Evaluating the Benefits of a Live, Simulation-Based Telebehavioral Health Training for a Deploying Army Reserve Unit

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ABSTRACT Telebehavioral health (TBH) has previously been reported as underutilized in the Afghan Theater of Operations despite efforts to expand the number of operational TBH sites. A lack of training on TBH services and equipment was identified as a probable cause. The National Center for Telehealth and Technology (T2) provided members of the 1972nd Medical Detachment (Combat Stress Control [CSC]) U.S. Army Reserve with an in-person TBH training designed to provide the unit with hands-on knowledge and skills to deliver TBH services in theater. A key training component consisted of placing unit members in live, simulated clinical and technical scenarios they were likely to encounter while deployed. Evaluations suggest that the training was successful at preparing the 1972nd CSC for its TBH mission. During its deployment, the 1972nd CSC led an approximate 40% expansion of TBH services, including the direct provision of around 700 clinical encounters. Several best practice recommendations were identified including: (1) maintain the hands-on component, (2) use lessons learned to develop scenarios, (3) incorporate training into daily activities, and (4) tailor training while ensuring that all stakeholders have the same base knowledge set. To our knowledge, this is the most comprehensive process improvement evaluation of a predeployment telehealth training available.

INTRODUCTION
Telebehavioral health (TBH) is a broad term that encompasses the use of telecommunications technologies such as video-teleconferencing, computers and the Internet, mobile devices, and broad-band connectivity to increase access to and enhance the delivery of psychological health and traumatic brain injury care from a distance. A number of studies support the use of TBH1–8 and other studies have shown that many U.S. Service Members are willing to receive and are satisfied with TBH services.9–11 Health care providers, however, may be more reluctant to embrace TBH for several reasons including concerns about developing rapport with patients, patient compliance, and less successful treatment outcomes.12 Many of these concerns may be due to limited training opportunities for providers to better engage with and understand the functional delivery of TBH services. One study in particular found that about half of providers using TBH felt poorly trained to deliver services.13 Fortunately, there is evidence to suggest that when given information about the utility of TBH, and provided opportunities to engage in TBH services, provider reluctance can be reduced.12

Given the potential of TBH, it has been identified as one way to address certain access to care concerns in remote and austere environments, and efforts have been made to expand the number of operational, synchronous TBH units (e.g., computers and web cameras) and sites (e.g., secure and private locations) in the Afghan Theater of Operations (ATO).14 Combat Stress Control (CSC) units are responsible for providing a broad range of psychological and related health care services, and have been identified as tip-of-the-spear assets to promote the expansion of synchronous TBH care in ATO. However, reports such as the 2010 Joint Mental Health Advisory Team (J-MHAT) survey found a general lack of tailored training for CSC units, with 21.6% of Tri-Service CSC/Behavioral Health (BH) personnel reporting that their pre-deployment training did not adequately prepare them for their combat operational stress control (COSC)/BH mission.15 More specifically the J-MHAT report suggested that pre-deployment training was not constructed around the needs of BH personnel. And although TBH has been identified as a force multiplier, there is limited documentation of systematic TBH training for deploying forces. Concurrently the report recommends further evaluation of the use of TBH in ATO.

Recognizing the need for additional training to better execute the mission of expanding telehealth care, representatives from the 1972nd Medical Detachment (CSC) U.S. Army Reserve contacted the National Center for Telehealth and Technology (T2) with a request to provide tailored pre-deployment TBH training. An in-person TBH training designed to provide deploying COSC/BH assets with the hands-on knowledge and skills necessary to deliver synchronous TBH services in theater was delivered in March, 2012. This article focuses on a subset of a process improvement initiative designed to better understand the training program strengths and opportunities for improvement. This includes an overview of the development and delivery of the training provided to the 1972nd CSC, with specific emphasis on the hands-on aspects of the training.

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MATERIALS AND METHODS

Participants
Thirty-six Service Members from the 1972nd CSC participated in the training session including psychologists, social workers, psychiatric nurse practitioners, occupational therapists, mental health specialists, medics, and other nonmedical support specialists. The majority of participants were from the Enlisted ranks, and eligible participants received continuing education credits as follows: 8 psychology, 6.5 social work, 6.5 nursing, and 8 occupational therapy.

Training Agenda
The training was developed based on established criteria including the American Telemedicine Association training program accreditation standards; a review of curriculum from available private sector and Federal telehealth training programs; and a review of telehealth-related education materials, manuals, and operating guidelines. The training delivered to the 1972nd CSC was appropriately modified to include additional emphasis placed on the training needs and mission requirements of a deploying military unit. For example, much of the afternoon session focused on experiential learning using a mock-up of the TBH equipment and settings that participants would encounter in ATO.

The training was scheduled over the course of a traditional duty day beginning with introductions and ending with a question-and-answer session. The training was held at the Coby Schwab Reserve Center on Joint Base Lewis-McChord in a large training room with moveable chairs, tables, and sliding partitions, and was structured to integrate with the rest of the unit’s predeployment training requirements. The morning agenda was primarily didactic focused on providing an overview of telehealth activities across the Military Health System; the benefits of and empirical support for TBH services; and the recommended best practices for developing and implementing standard clinical, business, technical, and safety procedures. Each training section was tailored with content for application in a deployed environment focused on use of synchronous audio–video communications to deliver TBH services. The afternoon agenda was experiential and focused on understanding technical issues and troubleshooting solutions, and actively engaging with BH equipment and resources similar to those already deployed in ATO. The intent of the afternoon agenda was to gain, through a practical application of concepts, hands-on familiarization with the process of setting up, maintaining, and if necessary troubleshooting TBH sessions.

Practical, Interactive Application of Concepts
A novel and ultimately beneficial aspect of the training was the practical telehealth exercise (PTE) segment. The PTE segment was a hands-on session that placed participants in the practical telehealth exercise (PTE) segment. The PTE process of setting up, maintaining, and if necessary troubleshooting TBH solutions, and actively engaging with BH equipment and resources similar to those already deployed in ATO. The ultimate goal of the PTE was to provide participants with hands-on opportunities to develop skills necessary to deliver synchronous TBH services in theater including the opportunity to engage in behaviors associated with setting up TBH environments, using and troubleshooting TBH equipment, and implementing standard operating procedures (SOPs) with specific focus on safety management. The large training room was divided into two sections, each comprised of four individual stations serving as mock TBH clinic rooms. Each station was set up using cubicle partitions and connected to another station on the opposite side of the room using a local area network (LAN) developed specifically for the training. Each LAN was comprised of two equipment end points (i.e., each station), CAT5e networking cable, and a switch. A total of four LANs were used for the training. The cubicle partitions were adorned with various office paraphernalia typical of individual work stations to remind participants about the importance of maintaining physical space appropriate for the provision of TBH care.

Participants were divided into teams of 4 or 5 individuals to conduct role-play exercises. Roles were randomly assigned and rotated during additional scenarios to ensure that all participants were afforded the opportunity to assume different responsibilities relevant to (1) tech support, (2) provider, (3) patient, (4) administrator/other support, and (5) observer. Teams were given brief deployment-related scenarios to role-play and each exercise began with one team initiating a video-teleconferencing call with its connected team on the other side of the room. Scenarios lasted up to 15 minutes. Some scenarios required that an observer physically disconnect the LAN or camera to simulate network or other equipment failures and to prompt implementation of appropriate SOPs and troubleshooting solutions. Teams completed at least four different scenarios and conducted after-action reviews (AAR) following each completed scenario. The training ended with a large group scenario-based AAR and broad question and answer session.

Process Improvement Methods
A process improvement evaluation was conducted to identify training program strengths and areas to improve future training effectiveness and efficiencies. A broad evaluation was conducted at four time points over a 10-month period: (1) pretraining, (2) post-training, (3) during deployment, and (4) during demobilization. Given the focus on evaluating the training process, items assessing participants’ personal understanding of, and confidence and competence in providing telehealth services and ratings of the course instructors are not detailed in this article, although the broader process is described below. The training and evaluation protocols were used and scenarios likely to be encountered in ATO. The PTE segment of the training was preceded with a visual overview of the TBH equipment including basic information on the technology, a demonstration of how to set up and operate the equipment, and review of common troubleshooting solutions. The ultimate goal of the PTE was to provide participants with hands-on opportunities to develop skills necessary to deliver synchronous TBH services in theater including the opportunity to engage in behaviors associated with setting up TBH environments, using and troubleshooting TBH equipment, and implementing standard operating procedures (SOPs) with specific focus on safety management. The large training room was divided into two sections, each comprised of four individual stations serving as mock TBH clinic rooms. Each station was set up using cubicle partitions and connected to another station on the opposite side of the room using a local area network (LAN) developed specifically for the training. Each LAN was comprised of two equipment end points (i.e., each station), CAT5e networking cable, and a switch. A total of four LANs were used for the training. The cubicle partitions were adorned with various office paraphernalia typical of individual work stations to remind participants about the importance of maintaining physical space appropriate for the provision of TBH care.

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Predeployment Telehealth Training

TABLE I. Pre- and Post-Training Items Assessing General Understanding of TBH Policy, Procedures, and Applications

<table>
<thead>
<tr>
<th>Item</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I Know About Current DoD TBH Programs and Initiatives</td>
<td>29</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>I Understand the Benefits of TBH</td>
<td>29</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>I Know the Applications (Uses) for TBH</td>
<td>29</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>I Understand the Theoretic Foundation for TBH</td>
<td>29</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>I Know the Empirical Support for TBH</td>
<td>29</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>I Understand Guidelines for TBH</td>
<td>29</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>I Understand Standards for TBH</td>
<td>28</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>I Can Describe Clinical Practice Issues and Standard Operating Procedures for TBH</td>
<td>30</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>I Am Familiar With Relevant Mobile Applications Designed for Clinical Use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I Can Demonstrate How to Use Relevant Mobile Applications Designed for Clinical Use</td>
<td></td>
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<td></td>
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</tbody>
</table>

TABLE II. Relevancy of Training to Real-World Applications and Situations (n = 34)

<table>
<thead>
<tr>
<th>Item</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching Methods Were Effective</td>
<td>28</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Visual Aids, Handouts, and Oral Presentations Clarified Content</td>
<td>30</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>The Training was Relevant to My Unit Mission/Needs</td>
<td>29</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>The Skills and Knowledge Acquired During the Training Will Assist in My Expected Duties During My Upcoming Deployment</td>
<td>29</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>The Scenarios Used in the Practical Exercise Portion of the Training Were Realistic and Helpful</td>
<td>30</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

RESULTS

Pre- and Post-Training Evaluations

Training participants were asked to rate their level of agreement with ten general statements about how the training impacted understanding of TBH procedures and applications. Two items evaluated familiarity with mHealth applications (see Table I for a list of items). Participants were asked to assess additional post-training items about the perceived relevancy of the training to real-world applications in ATO and other situations. In general, ratings suggest the training was relevant (see Table II). The item “the training was relevant to my unit mission/needs” had the highest mean score (m = 4.24, SD = 0.89). Participants also felt that the teaching methods were effective (m = 4.21, SD = 0.88) and that visual aids, handouts, and oral presentations clarified content (m = 4.24, SD = 0.89).

In addition, participants provided qualitative responses to four general items: (1) overall impression and what went well, (2) knowledge gain and perceived transfer, (3) improvements, and (4) future training topics. Almost half of the responses specifically praised the quality and/or professionalism of the instructors, and many noted that they were previously unaware of the topics covered. There were also a significant number of comments stating that the hands-on practical exercise was very helpful with suggested applicability of the material to in-theater operations. The majority of comments for improvements suggested allowing more time for the practical exercises and many felt that the course could have been longer to allow for more hands-on training. Others suggested a larger training space, or separate classrooms, to set up stations for the hands-on portion. Finally, several participants suggested working with currently deployed units to incorporate more specific theater situations and examples.

Training Evaluations During Deployment

Participants were asked to complete another evaluation about 6 months into their deployment to help assess training impact on in-theater operations. Participants responded to items focused on how the training impacted confidence and competence conducting TBH sessions, and relevancy of the training in relation to their experiences while deployed (see Table III for a list of items). Another three items were repeated during

coordinated with the Commander and Detachment Sergeant, 1972nd CSC. Permission for T2 to conduct and for 1972nd unit members to participate in the process improvement evaluation was provided by the Commander, 1972nd CSC. Evaluation items and methodologies were designed specifically to assess the impact of this training.

Thirty-seven participants completed evaluations within 1 week before the training session (pretraining; one participant did not attend the training) and 34 completed training assessments within 2 weeks following the session (post-training). To better understand the long-term impacts, 27 members provided feedback about training effectiveness approximately 6 months into the deployment (deployed assessment). Responses to the evaluation items were gauged on a 1 (strongly disagree) to 5 (strongly agree) Likert-type scale with scores of 5 representing the most favorable appraisal. Several open-ended items were also provided. Data were collected using secure online questionnaire tools that generated anonymous responses. Deployed participants could not access the original tool used during the pre- and post-training assessments and another secure tool was used. All results were password protected and participants were reminded to not provide any identifying information. Because this evaluation was exploratory, quantitative responses were examined on an item-by-item basis within domains. Qualitative responses were reviewed for trends separately and then discussed jointly by the first two authors.

TABLE III. Relevancy of Training to Real-World Applications and Situations (n = 34)

<table>
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Predeployment Telehealth Training

TABLE III. Items Assessing Competence to Provide TBH in a Deployed Environment

<table>
<thead>
<tr>
<th>Due to the Training, I Can Competently...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use TBH Equipment (i.e., Camera, Microphone, Monitor)</td>
</tr>
<tr>
<td>Address Technical Troubleshooting Issues That Occur Using TBH</td>
</tr>
<tr>
<td>Set Up TBH Equipment (i.e., Camera, Microphone, Monitor)</td>
</tr>
<tr>
<td>Handle Crisis Situations During a TBH Session</td>
</tr>
<tr>
<td>Conduct a TBH Session in a Deployed Environment</td>
</tr>
<tr>
<td>Establish Patient Rapport</td>
</tr>
<tr>
<td>Provide Therapy</td>
</tr>
</tbody>
</table>

on experience with the equipment before the deployment were the most common responses to how training impacted operations. Others commented that the training reduced the learning curve expected in theater, and one respondent noted that it prepared them for what they were walking into and thus could better adapt based on the training. As expected based on previous comments, gaining hands-on familiarity with the equipment and practice setting up TBH sessions were reported as the most useful aspects of the training. Recommendations for improvement were also expected based on previous comments to include focusing more on technical trouble-shooting, utilizing more realistic scenarios, and conducting more targeted training for specific job specialties.

Training Evaluations Following Deployment

Information from the first three time points identified several trends related to the training process. T2 staff subsequently made a request to 1972nd CSC leadership to participate in a postdeployment AAR of the training content and process. Two members of the original training staff were invited to Fort Hood, TX, to meet with the 1972nd CSC as part of the unit’s demobilization activities. During this process, members were asked to participate in structured group sessions to further elucidate recommendations to improve future training content and processes. Unit members were divided into groups based on their primary job role: (1) health care provider, (2) technical support, (3) health care administration, and (4) leadership, with some participants in multiple groups. Interviews were conducted using a structured, but flexible, format focused initially on better understanding recommended improvements to the (1) impact of training, (2) technical troubleshooting scenarios, (3) clinical scenarios, (4) expansion of training across and outside CSC units, and (5) training efficiencies. The structured interviews were conducted during unit down times and the format allowed for inclusion of other topics as warranted. To maintain ethical standards, no...
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Overall, the results suggest that the
approach to providing TBH training to a deploying CSC unit,
DISCUSSION
The goals of this initiative were to develop a targeted
mous TBH in ATO to include requests for training and assis-
tance from other BH assets. This expansion is likely due to a
number of factors including Command support and a focused
mission to expand TBH services. It would be insincere to
claim the training was the sole reason for this expansion of
services. However, the objective feedback from the multiple
evaluations highlights the training as a significant contributor
to success. Specifically the live, interactive simulation exer-
was noted as critically valuable.

Few published articles have focused on training in the
delivery of telehealth services, and to our knowledge, this
is the most comprehensive process improvement evaluation
available of a predeployment TBH training. Given the lim-
ited published information and the originality of the training,
we were most interested in better understanding how to make
improvements for future, similar trainings. We offer several
viable recommended best practices to improve future pre-
deployment and other telehealth training sessions.

First, “maintain the hands-on training component.” Topics
such as empirical support for and the benefits of TBH can be
addressed didactically and may be more efficiently taught
through on-line and other distant learning media. However,
as already noted, the feedback we received from participants
suggests that the use of telehealth technologies and the prac-
tice of troubleshooting issues and implementing SOPs are
more adequately trained using live, interactive sessions, simi-
lar to those developed for this training initiative. This is
supported by the literature, which suggests that actively using
TBH equipment and services helps to reduce provider reluct-
c.12 Other suggested hands-on scenarios include placing
participants in live situations to practice obtaining buy-in
from, or teaching to reluctant telehealth stakeholders. It may
also be beneficial to put participants in a live session before
receiving any technical training as a way to highlight uniden-
tified knowledge gaps and the necessity of training.

Second, “use lessons learned to develop the most realistic
technical and clinical scenarios possible.” Given that this was
the first in-person scenario-based TBH training for a deploying
unit, it was expected that perceived gaps existed between the
scenarios and actual situations. The AAR conducted with the
1972nd helped to identify situations which can easily be
replicated and incorporated into training to improve realism
of future, similar trainings. This is important as one of the
common themes to the benefit of the training was the level of
familiarity and comfort it provided participants before going
into an otherwise unfamiliar situation. Although the focus for
this training initiative was on a deploying unit, it is reason-
able to believe that perceived realism is a critical component
of training for any population. Make certain to dedicate time
and resources to research and develop realistic scenarios
before a training initiative.

Third, “incorporate training into daily activities.” Training
should not be a 1-day activity but rather an ongoing process.
One way this can be accomplished is by using currently
available videoconferencing technologies and equipment to

Participants reported that the training provided a level of
comfort that not only positively impacted their ability to
provide TBH services but also their willingness to initiate
services. It was repeatedly noted that gaining hands-on expe-
rience with the actual equipment, setting up sessions in rep-
resentative environments, and actively working with clinical
and technical environments were the most valuable aspects of the
training. The feedback received clearly indicated that the use of
telehealth technologies and the practice of troubleshooting
issues and implementing SOPs are more adequately trained
with live, interactive sessions. As expected, feedback was
mixed about the realism of the simulated clinical and tech-
nical troubleshooting scenarios. Although the majority of
comments suggested the need for improved realism, some
participants did indicate that the situations they encountered
in the ATO were similar to those simulated during the train-
ing. However, feedback again noted that the equipment set-
up was highly representative of what participants used during
their deployment. In addition, it was suggested that all BH
assets require, at a minimum, the same level of base training
to self-sufficiently perform all necessary telehealth roles
duties. This includes an understanding of how to set up,
maintain, and troubleshoot a session in the absence of addi-
tional resources, and supports the importance of alternating
roles during the practical exercise. Several participants noted
that expansion of services in theater could have been more
robust if other units and medical assets had a similar under-
standing of telehealth services. A few participants mentioned
resistance to providing telehealth services from other stake-
holders, often due to a lack of information regarding legal
implications, equipment use, and policies. As one example,
unit members noted a receiving commander that would not
grant permission for a TBH site visit due to perceptions that
the visit diverted resources and was not mission critical.
Finally, it was noted that the turnover rate and operational
tempo did not allow for sufficient on-the-job training, under-
scoring the need for a baseline understanding across all
involved personnel before arrival in theater.

DISCUSSION
The goals of this initiative were to develop a targeted
approach to providing TBH training to a deploying CSC unit,
to conduct a multifaceted process improvement evaluation to
better understand which aspects of the training were most
effective and efficient, and to make recommendations to
improve the training. Overall, the results suggest that the
training helped prepare the 1972nd CSC for its TBH mission.
During its deployment, the 1972nd CSC led an approximate
40% expansion of TBH services throughout the southern
region of Afghanistan, including the direct provision of
around 700 clinical encounters. As a result, the 1972nd CSC
has been identified as a leader in the expansion of synchro-
Predeployment Telehealth Training

conduct meetings and briefings to gain real-life familiarity. For example, rather than conducting a distant meeting via teleconference, work to set up synchronous audio–video communications to allow participants to gain additional understanding of the subtleties associated with this form of communication. Other ideas include gathering critical reading materials and distributing them for self-paced learning, or for group discussions in the form of a journal club.

Fourth, “tailor telehealth training based on roles, but ensure that all stakeholders have the same technical training and base knowledge set.” Participants noted that all BH assets should have the same level of base training to self-sufficiently perform all necessary telehealth roles and duties, with additional training required to gain depth for more specific roles. Developing this base knowledge of telehealth for all stakeholders should ensure a more common understanding for the uses and benefits of telehealth and related services, which may facilitate further expansion. At the same time, it is unnecessary for all stakeholders to obtain advanced expertise beyond their role-based specialties. The current training initiative to include the live, simulated scenarios may be considered as the minimum for developing a base set of telehealth competencies. Additional training may then follow a stepped approach based on role-specific needs and resource availability.

There are limitations to this process improvement evaluation. Given the focus on training a specific CSC unit, there is the possibility that the recommendations will not generalize to other units, Services, or theaters of operations. Although the current effort suggests the potential utility of predeployment hands-on training for areas of telehealth beyond TBH, this issue was not specifically addressed in the current evaluation. The present information is based on a subset of a process improvement initiative and therefore a cause-and-effect relationship between the training and any outcomes can be implied but not confirmed. However, these original data provide useful information about how to better equip deploying health care forces with the knowledge and skills necessary to effectively deliver TBH care. More specifically, this data provide insight into efficiency considerations, and informs future training models and methods. The theme that participation in live, simulated clinical and technical scenarios is an invaluable training method was recurrent, and likely would not have been identified without the training and evaluation. Therefore, it is recommended that future TBH trainings include up to a half-day (4 hour) live session incorporating a technical demonstration and troubleshooting overview, a practical telehealth exercise, and a moderated AAR. It is recognized that resources are constrained and we encourage more research to determine the most efficient modalities for delivering live, simulated trainings.

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