

**AWARD NUMBER: W81XWH-21-1-0422**

**TITLE: The ACTUATE-CBC Study: ACcelerating The UptAke of TelemedicinE for Crisis Burn Care**

**PRINCIPAL INVESTIGATOR: Amanda Bettencourt**

**CONTRACTING ORGANIZATION: University of Pennsylvania School of Nursing**

**REPORT DATE: OCTOBER 2022**

**TYPE OF REPORT: Annual Report, Year 1**

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

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# REPORT DOCUMENTATION PAGE

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<b>13. SUPPLEMENTARY NOTES</b>					
<b>14. ABSTRACT:</b> During a crisis, the United States will struggle to meet the clinical care needs of burn patients. Very few clinicians (1% of nurses and physicians) and few hospitals (2%) have burn care expertise. Due to these capacity limitations, patients with burns as large as 40% total body surface area will have to remain in care locations without burn expertise for days to weeks in a burn crisis. Telemedicine is an effective way to connect a caregiver in any location to a burn clinician, however, under all circumstances it remains underused. Burn teleconsultation reduces over-resuscitation, improves the accuracy of the burn diagnosis, improves communication among providers, and results in fewer unnecessary patient transfers. Given this compelling evidence, it is unclear why it is not used more often. Our proposal directly aligns with the FY20 MBRP Focus Area #2 - Burn care solutions for use by the medical first responder in the pre-hospital setting (not necessarily in a PFC scenario). We conceptualize "pre-hospital" in this study as "pre burn center" care, and we propose that providing evidence to support an ongoing, intermittent whole team burn teleconsultation model for the prolonged field care or civilian crisis care situation is the solution.  <b>Objective and Hypotheses:</b> Implementation science seeks to uncover the factors affecting the use of evidencebased practices like burn teleconsultation. Our research objective is to develop and test the effectiveness of a burn teleconsultation implementation intervention that will accelerate its uptake. We hypothesize that clinician ratings of acceptability, feasibility, and intention to use teleconsultation will relate to its actual use, and that deployment of the toolkit will change clinicians' perceptions and intention to use it under usual care and during a crisis.					
<b>15. SUBJECT TERMS</b>  NONE LISTED					
<b>16. SECURITY CLASSIFICATION OF:</b>			<b>17. LIMITATION OF ABSTRACT</b>	<b>18. NUMBER OF PAGES</b>	<b>19a. NAME OF RESPONSIBLE PERSON</b>
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- 1. INTRODUCTION:** *Narrative that briefly (one paragraph) describes the subject, purpose and scope of the research.*

The research study is being conducted to assess clinician’s intentions to use and the actual use of telemedicine technology during initial burn care. The objective is to understand clinician thoughts and preferences and use that information to develop and test a toolkit that would make using telemedicine easier for those interested in using it with burn patients.

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

Burn patients, Telemedicine, implementation science, referral data

- 3. ACCOMPLISHMENTS:** *The PI is reminded that the recipient organization is required to obtain prior written approval from the awarding agency grants official whenever there are significant changes in the project or its direction.*

**What were the major goals of the project?**

*List the major goals of the project as stated in the approved SOW. If the application listed milestones/target dates for important activities or phases of the project, identify these dates and show actual completion dates or the percentage of completion.*

<b>TASK</b>	<b>ACCOMPLISH BY</b>	<b>PERCENTAGE COMPLETE</b>
Publish Study Protocol	Months: 1-3	80%
Local IRB approval for sites	Month: 3	75%
Each Burn Center submits first quarterly referral data and assists in recruiting 5 non-burn hospitals	Months: 9-10	75%
Distribute Survey Link to Clinicians in Study Sites	Months: 10-11	50%
Establish quarterly burn referral data sharing process from 4 burn centers- (collect referral data monthly and send it quarterly for the duration of the study)	Months 3-6	85%

**What was accomplished under these goals?**

*For this reporting period describe: 1) major activities; 2) specific objectives; 3) significant results or key outcomes, including major findings, developments, or conclusions (both positive and negative); and/or 4) other achievements. Include a discussion of stated goals not met. Description shall include pertinent data and graphs in sufficient detail to explain any significant results achieved. A succinct description of the methodology used shall be provided. As the project progresses to completion, the emphasis in reporting in this section should shift from reporting activities to reporting accomplishments.*

Not all major activities for this quarter were fully executed, but the team has still made significant advances to meeting these goals and is getting back on the initial project timeline quickly. The delay is related to IRB approval. We planned to use a single IRB process, however because the study was deemed to have “exempt” status by the Penn IRB, that is not possible. Therefore, each of the 4 burn centers must submit to their local IRB for approval, which has taken additional time.

University of Michigan: IRB approved; All ED Partner Hospitals selected and agreed to participate (5/5), referral data collection in place

University of California, Irvine: IRB approved; All ED Partner Hospitals selected, 2 of 5 have agreed to participate, referral data collection in place

Regions Hospital/Health Partners: IRB submitted, but not yet approved; All ED Partner Hospitals selected and agreed to participate pending IRB approval (5/5), referral data process in place and ready to share data once IRB approval is received at the site

Massachusetts General Hospital: IRB approved; All ED Partner Hospitals selected, 2 of 5 agreed to participate, referral data collection in place

The UPenn team is currently revising the protocol publication for submission. We have identified the target journal (Implementation Science, Impact Factor 7.3) and are in the final co-author draft review process. Once the final burn center site has IRB approval, we will submit the publication. We are waiting to be sure no alterations are requested to the protocol by that final IRB before publication.

The research team has established monthly team meetings with each burn center site. The burn centers’ staff members have collaborated to develop a consistent plan for referral data submission. Sites with IRB approval (3/4 burn centers) have submitted one partial quarter of de-identified and aggregated referral data. Per the protocol, we will collect this data quarterly for the duration of the study. The fourth burn center site already collects this data internally, and will share it with the research team once their IRB approval is in place.

The investigative team continues to meet twice monthly and has used its time to develop the protocol, write the protocol manuscript, outline the optimal burn center referral data collection process, finalize the electronic survey instruments in the secure electronic database (RedCap), develop subject recruitment materials, and assist the burn centers with recruitment of ED partner sites, as appropriate.

Major Achievements/specific objectives: As of October 2022, our major achievements towards our goals include:

1. Protocol paper revised and ready for submission to *Implementation Science*
2. Penn IRB approval received (exempt status)
3. Department of Defense Human Subjects approval received
4. All Burn Centers have developed procedures around referral data collection, and 75% are submitting this data
5. Initial and ongoing meetings with the burn center research teams to assist in recruitment and regulatory approvals
6. Hiring and onboarding of a part-time research project manager, and a part-time PhD student research assistant

Significant results/key outcomes: nothing to report

*study groups, and individual study. Include participation in conferences, workshops, and seminars not listed under major activities.*

Nothing to Report

**How were the results disseminated to communities of interest?**

*If there is nothing significant to report during this reporting period, state “Nothing to Report.”*

*Describe how the results were disseminated to communities of interest. Include any outreach activities that were undertaken to reach members of communities who are not usually aware of these project activities, for the purpose of enhancing public understanding and increasing interest in learning and careers in science, technology, and the humanities.*

Nothing to Report

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

*If this is the final report, state “Nothing to Report.”*

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

<b>TASK</b>
Publish Study Protocol
Fully execute local IRB approval for 1 remaining burn center site
Each Burn Center submits first quarterly referral data and assists in recruiting 5 non-burn hospitals
Distribute Survey Link to Clinicians in All Study Sites
Export survey response data to Stata and analyze results
Develop and submit Aim 1 manuscript
Recruit Clinicians to Participate in 1:1 interviews for Aim 2
Execute Clinician 1:1 Interviews
Develop CFIR-Informed Codebook for Interview Data Coding
Perform Qualitative Coding, Generate Process Maps

4. **IMPACT:** *Describe distinctive contributions, major accomplishments, innovations, successes, or any change in practice or behavior that has come about as a result of the project relative to:*

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

*If there is nothing significant to report during this reporting period, state “Nothing to Report.”*

*Describe how findings, results, techniques that were developed or extended, or other products from the project made an impact or are likely to make an impact on the base of knowledge, theory, and research in the principal disciplinary field(s) of the project. Summarize using language that an intelligent lay audience can understand (Scientific American style).*

Nothing to report

**What was the impact on other disciplines?**

*If there is nothing significant to report during this reporting period, state “Nothing to Report.”*

*Describe how the findings, results, or techniques that were developed or improved, or other products from the project made an impact or are likely to make an impact on other disciplines.*

Nothing to Report

**What was the impact on technology transfer?**

*If there is nothing significant to report during this reporting period, state “Nothing to Report.”*

*Describe ways in which the project made an impact, or is likely to make an impact, on commercial technology or public use, including:*

- *transfer of results to entities in government or industry;*
- *instances where the research has led to the initiation of a start-up company; or*
- *adoption of new practices.*

Nothing to Report

**What was the impact on society beyond science and technology?**

*If there is nothing significant to report during this reporting period, state “Nothing to Report.”*

*Describe how results from the project made an impact, or are likely to make an impact, beyond the bounds of science, engineering, and the academic world on areas such as:*

- *improving public knowledge, attitudes, skills, and abilities;*
- *changing behavior, practices, decision making, policies (including regulatory policies), or social actions; or*
- *improving social, economic, civic, or environmental conditions.*

Nothing to Report

- 5. CHANGES/PROBLEMS:** *The PD/PI is reminded that the recipient organization is required to obtain prior written approval from the awarding agency grants official whenever there are significant changes in the project or its direction. If not previously reported in writing, provide the following additional information or state, "Nothing to Report," if applicable:*

We have consistently been working through various issues that have pushed back our timeline by about a quarter. (Covid, staff turnover at other sites, unanticipated IRB approval for each burn center site). But we believe our plan and current timeline is working well and we are making strides to catch up on tasks. The only challenge has been the fact that we did not anticipate the burn center sites needing to get their own IRB approval. Our original plan was to utilize the University of Pennsylvania's IRB as a "single" IRB and establish reliance agreements between the research sites and that IRB according to typical clinical trial rules. Because the study was granted "exempt" status, a single IRB with reliance agreements is not possible. Therefore, all the burn center sites have had to submit the study protocol to their individual IRBs and seek their own exempt status. Once site has not yet received approval. Unfortunately, waiting on the other sites' IRB approvals has added time to the process of data collection. We are about a quarter behind on distributing the clinician interview surveys, but expect to rapidly deploy and analyze results in the first quarter of the next fiscal year. We do not anticipate a delay in the start of Aim 2, and are on track with its deliverables.

**Changes that had a significant impact on expenditures**

*Describe changes during the reporting period that may have had a significant impact on expenditures, for example, delays in hiring staff or favorable developments that enable meeting objectives at less cost than anticipated.*

Nothing to Report

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

*Describe significant deviations, unexpected outcomes, or changes in approved protocols for the use or care of human subjects, vertebrate animals, biohazards, and/or select agents during the reporting period. If required, were these changes approved by the applicable institution committee (or equivalent) and reported to the agency? Also specify the applicable Institutional Review Board/Institutional Animal Care and Use Committee approval dates.*

**Significant changes in use or care of human subjects**

Nothing to Report

**Significant changes in use of biohazards and/or select agents**

Nothing to Report

**6. PRODUCTS:** *List any products resulting from the project during the reporting period. If there is nothing to report under a particular item, state “Nothing to Report.”*

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

*Report only the major publication(s) resulting from the work under this award.*

**Journal publications.** *List peer-reviewed articles or papers appearing in scientific, technical, or professional journals. Identify for each publication: Author(s); title; journal; volume: year; page numbers; status of publication (published; accepted, awaiting publication; submitted, under review; other); acknowledgement of federal support (yes/no).*

Nothing to report

**Books or other non-periodical, one-time publications.** *Report any book, monograph, dissertation, abstract, or the like published as or in a separate publication, rather than a periodical or series. Include any significant publication in the proceedings of a one-time conference or in the report of a one-time study, commission, or the like. Identify for each one-time publication: author(s); title; editor; title of collection, if applicable; bibliographic information; year; type of publication (e.g., book, thesis or dissertation); status of publication (published; accepted, awaiting publication; submitted, under review; other); acknowledgement of federal support (yes/no).*

Nothing to Report

**Other publications, conference papers and presentations.** *Identify any other publications, conference papers and/or presentations not reported above. Specify the status of the publication as noted above. List presentations made during the last year (international, national, local societies, military meetings, etc.). Use an asterisk (\*) if presentation produced a manuscript.*

Nothing to Report

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

*List the URL for any Internet site(s) that disseminates the results of the research activities. A short description of each site should be provided. It is not necessary to include the publications already specified above in this section.*

Nothing to Report

- **Technologies or techniques**

*Identify technologies or techniques that resulted from the research activities. Describe the technologies or techniques were shared.*

Nothing to Report

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

*Identify inventions, patent applications with date, and/or licenses that have resulted from the research. Submission of this information as part of an interim research performance progress report is not a substitute for any other invention reporting required under the terms and conditions of an award.*

Nothing to Report

- **Other Products**

*Identify any other reportable outcomes that were developed under this project. Reportable outcomes are defined as a research result that is or relates to a product, scientific advance, or research tool that makes a meaningful contribution toward the understanding, prevention, diagnosis, prognosis, treatment and /or rehabilitation of a disease, injury or condition, or to improve the quality of life. Examples include:*

- *data or databases;*
- *physical collections;*
- *audio or video products;*
- *software;*
- *models;*
- *educational aids or curricula;*
- *instruments or equipment;*
- *research material (e.g., Germplasm; cell lines, DNA probes, animal models);*
- *clinical interventions;*
- *new business creation; and*
- *other.*

Nothing to Report

## 7. PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS

### What individuals have worked on the project?

Provide the following information for: (1) PDs/PIs; and (2) each person who has worked at least one person month per year on the project during the reporting period, regardless of the source of compensation (a person month equals approximately 160 hours of effort). If information is unchanged from a previous submission, provide the name only and indicate “no change”.

#### Example:

*Name:* Mary Smith  
*Project Role:* Graduate Student  
*Researcher Identifier (e.g. ORCID ID):* 1234567  
*Nearest person month worked:* 5

*Contribution to Project:* Ms. Smith has performed work in the area of combined error-control and constrained coding.

*Funding Support:* The Ford Foundation (Complete only if the funding support is provided from other than this award.)

Name: Dr. Amanda Bettencourt, PhD

Project Role: Principal Investigator

Researcher Identifier (e.g. ORCID ID): 0000-0002-2622-231X

Nearest person month worked: 1

Contribution to Project: Dr. Bettencourt has been responsible for the project's entirety during the last reporting period. She managed the Project Manager and her tasks such as finalizing payments for sites and submitting to the Department of Defense for approval. She was also responsible for project team meetings, outreach to the sites for coordinating IRB and kickoff meeting planning.

Name: Dr. Deena Kelly-Costa, PhD

Project Role: Co-Investigator

Researcher Identifier (e.g. ORCID ID): 0000-0002-2622-231X

Nearest person month worked: 1

Contribution to Project: Dr. Kelly-Costa was also responsible for attending project team meetings, contributing information for IRB submissions and start up planning.

Name: Dr. Colleen Ryan, MD  
Project Role: Co-Investigator  
Researcher Identifier (e.g. ORCID ID): 0000-0002-2622-231X  
Nearest person month worked: 1  
Contribution to Project: Dr. Ryan was also responsible for attending project team meetings, contributing information for IRB submissions and start up planning.

Name: Dr. Theresa Davis, PhD  
Project Role: Co-Investigator  
Researcher Identifier (e.g. ORCID ID): 0000-0002-2622-231X  
Nearest person month worked: 1  
Contribution to Project: Dr. Davis was also responsible for attending project team meetings, contributing information for IRB submissions and start up planning.

Name: Dr. Aryal, PhD  
Project Role: Co-Investigator  
Researcher Identifier (e.g. ORCID ID): 0000-0002-2622-231X  
Nearest person month worked: 1  
Contribution to Project: Dr. Aryal was also responsible for attending project team meetings, contributing information for IRB submissions and start up planning.

Name: Dr. Gary Vercruysse, MD  
Project Role: Co-Investigator  
Researcher Identifier (e.g. ORCID ID): 0000-0002-2622-231X  
Nearest person month worked: 1  
Contribution to Project: Dr. Vercruysse was also responsible for attending project team meetings, contributing information for IRB submissions and start up planning.

Name: Kelly Farraday, MSOD, CCRP  
Project Role: Project Manager  
Researcher Identifier (e.g. ORCID ID): 0000-0002-2622-231X  
Nearest person month worked: 2  
Contribution to Project: Mrs. Farraday has helped write a draft of the protocol paper, built the RedCap survey databases, Coordinated and worked with the sites in order to get their regulatory reporting complete and contact their referral hospitals, set up payments for sites, completed all regulatory submissions, finalized all consent forms and scheduled and ran all investigator meetings.

Name: Joseph Rhodes  
Project Role: Data Base Manager  
Researcher Identifier (e.g. ORCID ID): 0000-0002-2622-231X  
Nearest person month worked: 1  
Contribution to Project: Mr. Rhodes has helped train Mrs. Farraday and helped her to build the RedCap Database for referral data as well as the surveys.

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

*If there is nothing significant to report during this reporting period, state “Nothing to Report.”*

*If the active support has changed for the PD/PI(s) or senior/key personnel, then describe what the change has been. Changes may occur, for example, if a previously active grant has closed and/or if a previously pending grant is now active. Annotate this information so it is clear what has changed from the previous submission. Submission of other support information is not necessary for pending changes or for changes in the level of effort for active support reported previously. The awarding agency may require prior written approval if a change in active other support significantly impacts the effort on the project that is the subject of the project report.*

Nothing to report

**What other organizations were involved as partners?**

*If there is nothing significant to report during this reporting period, state “Nothing to Report.”*

*Describe partner organizations – academic institutions, other nonprofits, industrial or commercial firms, state or local governments, schools or school systems, or other organizations (foreign or domestic) – that were involved with the project. Partner organizations may have provided financial or in-kind support, supplied facilities or equipment, collaborated in the research, exchanged personnel, or otherwise contributed.*

*Provide the following information for each partnership:*

*Organization Name:*

*Location of Organization: (if foreign location list country)*

*Partner’s contribution to the project (identify one or more)*

- *Financial support;*
- *In-kind support (e.g., partner makes software, computers, equipment, etc., available to project staff);*
- *Facilities (e.g., project staff use the partner’s facilities for project activities);*
- *Collaboration (e.g., partner’s staff work with project staff on the project);*
- *Personnel exchanges (e.g., project staff and/or partner’s staff use each other’s facilities, work at each other’s site); and*
- *Other.*

Nothing to Report

**8. SPECIAL REPORTING REQUIREMENTS**

**COLLABORATIVE AWARDS:** *For collaborative awards, independent reports are required from BOTH the Initiating Principal Investigator (PI) and the Collaborating/Partnering PI. A duplicative report is acceptable; however, tasks shall be clearly marked with the responsible PI and research site. A report shall be submitted to <https://ebrap.org/eBRAP/public/index.htm> for each unique award.*

**QUAD CHARTS:** *If applicable, the Quad Chart (available on <https://www.usamraa.army.mil/Pages/Resources.aspx>) should be updated and submitted with attachments.*

- 9. APPENDICES:** *Attach all appendices that contain information that supplements, clarifies or supports the text. Examples include original copies of journal articles, reprints of manuscripts and abstracts, a curriculum vitae, patent applications, study questionnaires, and surveys, etc.*