processing, psychomotor speed, and cognitive flexibility (more prevalent in ARDS survivors than controls)</td>
</tr>
</tbody>
</table>

### Case reports

<table>
<thead>
<tr>
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<th>No. of tests</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>Jackson et al. [87]</td>
<td>1 ARDS survivor</td>
<td>49</td>
<td>7 months after hospital discharge</td>
<td>9</td>
<td>Impairment in attention, executive dysfunction, and visual memory; decline of +2 SD from baseline on measures of verbal, performance, and full-scale IQ</td>
</tr>
<tr>
<td>Hopkins et al. [88]</td>
<td>2 Hanta virus survivors</td>
<td>56/67</td>
<td>12 months after hospital discharge</td>
<td>7 (3 with multiple subtests)</td>
<td>Impaired attention, memory, mental processing speed, and mild generalized cognitive decline</td>
</tr>
</tbody>
</table>

COVID-19 and the ICU
Epidemiology Of Covid-19 Admissions

FIGURE 2: Coronavirus disease 2019 (COVID-19) hospitalizations, intensive care unit (ICU) admissions, and deaths, by age group—United States, February 12–March 16, 2020

TABLE. Hospitalization, intensive care unit (ICU) admission, and case-fatality percentages for reported COVID-19 cases, by age group—United States, February 12–March 16, 2020

<table>
<thead>
<tr>
<th>Age group (yrs) (no. of cases)</th>
<th>Hospitalization</th>
<th>ICU admission</th>
<th>Case-fatality</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–19 (123)</td>
<td>1.6–2.5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>20–44 (705)</td>
<td>14.3–20.8</td>
<td>2.0–4.2</td>
<td>0.1–0.2</td>
</tr>
<tr>
<td>45–54 (429)</td>
<td>21.2–28.3</td>
<td>5.4–10.4</td>
<td>0.5–0.8</td>
</tr>
<tr>
<td>55–64 (429)</td>
<td>20.5–30.1</td>
<td>4.7–11.2</td>
<td>1.4–2.6</td>
</tr>
<tr>
<td>65–74 (409)</td>
<td>28.6–43.5</td>
<td>8.1–18.8</td>
<td>2.7–4.9</td>
</tr>
<tr>
<td>75–84 (210)</td>
<td>30.5–58.7</td>
<td>10.5–31.0</td>
<td>4.3–10.5</td>
</tr>
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<td>≥85 (144)</td>
<td>31.3–70.3</td>
<td>6.3–29.0</td>
<td>10.4–27.3</td>
</tr>
<tr>
<td>Total (2,449)</td>
<td>20.7–31.4</td>
<td>4.9–11.5</td>
<td>1.8–3.4</td>
</tr>
</tbody>
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* Hospitalization status missing or unknown for 1,514 cases.
1 ICU status missing or unknown for 2,253 cases.
2 Illness outcome or death missing or unknown for 2,001 cases.
A collaboration among the University of Minnesota, University of Minnesota Physicians and Fairview Health Services
Novel issues related to Covid-19

- Contagious nature
  - PPE
  - Isolation—from families and providers
- Non-English speaking patients
- Lack of proven treatments
- Cohorting after discharge
A collaboration among the University of Minnesota, University of Minnesota Physicians and Fairview Health Services
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Confirmed COVID-19 Cases by Race and Ethnicity

- Caucasian
- Black
- Asian
- Pacific Islander
- Native
- Other
- Unknown
- Multiple

MDH DATA
POST ICU CLINIC
## Clinic Model: Post-Intensive Care Syndrome and Post-Intensive Care Syndrome-Family

Huggins, Elizabeth L. AG-ACNP; Bloom, Sarah L. AG-ACNP; Stollings, Joanna L. PharmD, BCPS; Camp, Mildred; Sevin, Carla M. MD; Jackson, James C. PsyD

<table>
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<th>Role</th>
<th>Responsibilities</th>
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| **Medical Intensive Care Unit’s Nurse Practitioner** | - Discusses work status and supports persons involved in care  
- Ensures that services arranged for at discharge are received; for example, access to medications and/or home health (notifies case manager as indicated)  
- Educates patient and patient’s family, health promotion, tracheostomy/wound care, nutritional assessment  
- Reviews level of independence for activities of daily living with patient and patient’s family |
| **Clinical Pharmacist**                 | - Medication reconciliation  
- Vaccine review/recommendation (e.g., influenza and pneumococcal) |
| **Neurocognitive Psychologist**        | - Screens for presence of anxiety, depression, and/or posttraumatic stress disorder  
- Therapeutic dialogue, referrals for ongoing therapy |
| **Pulmonary Critical Care Physician**  | - Reviews and interprets 6-minute walk and spirometry results with patient and patient’s family  
- Compiles recommendations from each clinician and reviews final plan with patient and/or patient’s family |
| **Case Manager**                       | - Accesses medications and durable medical equipment as indicated  
- Follows up with home health services if needed |
Follow-up Structure

• Pre-visit Planning Stage
• Visits within 7 Days
• 2 weeks post discharge
• 4 weeks post discharge
In the Pipe-Line

- ICU/Covid-19 survivorship support groups
- Longitudinal follow-up of patients in the clinic
- Setting up services to provide support to families of survivors
Questions?