

AWARD NUMBER: W81XWH-21-1-0050

TITLE: Addressing Post-Intensive Care Syndrome Among Survivors of COVID (APICS-COVID)

PRINCIPAL INVESTIGATOR: Samuel Brown, MD

CONTRACTING ORGANIZATION: IHC HEALTH SERVICES, INC

REPORT DATE: February 2022

TYPE OF REPORT: Annual Report

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

DISTRIBUTION STATEMENT: Approved for Public Release; Distribution Unlimited

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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

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1. REPORT DATE February 2022			2. REPORT TYPE Annual Report		3. DATES COVERED 15JAN2021 - 14JAN2022		
4. TITLE AND SUBTITLE Addressing Post-Intensive Care Syndrome Among Survivors of COVID (APICS-COVID)					5a. CONTRACT NUMBER W81XWH-21-1-0050		
					5b. GRANT NUMBER PR202630		
					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 Development 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-COVID seeks to address a key clinical and operational knowledge gap by defining patterns of unmet needs, resource utilization, readmissions, and long-term functional outcomes among ICU survivors in the age of COVID-19, allowing direct knowledge of COVID-19 patterns as well as comparison with the APICS-01 cohort, which has nearly completed enrollment with identical methodology, to allow comparisons. In the first year of award, APICS-COVID initiated enrollment and data collection ahead of schedule. The study team has started following patients through 6 months of follow-up. For the next study period we will continue patient enrollment and data collection.							
15. SUBJECT TERMS Acute Lung Injury, Recovery after Clinical Illness, Cohort Study							
16. SECURITY CLASSIFICATION OF:				17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON USAMRDC	
a. REPORT Unclassified	b. ABSTRACT Unclassified	c. THIS PAGE Unclassified	19b. TELEPHONE NUMBER (include area code)				

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std. Z39.18

V1-20210107

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1. INTRODUCTION:

The overall proposed approach is to generate an observational cohort and use pseudo-randomization (inverse probability of treatment weighting) to interrogate the relationship between unmet needs and hospital readmissions. This will occur in a multicenter cohort of patients with respiratory failure due to COVID-19 (as well as COVID-19 “bystanders,” patients who have acute respiratory failure during the pandemic not due to the SARS-CoV-2 virus) that we anticipate will usefully reflect the experience of service members and veterans.

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 has been completed ahead of schedule. All subtasks have been completed ahead of schedule.

Major Task 2: Patient Enrollment and Data Collection. We initiated enrollment ahead of schedule and as of January 15, 2022 we have enrolled 139 of 200 (70%) patients across all sites. All the investigator meetings are happening on-time and consistently. The study team continues to follow patients through 6-month follow ups. All subtasks are being completed on time or ahead of schedule.

Major Task 3: Data Analysis and Dissemination. The work under this task will begin in year 3, once enrollment and follow-up are completed.

What was accomplished under these goals?

Major Activities: Primary activities in this study period were preparing study for data collection and execution. As indicated above, these goals were achieved ahead of schedule. Formal findings will be reported after enrollment is completed.

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

Nothing to Report

How were the results disseminated to communities of interest?

Nothing to Report

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

For the next study period, we will continue patient enrollment and data collection.

4. IMPACT:

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

Nothing to Report

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?

Nothing to Report

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 completing our milestones and 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

No animal use research will be performed to complete the Statement of Work

Significant changes in use of biohazards and/or select agents

Nothing to Report

6. PRODUCTS:

• Publications, conference papers, and presentations

Journal publications.

Nothing to Report

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

Nothing to Report

Other publications, conference papers and presentations.

Nothing to Report

• 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**

Nothing to Report

7. PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS

What individuals have worked on the project?

IHC Personnel:

Name: Samuel Brown

Contribution to Project: No change

Name: Sarah Beesley

Contribution to Project: No change

Name: Valerie Aston

Contribution to Project: No change

Name: Danielle Groat

Contribution to Project: No change.

Name: Jenna Lumpkin

Researcher Identifier:

Project Role: Project Coordinator

Nearest person month worked: 3.6 CM

Contribution to Project: Jenna Lumpkin replaced Jennifer King (previous research coordinator) and has worked on the study by consenting, enrolling patients and data entry.

JHU Personnel:

Name: Dale Needham

Contribution to Project: No change

Name: Naga Preethy Kadiri

Researcher Identifier:

Project Role: Post-Doctoral Associate

Nearest person month worked: 2.66 CM

Contribution to Project: Naga Preethy Kadiri is a post-doctoral research fellow who worked on this project in Dr. Needham's research group, focusing on screening, enrolling and interviewing patients.

Name: Victor Dinglas

Researcher Identifier:

Project Role: Research Associate

Nearest person month worked: 2.34 CM

Contribution to Project: Works to maintain function of the data coordinating center including data processes oversight, communication with study team and related tasks.

VA Personnel

Name: Mustafa Mir-Kasimov

Contribution to Project: No change

Name: Craig High

Contribution to Project: No Change

University of Utah Personnel:

Name: Tom Greene

Contribution to Project: No change

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. Brown, the following funding is now providing effort:

5R01HL144624-03, "Study of Treatment's Echocardiographic Mechanisms – CLOVERS-STEM" (NHLBI, 20% effort)

1OT2HL156812-01, "PETAL Network International Coordinating Center for ACTIV-3b Trial Subaward" (NHLBI, 20%)

1OT2HL156812-01, "PETAL Network International Coordinating Center for ACTIV-3 Trial Initiative Subaward" (NHLBI, 10%)

3U01HL123009-07S1, "Investigate early interventions to improve outcomes in patients with early critical illness at risk for acute lung injury." (NHLBI, 11%)

1U01HL159878-01 "Implementation of Coordinated Spontaneous Awakening and Breathing Trials Using Telehealth-Enabled, Real-Time Audit and Feedback for Clinician Adherence: A Type II Hybrid Effectiveness-Implementation" (NHLBI, 2% effort).

1R43HL147788-01A1 "Feasibility Testing of a Microphone System to Facilitate Patient Communication during Noninvasive Ventilation" (NIH/Axon Medical, 2%)

For Dr. Beesley, only APICS-COVID funding is providing effort.

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

R01HL132887 "Nutrition and Exercise in Critical Illness (The NEXIS Trial): A Randomized Trial of Combined Cycle Ergometry and Amino Acids in the ICU" (NHLBI, 15%)

R01NR017433, "Symptoms Assessment and Screening for Laryngeal Injury Post-extubation in ICU" (NINR, 20%)

R01HL13288, "Effects of Exercise on Inflammation-Induced Lung and Muscle Injury in Critical Illness (NEXIS-FLAME)" (NHLBI, 2.5%)

R01AG061384 “Improving the statistical design and analysis of randomized controlled trials of delirium prevention and treatment for critically ill older adults” (NIA, 11.3%)
R42AG059451” Novel Arm Restraint for Critically III Patients to Reduce Immobility, Sedation, Agitation and Cognitive Impairment” (Sub University of Vermont/Health Design Ltd. Co., 15%)
1UG3HL147011 “Ganciclovir to Prevent Reactivation of Cytomegalovirus in Patients with Acute Respiratory Failure” (NHLBI, 2%)
K01HL141637 “Understanding Response Shift in Acute Respiratory Distress Syndrome” (NHLBI, Time commitment: Mentor)

K23HL138206 “A Pilot, feasibility randomized controlled trial of a behavioral activation and rehabilitation intervention to improve psychological and physical impairments in acute respiratory failure survivors” (NHLBI, Time commitment: Mentor)

K23HL155507 “Driving Pressure as a Target for Lung-Protective Ventilation” (NHLBI, Time commitment: Mentor)

In Kind support via Externally Funded Post-Doctoral Research Fellows: Pooja Kota, Mounika Lakhmalla, Vishwanath Thondamala, Vidyadhari Karne, Omar Almaadawy, Farbod Zahedi Tajrishi, Sravya Vellanki, Erfan Tasdighi, Mohammadmoein Dehesh, Maryam Azar, Swetha Aloori, Gaiti Fatima, Sai B. Oruganti

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

OTS-LBP-2017C1-6486 “Optimizing treatment sequencing for patients with chronic, non-specific low back pain” (Patient-Centered Outcomes Research Institute, 4%)

1R01AG065805-01A1 “Guiding next steps for SPRINT-MIND implementation: Identifying high-benefit subgroups and comparative effects of ARB- vs. ACEI-based regimens” (NIA, 11%)

PCS-2017C2-7613 “Multi-Level Interventions for Increasing Tobacco Cessation at FQHCS” (PCORI, 8%)

UL1TR002538 “University of Utah Center for Clinical and Translational Science (CCTS)” (NCATS, 8%)

PT170087 “Optimizing Rehabilitation InterventiONs (ORION) for Cognition Following Complex Traumatic Brain Injury” (DOD, 8%)

R01DK118219 “Long-term metabolic effects of kidney events with intensive SBP control” (NIDDK, 8%)

5U01DC014706 “A Randomized Trial to Determine the Role of Valganciclovir for Asymptomatic Cytomegalovirus Infected Hearing Impaired Infants” (NIDCD, 1%)

5R01AI135114 “Development of clinical decision tools for management of diarrhea of children in high and low resource settings” (NIAID, 3%)

5R01DK229079 “Dynamic Prediction of Renal Failure Using Longitudinal Prognostic Information among Patients with Chronic Kidney Disease and Kidney Transplant” (NIDDK, 4%)

5P30CA042014-32 “Cancer Center Support Grant – Biostatistics Center (CB)” (NCI, 6%)

W81XWH-21-1-0050 “Addressing Post Intensive Care Syndrome among Survivors of COVID (APICS- COVID)” (DOD, 5%)

3UL1TR002538 “Community-Academic Partnership to Address COVID-19 Among Utah Community Health Centers” (NCATS, 4%)

5R01NR018891 “Effects of a behavioral sleep extension intervention on cardiometabolic risk factors among patients with elevated BP/hypertension” (NINR, 4%)

5UH3AT009763-04 “SMART Stepped Care Management for Low Risk Pain in Military Health System” (NCCIH, 5% / 10%)

1R18DK123372 “Promoting Real World Implementation of an Evidence-Based Weight Management Intervention in Primary Care” (NIDDK, 4%)

R01 DK118082 “Pharmacological Approach to the Restoration of Hypoglycemia Awareness” (NIDDK, 2%)

For Dr. Mir-Kasimov, there is no change 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.

QUAD CHARTS: Included in the Appendix.

9. APPENDICES: The Quad Chart and the Award Chart

Addressing Post Intensive Care Syndrome among Survivors of COVID (APICS-COVID)

W81XWH2110050

PR202630



PI: Samuel Brown, MD

Org: Intermountain Healthcare

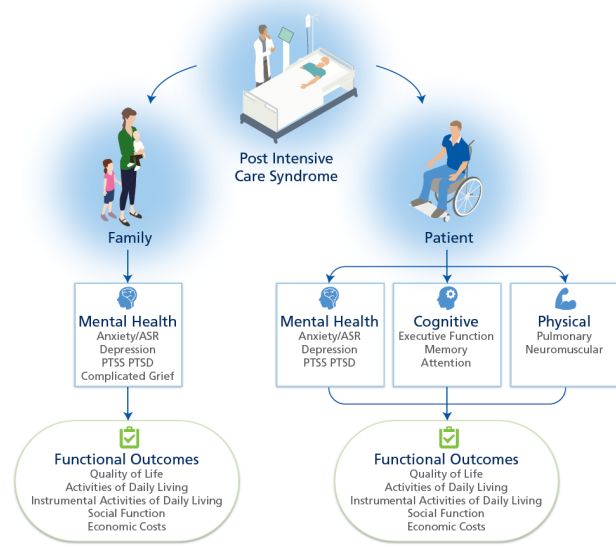
Award Amount: \$1,781,430

Study/Product Aim(s)

Aim 1: Assess the relationship between unmet needs after discharge and 3-month death or readmission, adjusting for the propensity to have unmet needs, among COVID-19 patients and COVID-19 bystanders. Secondly compare post-discharge outcomes among acute respiratory failure survivors during the COVID-19 pandemic to those of patients in the APICS-01 cohort.

Approach

The overall proposed approach is to generate an observational cohort and use pseudo-randomization (inverse probability of treatment weighting) to interrogate the relationship between unmet needs and hospital readmissions. This will occur in a multicenter cohort of patients with respiratory failure due to COVID-19 that we anticipate will usefully mimic the experience of service members and veterans. The population of patients treated at this facility is representative of the military.



Timeline and Cost

Activities	CY	21	22	23
Obtain IRB and HRPO Approval		█		
Site Education and Training		█		
Patient Enrollment and Data Collection		█		
Data Analysis and Dissemination				█
Estimated Budget (\$K)	\$1781	\$609	\$594	\$578

Updated: 15 January 2022

Goals/Milestones

- CY21 Goal – Study Initiation**
 - Submit study for IRB and HRPO approval
 - Standardize training and site education
- CY22 Goals – Patient Enrollment and Data Collection**
 - Enroll patients
 - Perform 6 month follow up visits
- CY23 Goal – Data Analysis and Dissemination**
 - Perform primary and secondary data analysis
 - Submit final report to the military
 - Submit primary manuscript to peer-reviewed journal

Budget Expenditure to Date

Projected Expenditure: \$1,781,430
Actual Expenditure: \$526,273

W81XWH-18-1-0813: Addressing Post-Intensive Care Syndrome Among Survivors of COVID

PI: SAMUEL BROWN, IHC HEALTH SERVICES, INC.

Budget:

Topic Area: COVID-19

Mechanism: CDMRP



Research Area(s): 1102, 1001

Award Status: 1/15/2021 - 1/14/2024

Study Goals:

This study seeks to address this clinical and operational knowledge gap for ARDS survivors by defining patterns of unmet needs, resource utilization, readmissions, and long-term functional outcomes among ICU survivors particularly those with COVID-19. We will employ a prospective, multi-center, observational study of outcomes and healthcare utilization among ARDS 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, adjusting for the propensity to have unmet needs, among COVID-19 patients and COVID-19 bystanders. Secondarily compare post-discharge outcomes among acute respiratory failure survivors during the COVID-19 pandemic to those of patients in the APICS-01 cohort.

- **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 likelihood of having unmet needs, and we hypothesize that survivors of respiratory failure during COVID-19 pandemic will differ from those enrolled in the APICS-01 cohort.

Key Accomplishments and Outcomes:

Study launched ahead of schedule. Enrollment (N=139/200) ahead of schedule.

Publications: none to date

Patents: none to date

Funding Obtained: