

AWARD NUMBER: W81XWH-18-1-0813

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

PRINCIPAL INVESTIGATOR: Samuel Brown

CONTRACTING ORGANIZATION: IHC HEALTH SERVICES, INC

REPORT DATE: October 2020

TYPE OF REPORT: Annual Report

PREPARED FOR: U.S. Army Medical Research and Materiel Command
Fort Detrick, Maryland 21702-5012

DISTRIBUTION STATEMENT: Approved for Public Release;
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REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
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1. REPORT DATE October 2020		2. REPORT TYPE Annual		3. DATES COVERED 30/09/2019 – 29/09/2020	
4. TITLE AND SUBTITLE Addressing Post-Intensive Care Syndrome (PICS) Among Survivors of Acute Lung Injury				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER W81XWH-18-1-0813	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Samuel M. Brown E-Mail: Samuel.Brown@imail.org				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) INTERMOUNTAIN HEALTH CARE, INC. IHC HEALTH SERVICES 36 S STATE ST STE 1600 SALT LAKE CITY UT 84111-1441				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Medical Research and Materiel Command Fort Detrick, Maryland 21702-5012				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for Public Release; Distribution Unlimited					
13. SUPPLEMENTARY NOTES					
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 second year of award, APICS-01 continued (and completed) enrollment well ahead of schedule. Analysis of data will not occur until after enrollment is closed. Findings to date are of a highly effective multi-center collaborative performing a high-quality clinical study ahead of schedule with extremely high follow-up rates and high compliance with all aspects of the study protocol.					
15. SUBJECT TERMS Acute Lung Injury, Recovery after Clinical Illness, Cohort Study					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Unclassified	18. NUMBER OF PAGES 11	19a. NAME OF RESPONSIBLE PERSON USAMRMC
a. REPORT Unclassified	b. ABSTRACT Unclassified	c. THIS PAGE Unclassified			19b. TELEPHONE NUMBER (include area code)

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1. INTRODUCTION:

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:

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

3. ACCOMPLISHMENTS:

What were the major goals of the project?

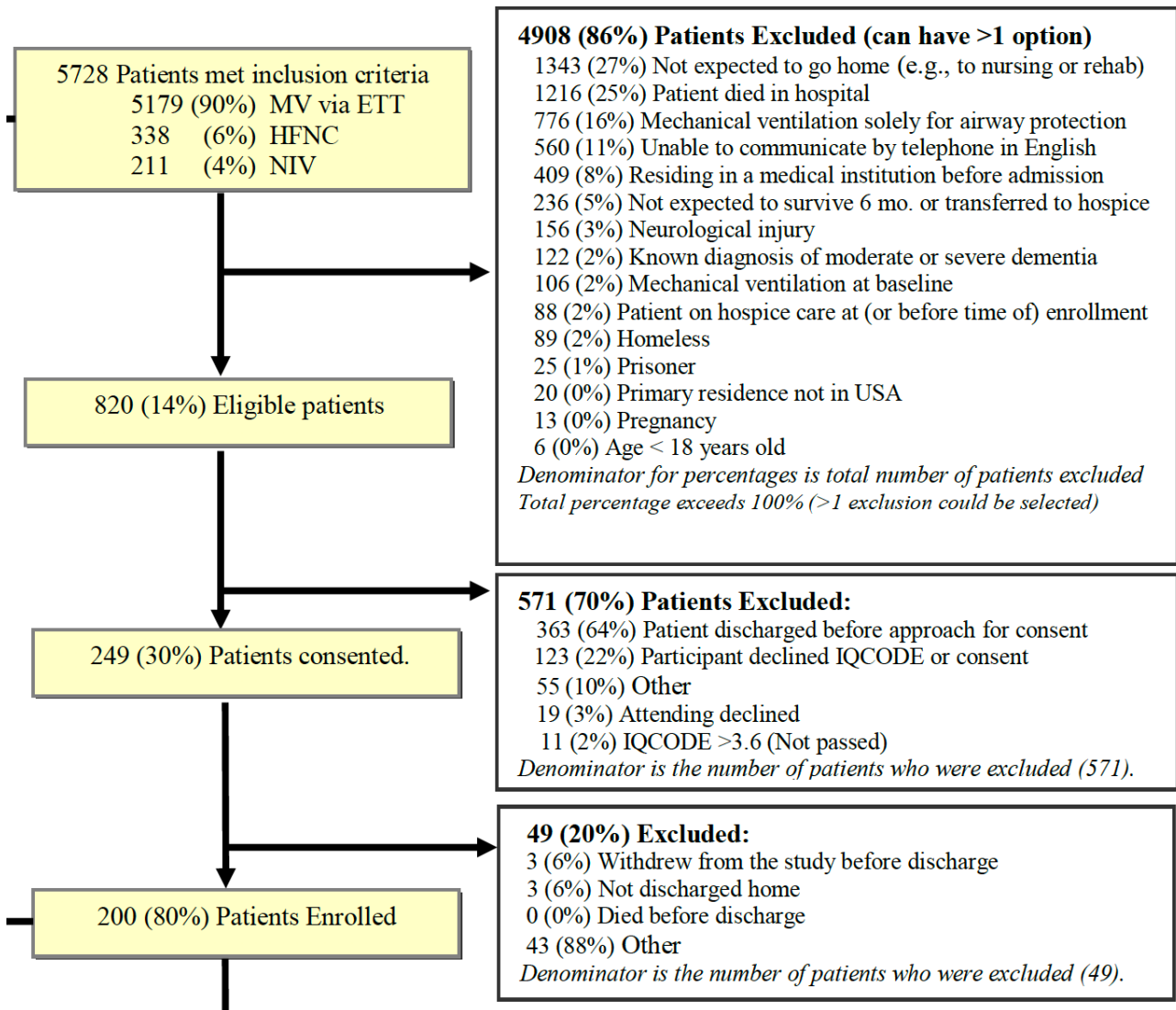
Major Task 1: Prepare Study for Data Collection and Execution. Major Task 1 was entirely completed in study year 1, as outlined in the report for Year 1.

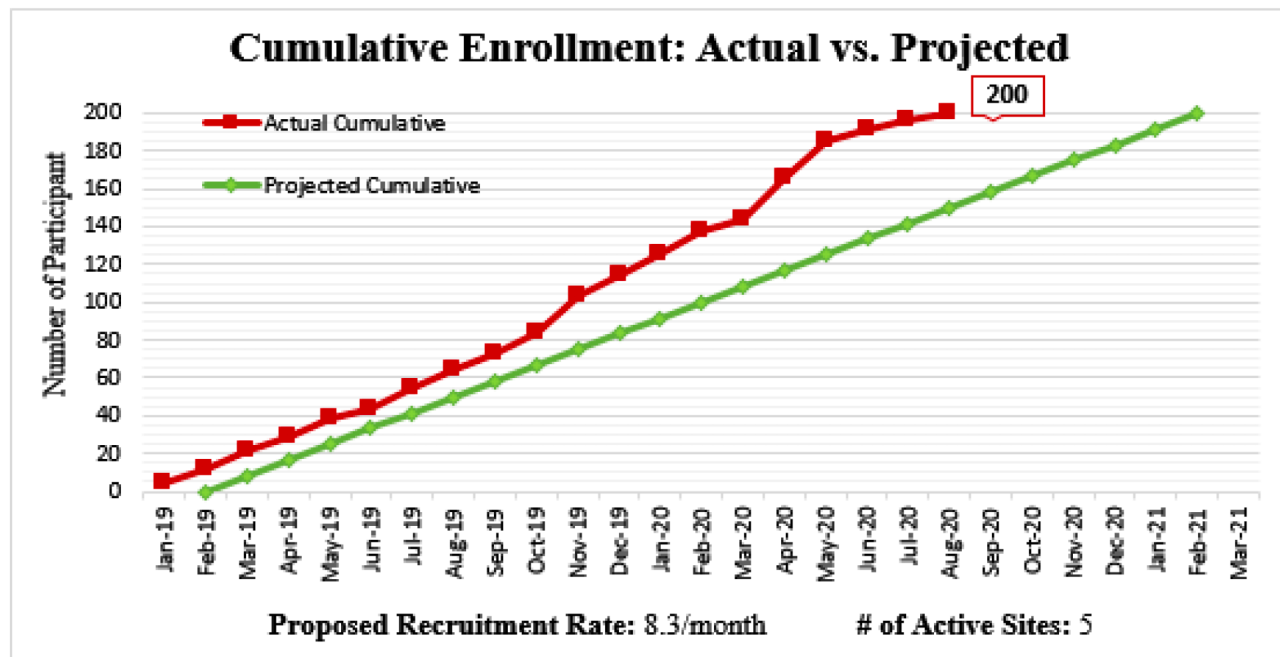
Major Task 2: Patient Enrollment and Data Collection. As of August 18, 2020 enrollment is complete at 200 patients, which comfortably exceeds our original milestone. All the investigator meetings are happening on-time and consistently. The entire study team continues to follow all patients through 6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

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 (and the under review protocol 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 completed enrollment ahead of schedule. We do not anticipate problems at this stage.

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.

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 final 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: Samuel Brown

Project Role: Principal Investigator

Researcher Identifier: ORCID:

Nearest Person Month Worked: 3

Contribution to Project: Oversight of entire project.

Funding Support:

Name: Katie Brown

Project Role: Study Coordinator

Researcher Identifier:

Nearest Person Month Worked: 1

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

Funding Support:

Name: Dale Needham

Project Role: PI of the Data Coordinating Center

Researcher Identifier:

Nearest Person Month Worked: 2

Contribution to Project: Oversees all functions of the data coordinating center as well as local enrollments at the Johns Hopkins site.

Funding Support:

Name: Narges Akhlagi

Project Role: Senior research coordinator for Data Coordinating Center

Researcher Identifier:

Nearest Person Month Worked: 2

Contribution to Project: Reports to Dr. Needham. Works to maintain function of the data

coordinating center including data processes oversight, communication with study team and related tasks.

Funding Support:

Name: Elise Caraker

Project Role: Study coordinator and telephone followup

Researcher Identifier:

Nearest Person Month Worked: 2

Contribution to Project: Study support, Telephone Followup, contacting study participants

Funding Support:

Name: Tejaswi Kalva

Project Role: Study Coordinator and telephone followup

Researcher Identifier:

Nearest Person Month Worked: 2

Contribution to Project: Study support, Telephone Followup, 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?

Dr. Brown received new funding on subawards for R43HL147788 “Feasibility Testing Of A Microphone System To Facilitate Patient Communication During Noninvasive Ventilation” (NHLBI, 8% effort), R01HL139751 “Targeting Cardiovascular Events To Improve Patient Outcomes After Sepsis” (NHLBI, 1% effort), 3U01HL123009-06S1 “CCC For NHLBI Prevention and Early Treatment of Acute Lung Injury PETAL Network ORCHID Trial” (NHLBI, 10% effort), 1UL1TR003142 “Stanford Center For Clinical & Translational Education And Research (SPECTRUM)” (NCATS, 3% effort), and 1OT2HL156812-01 “PETAL Network International Coordinating Center for ACTIV-3 Trial Initiative Subaward) (NIH, 10% effort).

For Dr. Mir-Kasimov, there is no change in other support.

For Dr. Needham there are no changes in other support.

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: SAMUEL BROWN, IHC HEALTH SERVICES, INC.

Budget: \$1,784,349

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=200) completed ahead of schedule. Extremely high follow-up rates achieved.

Publications: 1 peer-reviewed manuscript and 3 abstracts

Patents: none to date

Funding Obtained: \$1,784,349