

AWARD NUMBER: W81XWH-18-1-0814

TITLE: Addressing Post-Intensive Care Syndrome Among Survivors of Acute Lung Injury

PRINCIPAL INVESTIGATOR: James C. Jackson, PsyD

CONTRACTING ORGANIZATION: Vanderbilt University Medical Center

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14. ABSTRACT APICS-01 seeks to address clinical and operational knowledge gap for acute lung injury (ALI) survivors by defining patterns of unmet needs, resource utilization, readmissions, and long-term functional outcomes among ICU survivors. We will employ a prospective, multi-center, observational study of outcomes and healthcare utilization among 200 ALI survivors which are directly relevant to a military population. In the first year of award, APICS-01 secured all approvals, finalized all study materials, and initiated enrollment ahead of schedule. Enrollment is currently at 64 (ahead of a projected 50 at this point). Analysis of data will not occur until after enrollment is closed. Findings to date are of a highly effective multicenter collaborative performing a high-quality clinical study ahead of schedule. The screening activities are functioning well, the eligibility criteria are working well, and the enrollment curves are solid.				
15. SUBJECT TERMS Acute Lung Injury, Recovery after Clinical Illness, Cohort Study				
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TABLE OF CONTENTS

	<u>Page</u>
1. Introduction	4
2. Keywords	4
3. Accomplishments	4–6
4. Impact	6
5. Changes/Problems	6–7
6. Products	7–8
7. Participants & Other Collaborating Organizations	8–10
8. Special Reporting Requirements	10
9. Appendices	10–22

1. INTRODUCTION: *Narrative that briefly (one paragraph) describes the subject, purpose and scope of the research.*

APICS-01 seeks to address the clinical and operational knowledge gap for acute lung injury (ALI) survivors by defining patterns of unmet needs, resource utilization, readmissions, and long-term functional outcomes among ICU survivors. We will employ a prospective, multi-center, observational study of outcomes and healthcare utilization among ALI survivors which are directly relevant to a military population. The study will enroll 200 patients at multiple civilian and Veterans Administration hospitals centers. We hypothesize that unmet needs in the first 1-4 weeks after hospital discharge will be associated with readmission or death after hospital discharge at 3 months, even after adjusting for the likelihood of having unmet needs.

2. KEYWORDS: *Provide a brief list of keywords (limit to 20 words).*

Acute Lung Injury, Long-term Outcomes, Intensive Care, Recovery from Illness/Injury

3. ACCOMPLISHMENTS:

What were the major goals of the project?

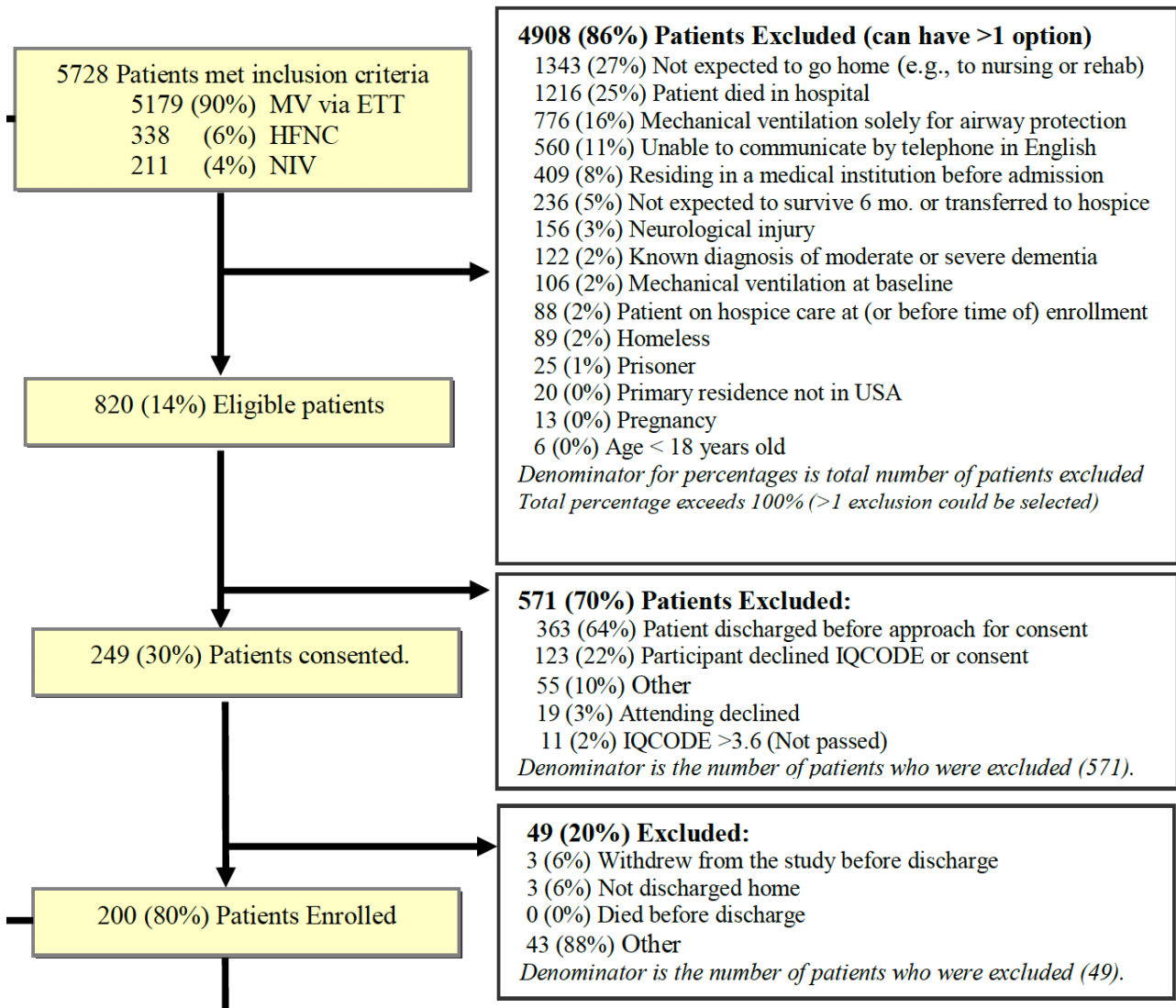
Major Task 1: Prepare Study for Data Collection and Execution. Major Task 1 was entirely completed in study year 1, as outlined in the report for Year 1.

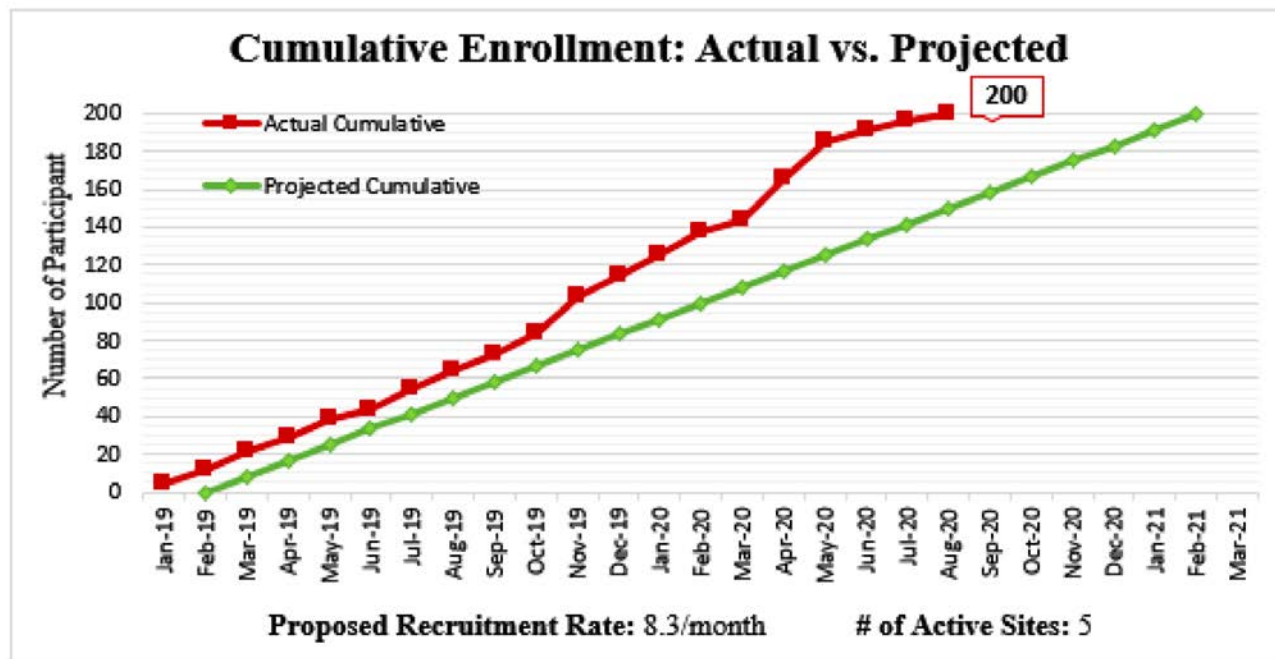
Major Task 2: Patient Enrollment and Data Collection. As of August 18, 2020 enrollment is complete at 200 patients, which comfortably exceeds our original milestone. All the investigator meetings are happening on-time and consistently. The entire study team continues to follow all patients through 6 months of follow-up.

Major Task 3: Data Analysis and Dissemination. The majority of the work under this task will begin in year 3, once follow-up is completed. We have begun the process of dissemination as outlined below, with manuscripts and abstracts already published or under review.

What was accomplished under these goals?

Major Activities: Primary activities in this study period were enrollment and follow-up. As indicated above, all goals were achieved ahead of schedule. Results were presented (virtually, as a result of COVID-19) as an abstract at the MHSRS 2020 meeting. The following figures demonstrate the screening and enrollment activities within the study, using a CONSORT-style diagram and an enrollment graphic to demonstrate our enrollment ahead of schedule. The protocol paper is under review (after a positive revise and resubmit status) at *BMJ Open*.





Specific Objectives: Assess the relationship between unmet needs after discharge and 3-month death or readmission, using inverse probability weighting to control for the propensity of having unmet needs.

Significant Results or Key Outcomes: All stated goals have been met.

Other Achievements: Nothing to Report

What opportunities for training and professional development has the project provided?

Nothing to Report

How were the results disseminated to communities of interest?

Results were presented (virtually, based on COVID-19) as an abstract at the MHSRS 2020 meeting. The protocol paper is under review (after a positive revise and resubmit status) at *BMJ Open*.

What do you plan to do during the next reporting period to accomplish the goals?

Describe briefly what you plan to do during the next reporting period to accomplish the goals and objectives.

For the next study period (Year 3) we will continue follow-up, cleaning of data, and preparation for final closure of the study dataset in Year 3. The focus will transition to Major Task 3. We will submit the first major report from APICS-01 to a peer-reviewed journal for publication, with acknowledgment of federal support. We will begin the analysis and writing of secondary/ancillary reports as well.

4. IMPACT:

What was the impact on the development of the principal discipline(s) of the project?

APICS-01 is the first study to our knowledge to carefully evaluate the first weeks after hospital discharge for ALI survivors. In that innovative setting, we are also studying the proportion of unmet needs as a marker of vulnerability and controlling—with innovative statistical techniques—for possible confounding. At this early stage of the work, the primary impact is mostly exemplary—highlighting the importance of this research topic. In addition, our published framing paper advanced understanding in the field of this important area.

What was the impact on other disciplines?

Nothing to Report

What was the impact on technology transfer?

Nothing to Report

What was the impact on society beyond science and technology?

The publication of the framing paper (and pending publication of the protocol paper) helped to advance conversations in public about the importance of care coordination and attention to early unmet needs among ALI survivors. This helped advance the societal conversation about our obligations to patients through the entire arc of illness through recovery.

5. CHANGES/PROBLEMS:

Changes in approach and reasons for change

Nothing to Report

Actual or anticipated problems or delays and actions or plans to resolve them

We are enrolling ahead of schedule and are meeting or exceeding all benchmarks. We are mindful that recruitment/enrollment must be monitored consistently and have established contingency plans for improving enrollment should the rate of enrollment decrease.

Changes that had a significant impact on expenditures

Nothing to Report

Significant changes in use or care of human subjects, vertebrate animals, biohazards, and/or select agents

Significant changes in use or care of human subjects

Nothing to Report

Significant changes in use or care of vertebrate animals

Nothing to Report

Significant changes in use of biohazards and/or select agents

Nothing to Report

6. PRODUCTS:

- **Publications, conference papers, and presentations**

Journal publications.

Brown SM, Bose S, Banner-Goodspeed V, Beesley SJ, Dinglas VD, Hopkins RO, Jackson JC, Mir-Kasimov M, Needham DM, Sevin CM, Addressing Post Intensive Care Syndrome 01 (APICS-01) study team. Approaches to Addressing Post-Intensive Care Syndrome among Intensive Care Unit Survivors. A Narrative Review. *Ann Am Thorac Soc*, 16(8), 2019, 947-956; published; federal support acknowledged.

Books or other non-periodical, one-time publications.

Nothing to Report

Other publications, conference papers and presentations.

James Jackson et al “Addressing Post-Intensive Care Syndrome (APICS-01),” 2019 Military Health Sciences Research Symposium, MHSRS-19-00923.

Narges Akhlagi, et al, “Addressing Post-Intensive Care Syndrome (APICS-01),” 8th Annual Johns Hopkins Critical Care Rehabilitation Conference, Baltimore, MD, abstract 8 (accepted; to be presented October 2019).

Samuel Brown et al “Combating Long-Term Respiratory Consequences of Airborne Hazards on the Battlefield - The APICS-01 Study Annual Update,” 2020 Military Health Sciences Research Symposium, MHSRS-20-00233.

- **Website(s) or other Internet site(s)**

Nothing to Report

- **Technologies or techniques**

Nothing to Report

- **Inventions, patent applications, and/or licenses**

Nothing to Report

- **Other Products**

The data are still being collected. Once the data are collected, they will represent a substantial contribution to our understanding of the outcomes of survivors of acute lung injury

7. PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS

What individuals have worked on the project?

Name: James C. Jackson

Project Role: Principal Investigator

Researcher Identifier: ORCID: 0000-0001-8089-2827

Nearest Person Month Worked: 3

Contribution to Project: Oversight of entire project.

Funding Support:

Name: Carla Sevin

Project Role: Study Doctor

Researcher Identifier: ORCID: 0000-0003-2971-179X

Nearest Person Month Worked: 1

Contribution to Project: Study support, consenting patients, data entry into database

Funding Support:

Name: Margaret Hays

Project Role: Research Nurse

Researcher Identifier:

Nearest Person Month Worked: 2

Contribution to Project: Study support, consenting patients, data entry into database

Funding Support:

Name: Megan Roth

Project Role: Research Nurse

Researcher Identifier:

Nearest Person Month Worked: 2

Contribution to Project: Study support, consenting patients, data entry into database

Funding Support:

Name: Patricia Bryant
Project Role: Study Coordinator and telephone follow-up
Researcher Identifier:
Nearest Person Month Worked: 1
Contribution to Project: Study support, Telephone Follow-up, contacting study participants
Funding Support:

Name: Amanda Gann
Project Role: Study Coordinator and telephone follow-up
Researcher Identifier:
Nearest Person Month Worked: 5
Contribution to Project: Study support, Telephone Follow-up, contacting study participants
Funding Support:

Name: Mary Martinez-Schmidt
Project Role: Study Coordinator and telephone follow-up
Researcher Identifier:
Nearest Person Month Worked: 4
Contribution to Project: Study support, Telephone Follow-up, contacting study participants
Funding Support:

Name: Julie Van
Project Role: Study Coordinator and telephone follow-up
Researcher Identifier:
Nearest Person Month Worked: 2
Contribution to Project: Study support, Telephone Follow-up, contacting study participants
Funding Support:

Name: Somnath Bose
Project Role: Site PI at Beth Israel Deaconess Medical Center
Researcher Identifier:
Nearest Person Month Worked: 1
Contribution to Project: Oversight of project at Beth Israel
Funding Support:

Name: Valerie Banner-Goodspeed
Project Role: Research Manager at Beth Israel Deaconess Medical Center
Researcher Identifier:
Nearest Person Month Worked: 1
Contribution to Project: Study management
Funding Support:

Name: Julia Dwyer
Project Role: Project Manager
Researcher Identifier:

Nearest Person Month Worked: 1

Contribution to Project: Study management

Funding Support:

Name: Krystal Capers

Project Role: Study coordinator

Researcher Identifier:

Nearest Person Month Worked: 4

Contribution to Project: Study support, Telephone Follow-up, contacting study participants

Funding Support:

Name: Andre Licht

Project Role: Study coordinator

Researcher Identifier:

Nearest Person Month Worked: 2

Contribution to Project: Study support, Telephone Follow-up, contacting study participants

Funding Support:

Has there been a change in the active other support of the PD/PI(s) or senior/key personnel since the last reporting period?

For Dr. Jackson, the following funding is now providing effort:

“Cognitive Outcomes in the Pragmatic Investigation of Optimal Oxygen Targets (CO-PILOT) Trial”
(2% effort)

“Early Cognitive Training and Rehabilitation to Prevent Cognitive Decline in Older, Hospitalized Adults with Delirium” (15% effort)

“Cognitive and Physical Exercise to Improve Outcomes after Surgery in the Elderly (COPEiOS)” (10% effort)

What other organizations were involved as partners?

Nothing to Report

8. SPECIAL REPORTING REQUIREMENTS

COLLABORATIVE AWARDS: A collaborative award is present and an annual report for the collaborative report is being submitted.

9. APPENDICES: *There is one appendix, the award chart.*

W81XWH-18-1-0813: Addressing Post-Intensive Care Syndrome (PICS) Among Survivors of Acute Lung Injury



PI: JAMES C. JACKSON, VANDERBILT UNIVERSITY MEDICAL CENTER

Budget: \$537,548

Topic Area: Acute Lung Injury

Mechanism: CDMRP

Research Area(s): 1102, 1001

Award Status: 9/30/2018 - 9/29/2021

Study Goals:

This study seeks to address the clinical and operational knowledge gap for acute lung injury (ALI) survivors by defining patterns of unmet needs, resource utilization, readmissions, and long-term functional outcomes among ICU survivors. We will employ a prospective, multi-center, observational study of outcomes and healthcare utilization among ALI survivors which are directly relevant to a military population.

Specific Aims:

Aim 1: Assess the relationship between unmet needs after discharge and 3-month death or readmission, using inverse probability weighting to control for the propensity of having unmet needs.

- **Hypothesis:** Unmet needs in the first 1-4 weeks after hospital discharge are associated with readmission or death after hospital discharge at 3 months, even after adjusting for the propensity of having unmet needs.

Key Accomplishments and Outcomes:

Study launched ahead of schedule. Enrollment (N=64) ahead of schedule. Extremely high follow-up rates achieved.

Publications: 1 peer-reviewed manuscript and 3 abstracts

Patents: none to date

Funding Obtained: