AWARD NUMBER: W81XWH-15-C-0088

TITLE: Improving Access to Care for Warfighters: Virtual Worlds Technology to Enhance Primary Care Training in Post-Traumatic Stress and Motivational Interviewing

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14. ABSTRACT

Veterans present to primary care providers (PCPs) with posttraumatic stress (PTS) symptoms because many are resistant to specialty mental health care. Most PCPs have not been trained to assess for and manage symptoms of PTS or motivate Veterans to engage in treatment. This can result in missed opportunities to intervene to prevent chronic mental and physical health problems. Therefore, the project aims to: (1) iteratively design a new web-based PTS and Motivational Interviewing training for PCPs using Virtual World technology to enhance interactivity; (2) implement a robust evaluation including a randomized control trial for clinically valid outcome measurement; (3) Conduct a summative evaluation to inform national "scale-up" dissemination and implementation. The final product will be a deliverable that will improve access to quality clinical care for our warfighters suffering with PTS. This report shares progress made during Year 1 of the project, which includes a developmental formative evaluation and storyboards displaying the training content. Year 2 will be dedicated to the build, refinement, and implementation of the virtual world training.

15. SUBJECT TERMS
Virtual reality; PTSD; medical education; virtual training; curriculum development; motivational interviewing

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Unclassified	Unclassified	Unclassified			

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1. INTRODUCTION:

Veterans present to primary care providers (PCPs) with posttraumatic stress (PTS) symptoms because many are resistant to specialty mental health care. Most PCPs have not been trained to assess for and manage symptoms of PTS or motivate Veterans to engage in treatment. This can result in missed opportunities to intervene to prevent chronic mental and physical health problems. The project aims are to: (1) iteratively design a new web-based PTS and Motivational Interviewing training for PCPs using Virtual World technology to enhance interactivity; (2) implement a robust evaluation including a randomized control trial for clinically valid outcome measurement; (3) conduct a summative evaluation to inform national "scale-up" dissemination and implementation. The project will produce a deliverable that will improve access to quality clinical care for our warfighters suffering with PTS. This report shares progress made during Year 1 of the project.

2. KEYWORDS

Virtual reality; PTSD; medical education; virtual training; curriculum development; motivational interviewing

3. ACCOMPLISHMENTS:

Year 1 of the project was dedicated to the developmental formative evaluation and curriculum development for the Virtual World PTSD and Motivational Interviewing training. The Principal Investigator, Project Coordinator, and other Co-Investigators advanced the development of the training curriculum, focusing on building content that is consistent with the overall learning objectives. Concurrently, the vendors at Heyden Ty provided guidance for virtualizing elements of the curriculum to build an engaging and impactful training. Additionally, CNDG staff hosted Second Life orientation sessions to acquaint project team members with the technical functionalities of a virtual world and to ground the team's curriculum work in the potential capabilities of a virtual learning environment.

In terms of human subjects, continuing review of the research protocol was submitted and approved. The Project Coordinator developed procedures for conducting and tracking recruitment, interviews, and analysis. The qualitative researchers on the project team authored a semi-structured interview guide and met weekly to plan for stakeholder recruitment, as well as how the data collected can inform the training curriculum. In total, 11 interviews were conducted with primary care providers and healthcare leadership. The data was analyzed and summarized into a technical report, which the team hopes to publish as a manuscript in the next project year.

Much progress was made surrounding the development of the training and curriculum. Heyden Ty, the project's virtual world curriculum experts, developed storyboards documenting the different segments of the virtual world training. Then, findings from the interviews with PCPs and leadership were incorporated into the storyboards to produce a more refined outline for the virtual world developers at Chant Newall Development Group (CNDG).   CNDG produced a video overview of the virtual environment, including beta versions of avatars, objects, and functionality. They reviewed the storyboards for feasibility and content, and will dedicate Quarter 1 of Year 2 of the project to carrying out the design of the training.

What were the major goals of the project?
The table below reflects Month 1, October 2015, through Month 12, September 2016.

Task	Projected Month	Completion Month
Major Task 1: Obtain local IRB and VA R&D and HRPO Approvals.	1-2	1
Subtask 1: File protocol with Local IRB	1	1
Subtask 2: File protocol with VA R&D	1	1
Subtask 3: File protocol with HRPO	1-2	1
Subtask 4: Make any required revisions and resubmit in the above order.	1-2	3
Subtask 5: Obtain Local IRB/ VA R&D/ HRPO Approval	2	1
Milestone #1: Local IRB/ VA R&D/ HRPO Approval		1
Aim 1: *To conduct a developmental formative evaluation to iteratively inform a Virtual World (VW) design based on our prior web-based posttraumatic stress (PTS) training for primary care providers (PCPs).*		

Major Task 2: Semi-Structured interviews with project stakeholders/key informants to inform curriculum content and instructional design	3	7-10
Subtask 1: Recruit & enroll stakeholders/key informants	3	7-9
Subtask 2: Qualitative analysis of curriculum content and instructional design.	3	9-12
Major Task 3: Begin Virtual World (VW) build	**2-12**	**7-12**
Subtask 1: Design curriculum based on data from semi-structured interviews.	2-4	8-12
Subtask 2: Host VW learning environment (initially in Second Life)	5	7
Subtask 3: Build an Orientation Center	6	7
Subtask 4: Create a storyboard	7	9
Subtask 5: Import and create virtual objects	9	9
Subtask 6: Create avatar types	9	9
Subtask 7: Secure the VW environment	10	incomplete
Subtask 8: Conduct quality checks	11	incomplete
Subtask 9: Migrate to other VW platform (e.g. UNITY)	12	incomplete

What was accomplished under these goals?

Major Task 1: Obtain local IRB and VA R&D and HRPO Approvals. – Complete
  Subtask 1: File protocol with Local IRB
  Subtask 2: File protocol with VA R&D
  Subtask 3: File protocol with HRPO
  Subtask 4: Make any required revisions and resubmit in the above order.
  Subtask 5: Obtain Local IRB/ VA R&D/ HRPO Approval

Submitted to and Approved by:
University of California San Francisco Committee on Human Research- 14-15004
Study Approval (Continuing Review) 09/03/2016-05/04/2017
Amendment 1 (personnel changes)- 08/12/2015
Amendment 2 (personnel changes)- 21/12/2015
Amendment 3 (personnel changes, increased number of SSIVs, interview guide)-
   09/03/2016

VA Research & Development and Clinical Research Workgroup-
CRW- Approval 22/04/2015
VA R&D - Approval 07/05/2015
- Renewed 09/03/2016

DoD Human Research Protection Office A18590
Approval 17/9/2015
Continuing Review Approved 26/04/2016

Major Task 2: Semi-Structured interviews with project stakeholders/key informants to inform curriculum content and instructional design – Complete
The qualitative team interviewed 11 PCP "end users" and healthcare leadership. Additional interviews will be conducted with educational experts and Information Technology (IT) experts in the first half of Year 2. The Qualitative Researchers assert that this will produce the most relevant data, since there will be beta elements of the training to share and discuss with interviewees at different milestones of the curriculum and virtual training development.

The overall conclusions from the developmental formative evaluation include:
1. Findings about challenges in primary care practice related to providing care to veterans with PTSD as well as treatment choices by PCPs and use of motivational interviewing are consistent with the published studies.
2. Findings support the need for training for PCPs focused on PTSD and MI applied to providing care for patients with PTSD.
3. Opinions of interviewed PCPs about VW training were limited to their insufficient understanding of VW.
4. This formative evaluation generated implications for audience generation, content, and training delivery and evaluation, and training generalizability that are being utilized for the VW training development in this project.

> **Subtask 1: Recruit & enroll stakeholders/key informants**
> • Project Coordinator and Research Assistant recruited and enrolled stakeholders/key informants from a potential pool of participants established by the PI and Project Team.
> • Recruitment began on 19-04-2016 and will continue as deemed necessary.
> • PI and Qualitative Researcher have conducted 11 semi-structured interviews, to date.
>
> **Subtask 2: Qualitative analysis of curriculum content and instructional design.**
> • Qualitative Analyst analyzed semi-structured interview results in relation to the curriculum content and instructional design.
> • Content experts from the project team have reviewed and offered insight on curriculum storyboards.
> • Findings from the analyses of ten interviews are shared in a Technical Report (Appendix A).

Major Task 3: Begin Virtual World (VW) build – In Progress – 70%
> **Subtask 1: Design curriculum based on data from semi-structured interviews.**
> • Analyzed evaluation data was displayed in a matrix (within Appendix A), and shared with the curriculum development team to inform the refinement of the training curriculum.

- Storyboards detailing the content for Sessions 1 and 2 of the training were refined and submitted to CNDG. CNDG will transform the concepts into a beta version of the training.

Subtask 2: Host VW learning environment (initially in Second Life)
• Project Team members have been oriented to Second Life. CNDG hosted team members in an existing learning environment and solicited feedback regarding the characteristics of virtual spaces and avatars to help inform the environment they will build specifically for this project during a project-wide meeting on 26-04-2016.
• CNDG submitted a video detailing their progress on 22-06-2016.
• CNDG created a virtual campus (Figures 1 and 2, Appendix B), which contains a hospital building with internal exam rooms for Standardized Patient interviews (Figure 7, Appendix B).
• As the developers at CNDG build additional training components, the Project Team will continue to monitor progress and offer feedback.

Subtask 3: Build an Orientation Center
• CNDG held several orientation sessions for project staff and collaborators in the virtual world. The Orientation Center environment provides instructions on how to navigate, as well as serves as a test for computer compatibility (Figures 3 and 4, Appendix B).

Subtask 4: Create a storyboard
• Heyden Ty, our vendor which specializes in virtual learning curriculums, submitted storyboards for each segment of the two-session training on 15-06-2016. These storyboards contain the proposed learner experience during the various segments of the training: Exploratorium, Didactic/Lecture, Small Group Standardized Patient Interviews, and Homework. Additionally, they contain content and directions for the engineering experts at CNDG.
• Much of Quarter 4 was spent refining these storyboards to include feedback from the developmental formative evaluation.
• Final versions of the storyboards were submitted by Heyden Ty on 23-09-2016 (Appendices C, D, E).

Subtask 5: Import and create virtual objects
• CNDG created a video which presents virtualized elements of the storyboards and curriculum, which are currently hosted on Second Life for the project team and Principal Investigator to review. Examples include polling stations, presentation screens, whiteboards for instructor and learner (Figure 5, Appendix B), and click-to-view information posters. They will continue to develop virtual objects and refine the environment in Quarter 4, as the storyboards are finalized.

Subtask 6: Create avatar types
• CNDG created sample avatars for the training, based on the specifications provided to them by the Project Coordinator. Additionally, they created a

prototype of the veteran, which will serve as the case study for the duration of the training (Figures 6 and 7, Appendix B). The project team will review the avatars and provide feedback for modifications during Quarter 4.

Subtask 7: Secure the VW environment
Subtask 8: Conduct quality checks
Subtask 9: Migrate to other VW platform (e.g. UNITY)
Subtasks 7-9 are incomplete, because the virtual world environment and its associated elements and avatars are still in the design phase. The delay in implementing the semi-structured interviews delayed the design process. These subtasks will be completed in early Year 2 in order to evaluate the design and content, and to then proceed with training delivery.

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?

CNDG will formally develop the virtual elements and environment according to the storyboards and curriculum provided by the project staff and Heyden Ty.The research team will then move forward with the SOW goals, including the independent review and implementation of the virtual world training.

Major Task 4: Independent review of new VW training using a focus group
Major Task 5: Refinement of the VW training
Major Task 6: Refinement of prior online training (Control) to make it a more apt comparison for RCT.

4. IMPACT

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

The qualitative data collected as part of the developmental formative evaluation was summarized in a technical report, which the researchers plan to develop into a manuscript. When the manuscript is accepted for publication in a peer-reviewed journal, it will inform the field of qualitative evaluation.

While it is too early to cite specifics, the project also has the potential to make an impact on primary care provider education and continuing medical education relating to health issues affecting both mind and body, including post-traumatic stress disorder. Since the training is delivered virtually, it can be disseminated world-wide.

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 developmental formative evaluation revealed a fair amount of hesitation toward virtual world training for the sake of continuing medical education. Several PCPs indicated generational differences in acceptability and ability to navigate and learn in a virtual environment. As the findings are applied to the curriculum and design of the training, the project has the potential to improve public knowledge and attitudes toward virtual world technology for the sake of provider education.

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

1. Resolved: Although the project year began on 25 September 2015, the Project Coordinator was not hired until 16 November, creating minor delays with some project activities.

2. Resolved: Establishing vendors delayed build phase. Vendors were provided with funds in January and moved forward with work on the project.

3. Delay: The project team members responsible for collecting and analyzing the qualitative data via semi-structured interviews had taken longer than expected to begin recruitment. Additional time was necessary to formalize the interview guides, and then develop a large enough sample for the PCP interviews.
- Resolution: A total of 11 interviews were completed. Qualitative researchers will likely conduct additional interviews as necessary.

4. Delay: As previously stated, Subtasks 7-9 associated with the virtual world build were delayed as a result of the modified timeline for the implementation and analysis of the semi-structured interviews. This work will be completed in early Year 2 of the project.

5. Ongoing Problem: Second Life, the online platform which will host the training during the development phase, is blocked on the VA network. This will impede on several research components, including delivery of the virtual world (experimental) version of the training, if it is not resolved.
- Course of action being taken: Project Staff and CNDG are investigating alternative options for delivery of the training during the focus group and RCT phases of the study.

Changes that had a significant impact on expenditures

Less was expended on payroll than in the initial budget. The Project Coordinator not being hired until well into Month 2 of the project, accounting for some of the disparity. Additionally, the salary support of certain personnel was less than anticipated in Year 1, but will increase in Year 2.

The project's travel budget reflected an annual trip to present project findings in Washington, DC. Since such a meeting did not occur, the travel budget was underutilized during Year 1.

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

Nothing to report.

Significant changes in use or care of human subjects

Nothing to report.

Significant changes in use or care of vertebrate animals.

Not applicable.

Significant changes in use of biohazards and/or select agents

Not applicable.

6. PRODUCTS

An abstract was submitted for consideration to present findings from the developmental formative evaluation at a conference in 2017. The authors will be informed of its status early in Project Year 2.

- Title - USING RAPID QUALITATIVE ANALYSIS TO SUPPORT THE DEVELOPMENT AND IMPLEMENTATION OF A VIRTUAL WORLD TRAINING FOR PRIMARY CARE PROVIDERS ON CARING FOR VETERANS WITH POST-TRAUMATIC STRESS DISORDER SYMPTOMS

- Authors - Marianna B. Shershneva, MD, PhD; Christopher J. Koenig, PhD; Mathew Douraghi, MA; Eilleen E. Sabino, MPH; Karen H. Seal, MD, MPH

- Submitted for consideration to: 2017 Society for Academic Continuing Medical Education's Annual Meeting in May 2017 as Research in Continuing Medical Education (RICME), Works in Progress

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

Nothing to Report.

Other publications, conference papers, and presentations.

The qualitative team produced a Technical Report (Appendix A) for internal use. The report details data collected through semi-structured interviews with PCPs and its relevance to current research in the field of PTSD treatment, as well as virtual world education. The intention is to further develop the report into a manuscript, then submit it to a peer-reviewed journal in the coming project year.

Website(s) or other Internet site(s)

A project website focused on recruitment and dissemination of project information will be developed and launched during Project Year 2.

Technologies or techniques

Nothing to report.

Inventions, patent applications, and/or licenses

Nothing to report.

Other Products

There are several products for internal use, which facilitate the design and implementation of the virtual world training:
- A storyboard representing the overall look and feel of the virtual world environment. (Appendix C)
- A storyboard for each of the two training sessions. (Appendices D and E)
    - Within these storyboards is the framework for "Exploratorium" learning stations that potentially can be used as stand-alone training tools.
- A video produced by CNDG, which showcases the virtual elements they have created to date.
    - Due to file size, it can only be shared via Dropbox or another file sharing application. Still photos of the video can be found in Appendix B.

7. PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS

What individuals have worked on the project?

Name: Karen Seal, MD, MPH
Project Role: Principal Investigator
Nearest person month worked: 2.4
Contribution to Project: Unchanged

Name: Eilleen Sabino-Laughlin
Project Role: Project Coordinator
Nearest person month worked: 12
Contribution to Project: Unchanged

Name: Nicole R. McCamish
Project Role: Project Manager
Nearest person month worked: 7.2
Contribution to Project: Unchanged

Name: Linda Abadjian, PhD
Project Role: Evaluator
Nearest person month worked: 1.8
Contribution to Project: Unchanged

Name: Yongmei Li, PhD
Project Role: Statistician
Nearest person month worked: 6
Contribution to Project: Unchanged

Name: Tom Metzler, MS
Project Role: Data Manager
Nearest person month worked: 1.2
Contribution to Project: Unchanged

Name: Shira Maguen, PhD
Project Role: Co-Investigator
Nearest person month worked: 0.6
Contribution to Project: Unchanged

Name: Thomas Neylan, MD
Project Role: Co-Investigator
Nearest person month worked: 0.3
Contribution to Project: Unchanged

Name: Beth Cohen, MD, MAS
Project Role: Co-Investigator
Nearest person month worked: 0.6
Contribution to Project: Unchanged

Name: Greg Reger, PhD
Project Role: Co-Investigator
Nearest person month worked: 0.6
Contribution to Project: Unchanged

Name: Christopher Koenig, PhD
Project Role: Co-Investigator
Nearest person month worked: 0.6
Contribution to Project: Unchanged
           through the end of July, when Dr. Koenig left his appointment at the San Francisco VA.

Vendors
Name: Chant Newall Development Group
Project Role: Consultant
Paid by deliverables per the SOW
Contribution to Project: Unchanged

Name: Forefront Collaborative
Project Role: Consultant
Paid hourly on a semi-annual basis
Contribution to Project: Unchanged

Name: Heyden Ty
Project Role: Consultant
Paid by deliverables per the SOW
Contribution to Project: Unchanged

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

There are no changes in active other support (for the PI and Co-I's) that would significantly impact the effort on this project.

What other organizations were involved as partners?

Nothing to report.

8. SPECIAL REPORTING REQUIREMENTS

Gantt Chart W81XWH-15-C-0088

Improving Access to Care for Warfighters: Virtual Worlds Technology to Enhance Primary Care Training in Posttraumatic Stress and Motivational Interviewing			FY 2016				FY 2017				FY 2018				FY 2019			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Aim 1 Formative Eval/Design	Major Task 2: Semi-Structured interviews with project stakeholders/key informants to inform curriculum content and instructional design	Anticipated	N=up to 20															
		Actual	N=11															
	Major Task 4: Independent review of new VW training using a focus group - Recruit stakeholders/key informants who were not involved in initial build recommendations	Anticipated					N=8											
		Actual																
	Major Task 5: Refinement of the VW training - Independent reviewers for Focus Group	Anticipated						N=8										
		Actual																
Aim 2 RCT	Major Task 11: Recruit PCPs from VA, DoD, and community	Anticipated							N=100									
		Actual																
Aim 3 Summative Eval/ Disseminate	Major Task 19: Conduct Summative Analysis - Recruit PCPs from each training arm	Anticipated													N=20			
		Actual																
	Major Task 19: Conduct Summative Analysis - Recruit stakeholders from Aim 1	Anticipated													N=10			
		Actual																

Updated 10/21/2016

"Improving Access to Care for Warfighters: Virtual Worlds Technology to Enhance Primary Care Training in Posttraumatic Stress and Motivational Interviewing"

Log #JW140067   Award # W81XWH-15-C-0088

PI: Karen Hope Seal, MD MPH **Org:** Northern California Institute for Research and Education   **Award Amount:** $1,554,345.30 Directs

Study Aims

Veterans present to primary care providers (PCPs) with posttraumatic stress (PTS) symptoms because many are resistant to specialty mental health care. <u>Most PCPs have not been trained to assess for and manage symptoms of PTS or motivate Veterans to engage in treatment.</u> This can result in missed opportunities to intervene to prevent chronic mental and physical health problems. We propose to:

(1) Iteratively design a new web-based PTS and Motivational Interviewing training for PCPs using Virtual World technology to enhance interactivity.
(2) Add a more robust evaluation including a randomized control trial for more clinically valid outcome measurement.
(3) Conduct a summative evaluation to inform national "scale-up" dissemination and implementation.

The proposed project is aligned with the needs of JPC 5 (Psychological Health and Resilience) and will produce a deliverable that will improve access to quality clinical care for our warfighters suffering with PTS.

Approach

<u>We are using mixed qualitative and quantitative observational and experimental methods to conduct a 4-year **effectiveness-implementation** randomized controlled trial (RCT), in which project stakeholders participate from start to finish.</u> A formative evaluation consisting of focus groups and semi-structured interviews captures stakeholder input in how we can best design and implement the Virtual World (VW) training. We will then conduct an RCT to compare the new VW training to our prior online PTS training. Pre-/post- and follow-up standardized patient interviews, provider self-report measures, and patient outcomes will be compared between groups. A summative evaluation will solicit feedback of PCP participants and stakeholders to expedite dissemination of the new VW training.

Accomplishment: Beta versions of the learning environment, Orientation Center, avatar types, virtual objects, and key exercises of the training, as described in the storyboards.

Timeline and Cost

Projected Period of Performance and Proposed Direct Costs Per Year

	FY16	FY 17	FY 18	FY 19
Aim 1 Formative Eval/Design	███	█		
Aim 2 RCT		█	█	
Aim 3 Summative Eval/Disseminate				█
Estimated Costs/Year ($)	495,224.05	436,314.56	310,165.91	312,640.78

Total Direct: $1,554,345.30

Period of Performance: 01/10/2015-30/09/2016
Updated: 24/10/2016

Goals/Milestones

Major Task 1: Obtain local IRB and VA R&D and HRPO Approvals
Major Task 2: Semi-Structured interviews with project stakeholders/key informants to inform curriculum content and instructional design
Major Task 3: Begin Virtual World (VW) build
Subtask 1: Design curriculum based on data from semi-structured interviews
Subtask 2: Host VW learning environment (initially in Second Life)
Subtask 3: Build an Orientation Center
Subtask 4: Create a storyboard
Subtask 5: Import and create virtual objects
Subtask 6: Create avatar types

Budget Expenditure to Date

Projected Expenditure: $495,224.05

Actual Expenditure: $399,346.00

9. APPENDICES

Appendix A: Technical Report for Developmental Formative Evaluation

**Interviews with Primary Care Providers to Inform the Development of the Virtual World
Training on Posttraumatic Stress and Motivational Interviewing**

TECHNICAL REPORT
23 October 2016
Unpublished Data – Not for Distribution

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Background

Military veterans with posttraumatic stress disorder (PTSD) symptoms receive care from primary care providers (PCPs) who often lack basic skills in detecting and managing PTSD and in using effective communication techniques. ***Improving Access to Care for Warfighters: Virtual Worlds Technology to Enhance Primary Care Training in Posttraumatic Stress and Motivational Interviewing*** is a four-year project with the overarching goal to build competency among a primary care workforce to better detect and manage posttraumatic stress symptoms and motivate treatment engagement in warfighters through the use of virtual world (VW) technology. This project consists of development of an innovative VW training for primary care providers (PCPs) and then conducting a randomized controlled trial (RCT) to compare its effectiveness against a traditional web-based course covering similar content. This project is funded as a Joint Warfighter initiative[1] by the US Department of Defense.

This report presents the preliminary results from a developmental formative evaluation, which is part of Phase 1 of the project. The qualitative research team sought to inform the design of the aforementioned VW training through semi-structured interviews with key stakeholders, particularly PCPs, who are the target audience for the training. Contributing researchers include: Christopher J. Koenig, PhD; Marianna Shershneva, PhD; Eilleen Sabino-Laughlin, MPH; and Mathew Douraghi, MA under the guidance of the Principal Investigator, Karen H. Seal, MD MPH. Research activities were approved through the University of California San Francisco Committee on Human Research,[2] VA Research and Development Clinical Research Workgroup, and the Department of Defense Human Research Protection Office[3].

Purpose

This developmental formative evaluation study employs qualitative methods to explore perspectives of PCPs, educators, health care leadership, and information technology specialists on the relevance, acceptability, and feasibility of the VW training. This evaluation is being conducted to solicit input from these stakeholder groups to help shape the intervention content and execution in the VW environment. The research team focused on PCP stakeholders first because understanding their experience with and perspectives on PTSD assessment and management is critical to planning and implementing the VW training modules.

Methods

Study Design
The developmental formative evaluation has been qualitative in nature. Data have been collected using semi-structured interviews and analyzed using rapid qualitative analysis, a collaborative process involving triangulation, iterative data collection and analysis procedures to quickly develop an understanding of a target area from stakeholders' perspectives. Emerging themes from the analysis are being used by the VW instructional design experts to tailor the content and its presentation to the needs, values, and preferences of the stakeholders. This process should facilitate future implementation and dissemination among the project stakeholders.

Sample and Recruitment
A convenience sample of PCPs affiliated with the Veterans Health Administration (VHA) was recruited via e-mail. The e-mail included the study name, a brief "Dear Colleague" message from the study Principal Investigator, Dr. Karen Seal, inviting VA PCPs to participate, and a detailed information sheet describing the study purpose, interview length, anticipated risks and benefits, privacy and confidentiality notices, and participation compensation. Each e-mail solicitation included a link to a YouTube video.[4] This video was created

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[1] Award # W81XWH-15-C-0088, Principal Investigator Karen Hope Seal, MD MPH
[2] CHR 14-15004, Interview Guide Approved: 09/03/2016
[3] HRPO A18590
[4] VW video:https://www.youtube.com/watch?v=N_WaUT77LwU&feature=youtu.be

by the VW consultant team to provide an example of a multi-media, immersive VW training environment and to introduce prospective participants, who might have limited experience with VW, to the use of the VW technology for training and education. Interested PCPs were asked to respond to the e-mail solicitation and were scheduled for an interview by the qualitative team.

Data Collection

The research team developed an original semi-structured interview guide based on the senior authors' clinical experience and Drs. Koenig's and Shershneva's experience conducting qualitative research to develop education interventions. The PCP interview guide included questions designed to collect data with respect to four domains: (1) the applicability of training topics for PCPs, including PTSD-related content and MI training; (2) the feasibility and acceptability of a synchronous VW training for busy PCPs; (3) barriers to and facilitators of implementation with regard to learner burden vs. degree of interactivity, internet access, bandwidth and security issues, and preferences for asynchronous training exercises and downloadable provider and patient educational materials; and lastly (4) generalizability for implementation among PCPs in diverse practice settings with different populations.

Ten semi-structured interviews with PCPs, including several clinicians who also had leadership positions in their organizations, were conducted by experienced interviewers, Dr. Christopher J. Koenig and Mathew Douraghi from May to July, 2016. All interviews except one were conducted on the phone and were approximately 30 minutes long. One interview was conducted in-person by the interviewee's request. All participants agreed to have their interviews digitally audio recorded. Data included the audio recordings and interviewer notes taken during the interview. The recordings were retained and used to verify hand-written notes and to identify particularly rich or meaningful participant responses, some of which were selected and incorporated in the rapid analysis.

Interviews with educators and IT specialists will continue throughout intervention development. In the course of the interview, several participants volunteered their expertise and time to examine and evaluate prototypes of the training modules and training intervention.

Data Analysis

The first step of the rapid analysis involved summarizing interviewer notes using a structured template that maps onto the interview guide topics. For instance, immediately after the interview, Mr. Douraghi listened to the audio recording, reviewed notes taken during the interview, summarized the notes into the template, and included verbatim quotations that illustrated particularly rich or meaningful content. Subsequently, Dr. Koenig reviewed the summary and added his notes and comments. Additionally, Mr. Douraghi added the interview recording timestamps next to the key statements to facilitate quick retrieval of the corresponding segment of the recording, if additional data review were needed. Completed summaries were collaboratively reviewed by Drs. Koenig and Shershneva and Mr. Douraghi for accuracy and relevance to the four domains (i.e., relevance, feasibility/acceptability, barriers and facilitators, and generalizability), and by Ms. Sabino-Laughlin (Project Manager) for relevance to intervention development.

The second step involved transferring individual interview content from the original template onto a matrix. Matrix displays are a common rapid qualitative analysis technique to further summarize interview content to identify similarities and differences across participant responses. Particularly rich content was noted on the display to retain participants' concerns in their voices. The evolving matrix display was discussed by the qualitative research team to compare findings across participant groups and identify implications for the VW training content and delivery. Finally, Dr. Shershneva, Mr. Douraghi, and Ms. Sabino-Laughlin presented the qualitative findings in the form of the matrix display to the intervention development team for discussion of themes and implications. Several meetings among the members of the qualitative research team and the curriculum development team resulted in gaining insights into the PCPs' perspectives that helped affirm or modify how the VW intervention modules might be refined to be responsive to stakeholder concerns.

Results

Participants
All study participants were PCPs. They ranged in age and experience, and were located in four different states, with seven located in California, one in Connecticut, one in Colorado, and one in Minnesota. All California PCPs were from the San Francisco Bay Area. Half of the participants were females; 70% (n=7) were physicians and the remaining 30% (n=3), nurse practitioners. All male participants were physicians. The female participants included three nurse practitioners and two physicians. All were affiliated with the VA system, and all had no or limited experience using VW.

Profession	Gender	Age Category	Location	VW Experience
Physician	Male	40-49	California	None
Physician	Male	50-59	California	None
Physician	Male	60-69	California	Limited, not similar to this training
Physician	Female	40-49	California	None
Physician	Male	30-39	Colorado	Limited, not similar to this training
Physician	Male	40-49	Minneapolis	None
Physician	Female	60-69	Connecticut	None
Nurse Practitioner	Female	50-69	California	Limited, not similar to this training
Nurse Practitioner	Female	30-39	California	None
Nurse Practitioner	Female	50-59	California	Limited, not similar to this training

Relevance of Training Topic and Curriculum

Difficulties in Recognizing and Diagnosing PTSD
Half of the interviewees identified that PTSD manifests in different ways and reported the challenge of differentiating PTSD from substance abuse, anxiety, alcoholism, depression, and other mental health conditions. One PCP acknowledged difficulty distinguishing actual trauma from imagined trauma due to dementia or psychosis, and another PCP commended on the difficulty in differentiating PTSD from other mental health conditions, especially in older patients. Below are examples from two interviews:

- "The main challenge is that most of us in primary care, we're not mental health practitioners. We're not as experienced with mental health, it's an issue with training, exposure, and experience. And also a little bit, maybe for some, sometimes if you don't have enough experience, you're not comfortable. That would be a main challenge." (P6)
- "It [PTSD] can feel a little occult sometimes, kind of hidden behind something that looks more like substance abuse or generalized anxiety or alcoholism or sometimes I just won't get answers during my interview." (P2)

Several PCPs reflected on the limitations of available screening tools for PTSD, for example saying that four screening questions may not be enough to identify PTSD and that there may be false-negative screening results.

Two PCPs elaborated on difficulties determining the etiology of PTSD in veterans, which may be from a trauma unrelated to active duty, such as a childhood trauma.

A repeated theme in several interviews was: veterans not willing to open up about their mental health problems during visits. One PCP said:

- "I was getting the veteran to acknowledge that they actually have PTSD or symptoms of PTSD. To me, I think, it's the challenge of them, they're in denial. They're in a stage, they're not ready to accept that this could possibly affect them and they could possibly have the diagnosis." (P1)

PCPs explained how veterans are concerned over having a mental health diagnosis in their record because of the stigma and impact on their status in the military.

Other challenges included lack of time to do a mental health-related assessment during a medical visit and the provider failing to recognize that their patient is a combat veteran.

Difficulties in treatment and management of PTSD
The respondents talked about the diversity of veterans with PTSD and other co-morbidities, and acknowledged that it was challenging to determine if some physical symptoms (like itching, etc.) represented a physical manifestation of PTSD. One PCP provided an example of the challenges involved in treating and managing PTSD in homeless people with PTSD who are also substance users.

One PCP commented on how it can be challenging to help veterans see the connection between some symptoms like insomnia due to nightmares and PTSD. Another PCP elaborated on the issue of veterans refusing treatment for PTSD due to the stigma of help-seeking and mental health treatment in general. One PCP felt strongly that medical and psychological management of PTSD can bring relief, but is not sufficient and suggested that many veterans need a more comprehensive solution to addressing their overall health problems and well-being.

Factors influencing PTSD management
Nearly half of respondents (4 of 10) talked about PCPs having insufficient training, experience, or exposure with respect to mental health problems. One PCP noted that VA does not pay for Mindfulness Based Stress Reduction (MBSR) training for veterans.

Other reported factors that can negatively impact PTSD management included:
- Financial and policy factors that limit treatment and prescribing options.
- Socioeconomic factors, including lack of stable housing.
- Not having access to useful screening tools and other tools to help detect mental health problems
- Inconsistent staffing and changes in services may result in veterans receiving inaccurate information about treatment options available to them
- Many providers do not have a way to de-compress after dealing with difficult and emotionally draining patients; this is not a part of the culture of primary care.

PTSD Treatments that PCP Participants Recommend
When asked about treatments they recommend for patients with PTSD, PCPs mentioned multiple therapies (see Table below). Notably, none of the interviewed PCPs reported recommending a community engagement/psychosocial approach.

Treatments Named by PCPs	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Medications										
SSRIs (anti-depressant drugs)	X	X			X			X		X
Medication (Prazosin, Flouxetine, Sertraline, Paxil)	X	X		X			X		X	X
Steroid Injections										X
Pain Clinic										X
Behavioral Health										
Cognitive behavioral therapy (CBT)	X						X			
Rapid Processing Eye Movement (EMDR)	X									
MH Referrals		X		X		X		X	X	X
Cognitive processing therapy (CPT)						X				
Evidence based psychotherapy, specifically prolonged exposure therapy (PE)						X				X
Substance Abuse Treatment (AA or NA)		X								

Treatments Named by PCPs	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Community Engagement/Psychosocial Approach										
Community Engagement/Psychosocial Approach										
Mind-Body/Integrative Treatments										
Mindfulness Meditation	X									X
Mantram Repetition, an evidence-based meditation technique tested at VA with HSR&D funding*	X									
Relaxation and joyfulness techniques**		X								
Acupuncture		X		X						X
Chiropractic Care										X
Podiatry										X
Yoga										X
Vet Center Services (Alpha-Stim)	X									
Environmental Factors*										
Safe, decent, and *beautiful* housing				X						

* Mantram Repetition is an evidence-based meditation technique adapted to VA by Jill Bormann at San Diego VA. The book "*Strength in the Storm: Transform Stress, Live in Balance, and Find Peace of Mind,*" outlines this practice in detail.
**Possibly, respondent referred to "Acceptance and Commitment therapy"
*** Environmental factors are not necessarily covered in the curriculum

Practice Patterns and Use of Motivational Interviewing (MI) and Shared Decision-Making
Several PCPs elaborated on their practice patterns including communication with patients, a general approach to care for patients with PTSD, and referrals. All but one PCP reported using motivational interviewing (MI) in their practice. One PCP reported having in-depth discussions of treatment options with patients. The same PCP reflected on a holistic approach to care for patients with PTSD. Another PCP reported routinely doing the suicide risk assessments and often referring to a mental health provider, and one PCP reported a preference to leave medication prescribing to a specialist in certain situations, such as in patients having nightmares.

Several interview questions addressed MI. In addition to use of MI in practice, respondents reflected on their MI training experience. Two had no formal training in MI, five participated in MI course(s) provided by various sources, and three were experts in MI as they reported being either a facilitator in MI training or an investigator in an MI training study.

The list below summarizes MI techniques that were identified by the respondents as useful in their practice (using the terms stated by the interviewed PCPs):
- Exploring patient's beliefs, asking them to explain the risks/benefits of a particular behavior, juxtaposing patient behavior with ideal health (three PCPs)
- Reflecting veterans' words, values, and preferences back to them for discussion (three PCPs)
- Open ended questions (two PCPs)
- Affirmations (two PCPs)
- Readiness/confidence ruler (two PCPs)
- Repeating back to veterans what she/he is hearing (one PCP)
- Helping veterans set their own goals (one PCP)
- Expressing empathy (one PCP)

One PCP acknowledged the challenge of knowing what MI technique to use at what time. Other PCPs reported choosing more simple-to-use MI techniques and deciding whether to use MI at all or not based on the relationship with the veteran. One PCP saw the benefit of involving other members of a care team in using MI with veterans, but it was not part of their practice at the time of the interview.

A question about provider-patient shared decision-making was asked in four interviews. Shared decision-making was explained differently by the PCPs, including one appropriate definition of shared decision-making and another definition that likely reflected a misconception about this approach. One PCP noted that shared

decision-making is time-consuming, and one PCP reported lack of skills and confidence necessary for use of shared decision-making.

Suggestions Focused on the VW Training Content
Three PCPs made suggestions related to the proposed training content at various points in the interview. These suggestions are summarized below:

- Include different kinds of trauma—childhood trauma, sexual trauma, other abuse in addition to combat trauma
- Make the training easy to understand and not complicated
- Include information on how fear/anxiety is a driving force for chronic illness; prior trauma might lower the threshold for experiencing fear/anxiety and make these feelings more common.
- Include psychosocial aspects of illness
- Address the concept of forgiveness (i.e., helping the soldiers to recognize that what they are going through is not their fault).
- Include how to express gratitude to veterans for their service to the country.
- Make sure that providers understand that PTSD treatment must be tailored to the individual depending on their symptoms, goals and values and particular life circumstance.
- Address provider secondary "trauma" related to treating patients with PTSD

Training Delivery: Feasibility and Acceptability

Acceptance of Virtual World Training
Half of PCPs reported high acceptance of virtual reality as the proposed training modality, citing that it has the potential to help providers learn and may replace some of the current training modalities in the future. One PCP said:

- "When I watched the video clip, I was pretty amazed because it did pretty much look like a video game and the idea of having simulated patients or even just a classroom in the educational environment, it seems very clever and could be additive or even take the place of some of the training that we get in the medical field." (P7)

Four interviewees believed that the VW training will be well-received by younger PCPs. For example:

- "I think, I'm going to sound old, but I think this is a necessary thing for the millennials and the people who are training now. I think for someone more in the baby boomer-ish era, it would be a little bit more taxing. I found when I looked at the video I thought 'This would be really cool for my kids, but this might make me crazy.' Nobody does anything without a phone these days, including myself, you know people are used to growing up gaming and doing those things and I think that people who are very comfortable in that environment, it would be a fabulous training." (P4)
- "I think it's a generational thing. I think for my generation, I'm almost 55. We didn't grow up with this. So it has been a…, at first I was cynical and now I am much more open." (P9)

Several PCPs noted that a VW training would be convenient, because it is online interesting because of its novelty, and possibly, cost effective. Interactivity among VW users, opportunities to provide immediate feedback, and capability to support simulated patient experience were viewed as positive features of VW. One PCP felt that VW may be used to build a sense of community among providers. Another PCP elaborated on the possibility of converting a face-to-face training into the VW training, and one noted that such training would be good for providers who are new to the VA system.

Four PCPs were skeptical regarding the VW training as they did not see the value of this training modality or considered the VW training to be overwhelming. For example, one PCP questioned the value of the VW training:

- "I guess I'm wondering what is the added value over like some similar like structures like role playing or even, I think things like taping your encounters or standardized patients or something like that. It seems like a lot of effort to create something like that and what is the additional value of that over some of these other things… I'm a little skeptical…I mean I love the idea of supporting primary care doctors in learning more about PTSD and getting more comfortable with it, so if that's a way to make that work." (P8)

Two PCPs felt that audience generation for the VW training would be a challenge.

Notably, interviewed PCPs had no or very limited exposure to VW, and some of their statements revealed misconceptions about VW. For example, one PCP thought that VW participants would need virtual reality goggles to participate in the training.

Suggestions Focused on the VW Training Delivery
Six PCPs made suggestions related to the mode of training delivery which are listed below:
- Make training fun and engaging
- Avoid making this training formulaic as some VA trainings have been in the past
- Make the training similar to previous trainings participants have done
- Make the training user-friendly/avoid technical glitches in virtual environment
- Create modules in 18-20 minute blocks
- Make the training short
- Provide immediate feedback to providers learning new MI skills
- Use case-based learning
- Use a TED Talk format
- Find research to support high information retention rates through this training modality
- Make the training efficient for providers
- Highlight the importance of the training
- Be selective with the initial participants to increase chance of getting positive feedback

Barriers and Facilitators for Participation in VW Training

Facilitators
Several PCPs thought that having dedicated time, in particular, having blocked clinic time would support participation in the VW training. Half of PCPs commented on CME credit, indicating that it is an incentive, but likely not a big draw to participation. Evidence of positive educational impact was viewed as participation facilitator by two PCPs. Two other participants talked about positive feedback and testimonials from participants as factors that may increase future participation. Other facilitators reported by PCPs included relevance to practice; opportunity to learn something new; being able to do training from the VA or at home; desktop computer and mobile access to training; quality improvement credit/incentive; self-paced training; user-friendly/fun to use technology; novelty/technology coolness; non-judgmental environment; training being free; gift card/purchasing VR goggles for participants. One PCP mentioned food, not explaining how this incentive may work in VW.

Barriers
Four PCPs emphasized the importance of finding time for the training, with one PCP also talking about the time to create an account and learn how to use the program. Several PCPs named fear of technology and computer/access problems as the barriers to participation. Additional barriers named by PCPs included resistance because the training is new and different, low satisfaction with previous VA trainings, participant fee, and older age.

One PCP elaborated on the barriers, saying:
- "But it is one of, sort of the very, 'work-a-day' barriers of physicians having time in their day to actually having the minutes to participate, having the bandwidth to get an e-mail and actually read it and then track the information that is needed to build the access to the program. What you're describing, virtual reality seems several generations beyond the current level of functionality of VA related IT. And maybe then, the flip side of that coin is that, it's exciting and different in a way that really sets it apart from other opportunities for training. I think a real challenge, I imagine VA, it's been a long time since I've read the Scarlett Letter, but that's what comes to mind for me, you know VA trainings wear a badge of a painful use of 3 hours of your day when you otherwise could be doing other things. I do think a challenge to this will be identifying it as a training related to VA. I think it travels in rough company in that regard."

Generalizability/Applicability to Broader Audience

When asked about applicability of the described VW training to the broader PCP audience, one PCP stated that such training might not be generalizable because the VA experience is different from the experience in the non-VA settings. Answering the same question, other PCPs offered suggestions for how to make the VW training applicable to the broader audience. Some suggestions overlapped with those for the training content and delivery stated earlier in the report. The suggestions included:

- Include childhood trauma, sexual trauma, abuse, and other types of non-combat trauma
- Reflect the provider's most common type of patients
- Reflect PTSD with comorbid mental health issues
- Include range of patients in age, experience, and treatment options
- Have profession-specific training modules
- Keep the material down to a bare irreducible minimum (BIM) when creating content, then, build off the BIM
- Keep the training relevant with current events in the medical world; be sensitive to the broad range of care issues that PCPs have to deal with each day
- Use a stronger form of training than passive learning
- Vary participant's age ranges for the initial testing group to create ambassadors for the program
- Show educational impact

Discussion

Training on PTSD for PCPs is Relevant and Needed

The interviewed PCPs acknowledged multiple challenges and factors influencing diagnosis, treatment and management of PTSD. Many of these are consistent with findings from prior research. PTSD manifests itself in different ways and frequently co-occurs with other mental health conditions, including a broad range of substance use, mood, anxiety, and personality disorders (Back et al, 2014; Goldstein et al, 2016). Half of participants stated that this presents a challenge because clinical manifestations of comorbid conditions may be similar to PTSD or found to be symptoms of PTSD. As noted by one participant, differentiating PTSD from other mental health conditions is especially difficult in older patients, and it is known that more than 60% of military veterans in the United States are 55 years or older and older age is associated with a higher likelihood of reactivated or delayed-onset PTSD (Mota et al, 2016). Participants also noted that it is difficult to recognize actual trauma from imagined trauma due to dementia, psychosis, and other issues, and recognize the origin of the trauma, which may be trauma related to active duty or trauma caused from other experiences, such as abuse in childhood, adult emotional or sexual trauma.

Participants talked about limitations of screening tools as a challenge, such as false-negative results. It is possible that improved screening instruments will address some of the limitations, as current tools, the Primary Care PTSD screen (PC-PTSD) and the PTSD Checklist, are being examined and modifications are suggested to reflect the new Diagnostic and Statistical Manual of Mental Disorders (DSM-5) criteria for PTSD (Prins et al, 2016; Spoont et al, 2015). At the same time, implementation of updated screens in routine practice would create additional need for education.

Another challenge reported during interviews was lack of time during a medical visit to do a mental health-related assessment of a veteran patient. This challenge is discussed in the literature. For example, lack of time to deal with psychologic problems was named as a major barrier to PTSD care by 66% of PCPs in a study done by Meredith and colleagues (Meredith et al, 2009)

According to participants, veterans are sometimes unwilling to open up about their mental health problems during the visit with providers and this can increase the difficulty in recognizing PTSD, providing treatment, or referring to treatment. Participants explained that one reason for this unwillingness is a stigma associated with a mental health diagnosis. Veterans express concern over the impact of having a PTSD diagnosis in their file.

This is sometimes tied to concerns over how such a diagnosis will affect their status in the military. Stecker and colleagues (Stecker et al, 2013) studied beliefs of veterans who screened positive for PTSD and found that decision not to seek treatment for symptoms of combat-related PTSD was influenced by stigma in 16% of cases. Beliefs about stigma fell into two categories—including self-stigma and the idea that treatment would result in consequences. This study identified other beliefs that created barriers to treatment, which did not emerge in our formative evaluation. Those included concerns about treatment (40%), emotional readiness for treatment (35%), and logistical issues (8%).

In our formative evaluation, nearly half of participants thought that that PCPs had insufficient training, experience, or exposure with respect to mental health problems. This is consistent with the findings of a survey study of PCPs in community health centers, where PCPs indicated insufficient knowledge about PTSD diagnosis (28% of respondents) and insufficient knowledge about PTSD treatment (27% of respondents) as the major barriers to PTSD care (Meredith et al, 2009). The challenges associated with PTSD care and PCPs' lack of training and knowledge in this clinical area support the relevance and need for the training that is being developed through this project.

Treatments, Practice Patterns and Use of Motivational Interviewing

When asked about which types of treatment they recommend, PCPs overwhelmingly named pharmaceutical interventions, such as anti-depressants and prazosin, a drug for patients with nightmares. Interestingly, the second most popular treatment recommendation for veterans presenting with PTSD symptoms was referral to mental health. While these two approaches are supported by evidence, they both focus on psychological treatments, rather than recommend more integrative treatments, targeting both mind and body.

One surprising finding was that not one of the 10 PCPs mentioned community-based approaches to treatment for PTSD. Developing research has demonstrated that traditional treatments for PTSD have only limited effectiveness. Modalities once thought to be the gold-standard of treatment, such as prolonged exposure therapy, are no longer viewed as such (Neylan, et. al., in publication). Alternatively, a panel of highly specialized physicians recommended engagement in social and vocational activities as a means of not just temporarily alleviating PTSD symptoms, but as a long-lasting method of coping.

Current trends in the VA health care system include a shift to a Whole Health Approach (VA Patient Centered Care website) to care for veteran patients. This involves a personalized, proactive, patient-driven model of healthcare, which is supported by positive relationships between provider and patient. Motivational Interviewing can enhance this relationship and allow PCPs to better understand their veteran patients' values and health goals. Research has shown that patients are more likely to demonstrate readiness for change and are less likely to drop out of interventions in studies where MI was used (Blain 2013).

However, even the most seasoned professionals may not be consistent in utilizing MI in their practice. The interviews revealed a diverse list of MI techniques that were implemented, but also addressed some challenges, such as knowing when to use MI with a patient. Regardless of prior training, PCPs expressed varying levels of comfort with either implementing or recommending certain types of care. This demonstrates a need for the curriculum to, therefore, focus on building the self-efficacy of PCPs to present options to their patients, rather than encouraging PCPs to implement these treatments in their practice.

Opinions About Acceptance of VW Training Varied

Opinions of interviewed PCPs about VW training varied from seeing this format as highly desired for peer PCPs to conservative and even negative opinions about the acceptance and value of education in VW. These opinions should be interpreted with caution because participants lacked VW experience and understanding of VW capabilities. At the same time, participants seemed to be in agreement recognizing the value of interactive educational approaches and feedback, which are recognized as effective continuing education strategies (Moore et al, 2009), and some acknowledged that these strategies can be used in VW. Based on discussions with the VW experts who are the part of the project team, opinions of clinicians who are not familiar with VW are likely to change once they have exposure to the VW training; they may find VW more in-depth and immersive than they originally thought or anticipated.

Several participants speculated that younger PCPs would better accept a VW training than their older peers. It is a common belief that 3D virtual environments are particularly attractive for the younger generation who frequently and naturally use digital technologies in everyday life (Hunsinger et al, 2012). However, multiple studies conducted in different countries suggest that the "digital native" label does not provide evidence of a better use of technology to support learning, because other factors related to learner characteristics and teaching model are also important or more important in this respect (Gros et al, 2012).

An important topic of interest to the research team was how to increase the participant's willingness to engage in the training. When asked about this, participants noted that the training needed to be advertised as fun, exciting, and different from a traditional VA training. More specifically, participants stated that the training should not be formulaic as some VA trainings have been in the past. Collectively, participants named many factors that were either barriers or facilitators for PCPs participation in a VW training. While some of the factors are outside of the education planners' control, such as participants having dedicated time for training, other factors should be addressed by the planners, including access to the training from VA computers, learner support, and mitigating and resolving technical issues, which are to be anticipated (Shershneva et al, 2014).

Implications

Below is a summary of implications for the VW training development and implementation that the research team drew from the analysis of the PCP interview data. Several implications supported the training features that have been planned or considered, such as emphasizing the role of PCPs in PTSD care and resolving issues related to access to training within the VA facilities. Some implications are not specific to the capabilities of VW and reflect the best practices in continuing education, such as use of case-based learning, role-playing, and feedback. The evolving curriculum already includes these elements. By contrast with these elements, some opinions and suggestions from the interviewed PCPs were critically reviewed and not reflected in the list below because they were viewed less relevant to the current training-in-development, such a suggestion to use TED-style presentations. Notably, the emerging results and implications were documented in the matrix table, and evolving versions of the matrix table were shared and reviewed with the PI and the curriculum team to discuss their applicability to the VW training-in-development.

Training development and evaluation:
- Add evaluation questions about perceived complexity of training
- Have a sample of learners that is diverse in age, training, location, etc.
  - Particularly important: should pay attention to age during randomization process for focus groups.
- Review interview notes when recruiting training participants to identify candidates (e.g., P4)

Audience generation:
- Given that some clinicians believe they are using MI in their practice, the audience generation strategies may need to have the language about advancing MI skills rather than introduction to MI
- Advertising should convey precisely what the learner can expect from the training
- Clearly state technical requirements for participation
- Offer CME credit, as it is a desired feature of the training
- Collect (positive) testimonials from VW training participants to use for generation of future audience
- Consider including evidence of the effectiveness of education in VW.Training in the training description/audience generation materials
- Consider presenting training to potential participants as fun, engaging and valuable

Content:
- Reflect in the curriculum that different kinds of trauma may lead to PTS in veterans
- Address community engagement/psychosocial approaches
- Present co-morbid mental health issues
- Include psycho-social aspects of illness
- Discuss disrupted fear networks
- Invest sufficient time in explaining clinical manifestations of PTSD
- Provide learners with downloadable practice-oriented tools and/or links to tools (e.g., tools existing within VA HER/system)

- Demonstrate to learns how best practices in screening for/diagnosis of PTS and managing of patients with PTSD may be time efficient
- Emphasize the role of PCPs
- Reframe the post-traumatic stress symptoms to not imply a "disorder"
- Consider providing a definition of shared decision-making
- For learners from Kaiser and community health care settings: consider providing tips for interacting with veteran patients.

Delivery:
- Revisit IT logistics to ensure VA access to the training
- Create a safe, non-judgmental environment to practice skills
- Provide synchronous training
- Use case-based learning and role-playing
- Support building community among PCPs, provide opportunities for learner-learner interaction and networking
- Provide immediate feedback on learner performance
- Advocate for potential learners to have designated days/times for education in their setting and consider these designated times when scheduling VW training sessions
- Provide learner support to address computer problems
- Involve VA training experts for insight

Generalizability
- Consider the implications for content and delivery stated above as means to increase applicability of the VW training to the broader audience of PCPs
- Consider tailoring the training content to the educational needs and experience of PCPs practicing in the non-VA settings
- Emphasize interprofessional collaborative practice as related to care for patients with PTSD

Limitations

We used a convenience sample of seasoned PCPs affiliated with VA and results cannot be generalizable to the broader population of PCPs affiliated with the VA system and the population of PCPs practicing outside of the VA system. However, generating generalizable results was not the purpose of this study because it was formative evaluation to inform training development and not a research study.

Lack of participant familiarity with VW environment and a choice some participants made to not view the provided video about education in VW prior to the interview led to participant responses based on insufficient or inaccurate understanding of the VW capabilities.

Conclusion
1. Findings about challenges in primary care practice related to providing care to veterans with PTSD as well as treatment choices by PCPs and use of motivational interviewing are consistent with the published studies.
2. Findings support the need for training for PCPs focused on PTSD and MI applied to providing care for patients with PTSD.
3. Opinions of interviewed PCPs about VW training were limited to their insufficient understanding of VW.
4. This formative evaluation generated implications for audience generation, content, and training delivery and evaluation, and training generalizability that are being utilized for the VW training development in this project.

References

Back SE, Killeen TK, Teer AP, et al. Substance use disorders and PTSD: an exploratory study of treatment preferences among military veterans. *Addict Behav*. 2014;39(2):369-373.

Blain, LM. Motivational interviewing as an augmentation to increase effectiveness in cognitive processing therapy for PTSD: an initial trial. 2013. ProQuest Dissertations Publishing
http://gateway.proquest.com/openurl?url_ver=Z39.88-2004&res_dat=xri:pqdiss&rft_val_fmt=info:ofi/fmt:kev:mtx:dissertation&rft_dat=xri:pqdiss:3602560

Goldstein RB, Smith SM, Chou SP, et al. The epidemiology of DSM-5 posttraumatic stress disorder in the United States: results from the National Epidemiologic Survey on Alcohol and Related Conditions-III. *Soc Psychiatry Psychiatr Epidemiol*. 2016;51(8):1137-1148.

Gros B, Garcia I, Escofet A. Beyond the net generation debate: a comparison of digital learners in face-to-face and virtual universities. *The International Review of Research in Open and Distributed Learning*. 2012; 13 (4).
http://www.irrodl.org/index.php/irrodl/article/view/1305/2311

Hunsinger J, Krotoski A (Eds.). *Learning and Research in Virtual Worlds*. New York: Routledge, 2012.
https://books.google.com/books?id=KZLbAAAAQBAJ&pg=PA49&lpg=PA49&dq=virtual+world+is+better+perceived+by+younger+generation&source=bl&ots=1W49tP7QsX&sig=BnDtlrdFcpe1CA1Oj_8hKs25g50&hl=en&sa=X&ved=0ahUKEwj6pre4terPAhXERCYKHdohDU4Q6AEIWTAJ#v=onepage&q=virtual%20world%20is%20better%20perceived%20by%20younger%20generation&f=false

Meredith LS, Eisenman DP, Green BL, Basurto-Da´vila R, Cassells A, Tobin J. System factors affect the recognition and management of posttraumatic stress disorder by primary care clinicians. *Med Care* 2009;47.
http://cphd.ucla.edu/sites/default/files/downloads/Meredith.HPHS_.pdf

Moore DE, Green JS, Gallis HA. Achieving desired results and improved outcomes: integrating planning and assessment throughout learning activities. *J Contin Educ Health Prof*. 2009;29(1):1-15.

Mota N, Tsai J, Kirwin PD, et al. Late-life exacerbation of PTSD symptoms in US veterans: results from the National Health and Resilience in Veterans Study. *J Clin Psychiatry*. 2016;77(3):348-354.

Neylan, T., et. al. What I have changed my mind about and why. Report on presentation at ISTSS November, 5, 2015: New Orleans, LA. (in publication)

Prins A, Bovin MJ, Smolenski DJ, et al. The Primary Care PTSD Screen for DSM-5 (PC-PTSD-5): Development and Evaluation Within a Veteran Primary Care Sample. *J Gen Intern Med*. 2016;31(10):1206-1211.

Shershneva M, Kim JH, Kear C, Heyden R, Heyden N, Lee J, Mitchell S. Motivational interviewing workshop in a virtual world: learning as avatars. *Fam Med*. 2014;46(4):251-258.

Spoont MR, Williams JW Jr, Kehle-Forbes S, Nieuwsma JA, Mann-Wrobel MC, Gross R. Does this patient have posttraumatic stress disorder?: Rational clinical examination systematic review. *JAMA*. 20154;314(5):501-510.

Stecker T, Shiner B, Watts BV, Jones M, Conner KR. Treatment-seeking barriers for veterans of the Iraq and Afghanistan conflicts who screen positive for PTSD. *Psychiatr Serv*. 2013;64(3):280-283.

VA Patient Centered Care Website
http://www.va.gov/PATIENTCENTEREDCARE/explore/about-whole-health.asp

Appendices

Appendix 1: Interview Guide

<u>Before the Interview</u>
Participants will receive background information about the Virtual Worlds project prior to the interview, e.g., curriculum info.

<u>Introduction</u>
[Confirm that participant has received the approved Information Sheet.]

First, I want to thank you for taking the time to talk with me today! The purpose of this brief interview is to get some input from you based on your clinical experience as a primary care provider. Our team is developing a new training intervention for primary care providers to improve their ability to identify and manage posttraumatic stress. While there are other interventions for posttraumatic stress, the one we are planning is interactive and it will be held in an online environment. So, the overall purpose of our conversation today will be to help me understand some of your needs as a clinician around posttraumatic stress and your thoughts about the online environment.

Your participation in this interview is voluntary. You may choose to not answer any question or stop the interview at any time. Do you have questions for me before we begin?

[Recite Audio Consent language from the protocol. START AUDIO RECORDER.]

<u>Domain 1: Needs Assessment of Proposed Training Topics -- Focus on Curriculum</u>
Q1. In your everyday clinical practice, what are some of the challenges recognizing posttraumatic stress (PTS)?

Q2. What are some typical treatments you have recommended for veterans with PTS?
> Follow-up: Are there other treatments you have heard about, but don't usually recommend? If not, why not?

Q3: The VA requires PCPs to have basic training in motivational interviewing. Can you tell me about your experience using motivational interviewing?
> Follow-up: What have been some of the challenges you have encountered to using motivational interviewing skills in your everyday practice?

Q4. What role has shared decision-making played when selecting treatment for PTS?

<u>Domain 2: Feasibility and Acceptability (Focus on Training Delivery in Virtual World)</u>

One of the things I'm interested in is how interested you might be in participating in a training that is held in an online environment. Did you have a chance to look at the materials I sent before our interview (e.g., the Virtual World introductory module)?
IF YES: The idea behind our training is that participants would log into a virtual environment and conduct the training interactively inside that world.

IF NO: It's no problem if you didn't. Are you at a computer right now? If it's OK, I'll send an e-mail with a link that I'd like for you to click, so I can get your reaction. [SEND LINK]

IF NO, Explain:
> A virtual world is a computer-based, 3-D, 360-degree simulated environment. It resembles a first-person computer game, in which the user's digital self (or representation) is free to move around an environment at will, interacting with other people's digital selves and with the objects placed within the environment. A digital self may resemble the user's appearance or may look completely different. Users' digital selves make gestures, move, sit, and interact with the environment in real time. Users can communicate with one another either by speaking through a microphone, or by typing inside a chat

system sort of like an instant message or text. When a user talks, her or his digital self talks, too, and can be heard by other users' digital selves positioned nearby. A virtual environment, which can be anything from a beach to a library, is usually expressed through color- and detail-rich graphics.

Q6. Do you have experience navigating in a virtual world for business, education, or personal reasons?

Q7: From what we have discussed, what do you think about holding a medical education training in a virtual environment?

<u>**Domain 3: Barriers and Facilitators**</u>
As I mentioned, the long term goal of this project is to better equip providers to work with and treat patients who have posttraumatic stress.

Q8. Do you think other primary care providers would be willing to participate in a training held in a virtual environment?
        Follow-up: Can you anticipate possible problems?
        Follow-up: Do you have suggestions about how we could make the training user friendly?
        Follow-up: Can you think of something that will make the training <u>relevant</u> to busy primary care providers?

Q9. Can you think of some reasons that may <u>prevent</u> a provider from participating in a virtual world training environment?
Q10. Can you think of some reasons that may <u>encourage</u> a provider to participate?
Q11. What about yourself, what might influence your decision to participate in a virtual world training environment?
Q12. Incentives. $$, CME credit, QI credit, etc.

<u>**Domain 4: Generalizability**</u>
Q12. Providers come from various backgrounds, and our goal is to make sure the training is useful to PCP in various practice contexts. From your experience of doing Continuing Medical Education (CME), what we do to make the training most useful to a broad audience of PCPs?

<u>**Interview Ending**</u>
Q13. Is there something else relevant to our conversation that I did not ask about, but you would like to share?
Q14. Do you have questions for me?
Thank you for your time!
[STOP AUDIO RECORDER]

Q#	Interview Domain	Implications
DOMAIN 1: RELEVANCE OF TRAINING TOPIC AND CURRICULUM		

Q1	**Difficulties in recognizing and diagnosing PTSD**
	1. Having enough time to do MH-related discovery during medical visit (P2, P5)
	2. PTSD manifests in different ways; differential diagnosis of PTS with substance abuse, anxiety, alcoholism, and depression other mental health conditions is a challenge (P2, P3, P4, P8, P9)
	   • Difficulty recognizing actual trauma from imagined trauma due to dementia, psychosis, etc. (P3)
	   • Older PTSD patients (P2)
	3. Differentiating etiology of PTSD (P1)
	   • Military experience (combat, military sexual trauma; women or men can experience multiple forms of trauma, etc.)
	   • Exposure to other kind of trauma experience (childhood, adult; emotional, sexual, physical, MST, etc.) (P1, P4)
	4. Failure by the provider to recognize that their patient is combat veteran (P4)
	5. Failure by the provider to understand that veterans don't need to be deployed to a warzone to develop PTSD (P4)
	6. Veterans not willing to open up about MH problems during visits (P2, P5, P7)
	   • Veterans will engage in 'deception' when answering questions by answering 'no' to particular questions when the answer should be 'yes'. (P5)
	   • Veterans show concern over having an MH diagnosis in their record because of stigma and impact on their status in the military. (P1, P5)
	7. Available screening tool has limitations (P5, P6, P10)
	   • Four question screeners for PTSD that are provided to providers are not enough to capture the entirety of the diagnosis. (P5)
	   • PTSD Screener. (P6)
	   • Negative PTSD screens may not be correct. (P10)
		-Reflect in the curriculum that different kinds of trauma may lead to PTS in veterans
		-Differential diagnosis of PTS is a challenge for PCP. Is there a room in the curriculum to address it?
		-"Lack of time" is a universal barrier. It may be helpful to demonstrate to the learns how best practices in screening for/diagnosis of PTS and managing of patients with PTSD may be time efficient
		-Providing learners with downloadable practice-oriented tools and/or links to tools will be helpful
		- Issue for Kaiser/community PCPs in identifying if the patient is a Vet
		-Invest sufficient time in explaining tell-tale symptoms.
		- Emphasize the role of the PCP: not to diagnose PTSD, but rather to manage symptoms of post-traumatic stress to the best of ability
		
		Focus Group: We could add evaluation questions about complexity of training.

Q1	**Difficulties in treatment and management of PTSD** 1. Veterans not willing to accept the diagnosis of PTSD and/or refusing treatment for PTSD due to stigma of help-seeking, MH treatment, etc. (P1) 2. PTSD in homeless people who are substance users (P3) 3. Recognize that clinical symptoms may be influenced by/associated with PTSD, such as itching (P1, P9) 4. Getting the veteran to understand that there is a connection between some issues and PTSD (insomnia caused by nightmares caused by PTSD). (P4) 5. Diversity of veterans with PTSD and other co-morbidities (P3) 6. Refusing treatment for PTSD due to stigma of help-seeking, MH treatment, etc. (P1) 7. Medical and psychological management is fine, but does not get at the root of the problem. Medical/psychological treatment is often a temporary band aid, what is	- Communication techniques are important for provider-patient interaction. - Again, explain that PCP's role is not to diagnose. Reframe the symptoms to not imply a "disorder"

Q#	Interview Domain	Implications
	needed for many veterans is a comprehensive solution to solving MH problems. (P3)	

Q1	**Factors influencing PTSD management**
	1. Financial and policy factors that play into treatment options/prescribing practices.
	2. Social-economic factors, housing (P3)
	3. Having useful/useable tools to help discover MH problems (P2)
	    • Ex: IPC initial visit template is a tool that helps to focus on MH for returning veterans (P2)
	    • Suicide Screens/Suicide Risk Assessments (P2)
	4. Inconsistent staffing. (P5)
	5. PCP's don't have enough training, experience, or exposure to MH. (P6, P7, P8, P9)
	    • Providers coming from outside the VA don't usually have the training to look for PTSD or its symptoms. (P7)
	    • No formal training in recognizing PTSD. (P7, P8)
	6. VA does not pay for Mindfulness Based Stress Reduction (MBSR) training for veterans (P3)
		-Tools existing within VA HER/system may be utilized in the training
		-Provide accessible resources for mindfulness
		-Question: how will we design the screening activity, if not using PC-PTSD screener?

Q2	**PTS treatment participants currently recommend** <u>Medications</u> 1. SSRIs (anti-depressant drugs) for patients with mood components. (P1, P2, P5, P8, P10) 2. Medication (Prazosin, Flouxetine, Sertraline, Paxil) (P1, P2, P4, P7, P9, P10) 3. Steroid Injections (P10) 4. Pain Primary Care Clinic (P10) (this one overlaps: medication, mind-body) <u>Behavioral Health</u> 1. CBT (cognitive behavioral therapy) (P1, P7) 2. ENDR (Rapid Processing Eye Movement) (P1) 3. MH Referrals (P2, P4, P5, P6, P8, P9, P10) 4. Warm handoff or a regular referral to MH 5. Substance Abuse Treatment (AA or NA) (P2) 6. Cognitive processing therapy (P6) 7. Evidence based psychotherapy, specifically long exposure therapy. (P6, P10) <u>Community Engagement/Psychosocial Approach</u> <u>Mind-Body/Integrative Treatments</u> 1. Mindfulness Meditation (P1, P10) 2. Mantram Repetition , an evidence-based meditation technique (P1) • Ex: *Strength in the Storm: Transform Stress, Live in Balance, and Find Peace of Mind* (book) 3. Relaxation and joyfulness techniques (P2)	-Primary care providers use a variety of treatments but are likely to have varying level of comfort with different treatment modalities/agents. (Keep in mind that these are seasoned professionals.) -<u>No community engagement/psychosocial approaches were mentioned by the interviewees. It may be underutilized and should be addressed in the curriculum.</u>

Q#	Interview Domain	Implications
	4. Acupuncture (P2, P4, P10) 5. Chiropractic Care (P10) 6. Podiatry (P10) 7. Yoga (P10) 8. Vet Center Services (Alpha-Stim) (P1) Environmental Factors (not necessarily covered in curriculum) 9. Safe, decent, and *beautiful* housing (P3) Practice Patterns/Approaches to Treatment 1. Does the suicide risk assessments; often refers to a mental health provider (P2) 2. In-depth discussions of treatment options with patients. (P10) 3. Prefers to leave medication prescribing to a specialist in situations such as in patients having nightmares (P1). 4. Holistic approach to care (P10) • Identifying patient's issues, orientating to VA, and getting patients sleeping. 5. Uses motivational interviewing (MI) (P1, P2, P3, P4, P5, P6, P8, P9, P10)	

Q3	**Participants' MI training experience**
	1. Participated in MI training (P1, P2, P5, P9, P10)
	    • Courses with VAMC Health Behavior Coordinators (P1, P2)
	    • Center of Excellence in Primary Care Education (COE-PCE) fellowship training (P2)
	    • Participates in various MI trainings. (P5)
	    • Basic MI training (P9, P10)
	2. MI expert (P4, P6, P8)
	    • Teaches MI as part of the COE-PCE fellowship program (P4)
	    • Former PI on an MI training project for PCPs. (P6)
	    • Participated and helped facilitate MI trainings. (P8)
	3. No formal training in MI training. (P3, P7)
	4. No MI training during residency. (P8)
	
	MI techniques participants find useful
	1. Open ended questions (P1, P5)
	2. Repeating back to veterans what s/he is hearing (P1)
	3. Exploring patient's beliefs, asking to explain the risks/benefits of a particular behavior, juxtaposing patient behavior with ideal health (P3, P4, P5)
	4. Helping veterans set their own goals (P4)
	5. Expressing empathy (P5)
	6. Affirmations (P5, P8)
	7. Readiness Ruler (P5, P8)
		-Past exposure to MI training does not mean that the clinician uses a *range* of MI techniques or have *advanced* MI skills.
		-If some clinicians believe they are using MI in their practice, the audience generation strategies may need to have the language about *advancing* MI skills rather than *introduction to* MI.
		-Think about who the ideal audience is for the training? Green providers?

Q#	Interview Domain	Implications
	• P8 referred to this as a confidence ruler 8. Reflections (P6, P8, P9) 9. Using simplicity when selecting techniques to use. (P10) 10. Would like to bring on other members of a care team into the MI treatment of veterans. (P5) • Participant does not engage in this, but believes it would be a great idea. **Challenges to using MI in clinical settings** 1. Relationship with Veteran determines whether provider will use MI during interaction or not. (P1) 2. Knowing what MI 'tool' to use at what time. (P9)	

Q4	**Shared Decision-Making**
	1. Variability in the definition of shared decision-making
	    • Appropriate definition (P2)
	    • Misconception (P1)
	2. SDM is time-consuming as it requires equal presentation of options (P2)
	3. Lack of skills/confidence necessary for SDM (P4)
		-SDM definition may need to be provided to learners (as additional resource?)
		-Note: A question about SDM was not asked in every interview. (Our focus is on collaborating with patients on a personalized care plan.)

	Suggestions—focus on content **1.** Include different kinds of trauma--childhood trauma, sexual trauma, abuse, etc (P1) **2.** Make the training easy to understand and not complicated (P2) **3.** Include information on how fear is a driving force for illness; trauma lowers threshold for feeling fear (P3) **4.** Include psycho-social aspects of illness. (P3) **5.** Include how to express gratitude to veterans for the service that they gave to the country. (P3) **6.** Make sure that providers understand that PTSD treatment is unique and varies. (P5) **7.** Address provider "trauma" related to treating patients with PTSD (P3) **Related opinions** 1. Many providers don't have an outlet to de-compress after dealing with difficult and emotionally taxing/draining patients. (P8)	-Kaiser/community docs might need tips for interacting with Vet patients. -Easy is subjective term. How do we determine what is easy and what is complicated for multiple participants? For curriculum: Be sure to discuss disrupted fear networks as part of the didactic
DOMAIN 2: TRAINING DELIVERY: FEASIBILITY AND ACCEPTABILITY		
Q6	**Experience with Virtual World** 1. No experience (P2, P3, P6, P7, P8, P10) 2. Limited experience, no similar to the training being developed in this project (P1, P4, P5, P9)	-Providers could come in with the expectation that they know what to do in the environment, but find that it's more in-depth than they originally thought or anticipated.
Q7	**Acceptance of Virtual World Training** 1. Personally: high acceptance, the way to go (P1, P2, P6, P7) • Very clever. Could be additive or even replace current training modalities.	-Our recruitment/advertising should convey precisely what the learner can expect from the training. VW is still unfamiliar for most.

Q#	Interview Domain	Implications
	(P7) - Has potential to be 'incredibly useful' is used for the right reasons. (P9) - Terrific idea with the potential of helping providers learn how to really connect with veterans. (P10) 2. Good delivery method for PCP (P1, P2, P6) - Chance for a higher rate of attendance because it's online. (P1) - Convenient – at own desk, at your environment, etc. (P1, P2) - Interesting/novel way of learning new information; good delivery method. (P2, P6) - May be beneficial and cost effective (P4) 3. Interactivity between users is a positive feature (P4, P6, P7) - You may forget that you're interacting with an avatar (P4) - Values simulated patients capability (P7) 4. Face-to-face training may be converted into the VW training (P10) 5. May be good for providers who are new to VA (P3) - Mentions Ukiah as a clinic with providers who have very little experience (P3) 6. Believes it will be well-received by younger providers (P1, P4, P5, P9) - Could feel too artificial to older generation 7. PCP audience generation for the VW training will be a challenge (P1, P2) 8. May be used to build a sense of community among providers. (P8) 9. Skeptical/negative (P2, P3, P5, P8) - Does not value VW; no particular benefit to this sort of training (P2, P3, P8) - May be overwhelming (P3) - Training modality is boring (P5) **Related opinions** 1. Necessary change. (P4) 2. Curious about educational impact/added value over other educational strategies (P6, P8) 3. Misconception - believes that participant needs virtual reality googles to participate in training (P6) 4. Values PCP learning from each other (P8) 5. Values immediate feedback (P9)	- P4 described in her own words what we call "immersive" -P4 may be invited to be a tester -Clearly stated technical requirements for participation are important -Benefits to synchronous training: - VW may support building community among providers, which was noted to be important by one PCP. PCPs often do not know how their peers practice, what treatment and communication approaches work best in the practice of their peers; therefore, PCPs value opportunities to network and be the part of the community where sharing of experiences occurs. The VW training should provide opportunities for learner-learner interaction. (Think about opportunities for discussion, e.g. homework.) - Immediate feedback is valued - this theme supports the design where learners practice new skills and receive feedback from the facilitators and other learners. -PCPs who are not familiar with VW may be skeptical about education in VW. Their negative attitude may be changed once they engage in education but how to make them choose to participate in the training? -The interviewed PCPs largely represented older/mature providers. It may be useful to have generation mix in the future focus group to receive feedback from younger and older clinicians. Also, can potentially use their "endorsement" of the training as a recruitment tool for the RCT. -Note: providers who are new to VA may not necessarily be younger providers; staff changes may be common on the VA facilities
	Suggestions—focus on delivery 1. Modules in 18-20 minute blocks (P1) 2. Use a TED talk format (P1) 3. Make the training user friendly (P2) 4. Make the training similar to previous trainings participants have done (P2)	-Feedback on learner performance is essential. -Perhaps cite benefits of VW training in recruitment? -PCPs rely on evidence-based methods. Can we demonstrate evidence via our recruitment tools? -Some suggestions are universal and not specific to

Q#	Interview Domain	Implications
	5. Provide immediate feedback to providers learning new MI skills (P3) 6. Address concept of forgiveness; helping the soldiers to recognize that what they are going through is not their fault (P3) 7. Make effort to present training as 'cool', 'fun', 'interesting' and 'valuable'. (P6, P9) 8. Find research to support high information retention rates through this training modality. (P6) 9. Avoid 'glitchy' and artificial virtual environment (P6) 10. Make the training efficient for providers (P6) 11. Include feedback (P9) 12. Highlight the importance of the training (P9) 13. Should not be formulaic. (P9) 14. Make training short (P10) 15. Make CME fun and engaging (P10) 16. Use case-based learning (P10) **Related opinions** 17. Be selective with the initial participants to increase chance of getting positive feedback (P6) 18. Role playing is a good training method (P10)	the capabilities of VW, such as case-based learning, role-playing and use of feedback. The evolving curriculum already includes these elements. -Although TED-style presentation is an interesting format to explore in CME/CPD, this format will not be the part of this curriculum -VW is expected to be fun and engaging
DOMAIN 3: BARRIERS AND FACILITATORS		

Q10 Q11	**Facilitators for Participation in VW training**
	 1. Having blocked clinic time (P1)
	 2. Having dedicated time (P2, P8, P9)
	 3. Relevance to practice, such as presenting variety of causes for PTS (P1)
	 4. Free (P1)
	 5. CME credit (P1, P2, P4, P6, P10)
	     • CME credit is preferred over QI credit (P4)
	     • Nice but not a big draw (P6)
	 6. QI credit/incentive that contributes to re-certification (P2, P6)
	 7. "Self-paced" training (P2)
	 8. Being able to do training from the VA or at home (P2)
	 9. Allowing for both desktop and mobile access (P2)
	 10. Gift card (P6)
	 11. Purchasing VR googles for providers (P3)
	 12. Monetary incentive and credit may not mean as much as the opportunity to learn something new (P4)
	 13. "Mental" age of the provider (P4)
	 14. Non-judgmental environment (P4)
	 15. Novelty, technology coolness factor (P6)
	 16. Easy/user-friendly/fun to use (P4)
		-Logistics are key. Perhaps we should speak with VA training experts for insight.
		 -It is important to create a safe environment to practice skills
		 -Dedicated or even blocked clinic time seems to be the critical factor. If potential learners have designated days/times for education in their setting, the planners need to be aware of these scheduled times and, if possible, schedule VW training sessions accordingly.
		 -CME credit may be a desired feature of the training but it is not likely to be the major factor influencing participation
		 -QI theme may reflect VA-specific QI requirements rather than MOC requirements
		 -Collecting testimonials from VW training participants may be helpful for generation of future audience for this training
		 -Training description/front matter may have a reference to the effectiveness of education in VW.

Q#	Interview Domain	Implications

	17. Positive feedback from participants (P4, P6)
	     • Word of mouth advertising among providers (P4)
	     • Testimonials (P6)
	 18. Food (P6)
	 19. Demonstrate positive educational impact (P8)
	 20. Added patient value (?) (P9)	

Q9	**Barriers to Participation in VW training**
	 1. Resistance because it is new and different (P1)
	 2. Finding time for the training (P2, P3, P5, P6)
	 3. Time to create an account and learn how to use the program (P5)
	 4. Fear of technology (P4, P6)
	 5. Computer problems (P1, P2)
	     • Not being able to access the training from a VA computer (P2)
	     • Not being able to come back to finish the training (P2)
	 6. Having to pay for the training (P2)
	 7. Older age (P4)
		-Revisit IT logistics.
		 -VA access to the training is critical

	**DOMAIN 4: GENERALIZABILITY: APPLICABILITY TO BROADER AUDIENCE**	
Q12	**Suggestions for how to make training applicable to broader audience** 1. Include childhood trauma, sexual trauma, abuse, etc. (P1) 2. Reflect a provider's most common type of patient (P2) 3. Reflect PTS with comorbid MH issues (P2) 4. Include range of patients in age, experience, and treatment options (P2) 5. Have profession-specific training modules. (P2, P4) 6. Use stronger form of training than 'passive learning'. (P4) 7. Vary participant's age ranges for the initial testing group to create ambassadors for the program. (P4) 8. Keep the material down to a bare, irreducible, minimum (BIM) when creating content, then, build off the BIM (P9) 9. Keep the training relevant with current events in the medical world (zika, infectious disease, etc.) (P4, P7) • Providers already have to learn about these things and this could make this modality more appealing to them. (P7) 10. Be sensitive to the broad range of care issues that PCP have to deal with each day (P4) 11. Show educational impact (P6) **Other opinions** 1. May not be generalizable the VA experience is different from the experience in the non-VA settings (P2)	-It's important to have a sample of learners that's diverse in age, training, geo., etc. -Training should at least present co-morbid MH issues, if not discuss determining if the patient is facing PTSD vs. other MH issues. - Question: Will learners from outside VA have the same exposure to patients with PTSD? - Necessary to address how different members of a treatment team (varied profession) would approach this? Interprofessional/collaborative practice emphasis. -We should pay attention to age during randomization process for focus groups.

Appendix B: Virtual Environment Images

The figures in this section represent the deliverables submitted by the vendors, consistent with the SOW. CNDG provided the following disclaimer: "This is a proof of concept for NCIRE. Final program may be somewhat different."

Figure 1. Virtual campus (bird's eye view)

Figure 2. Virtual Campus

Figure 3. Orientation Center

Figure 4. Orientation Center displaying PCP avatar
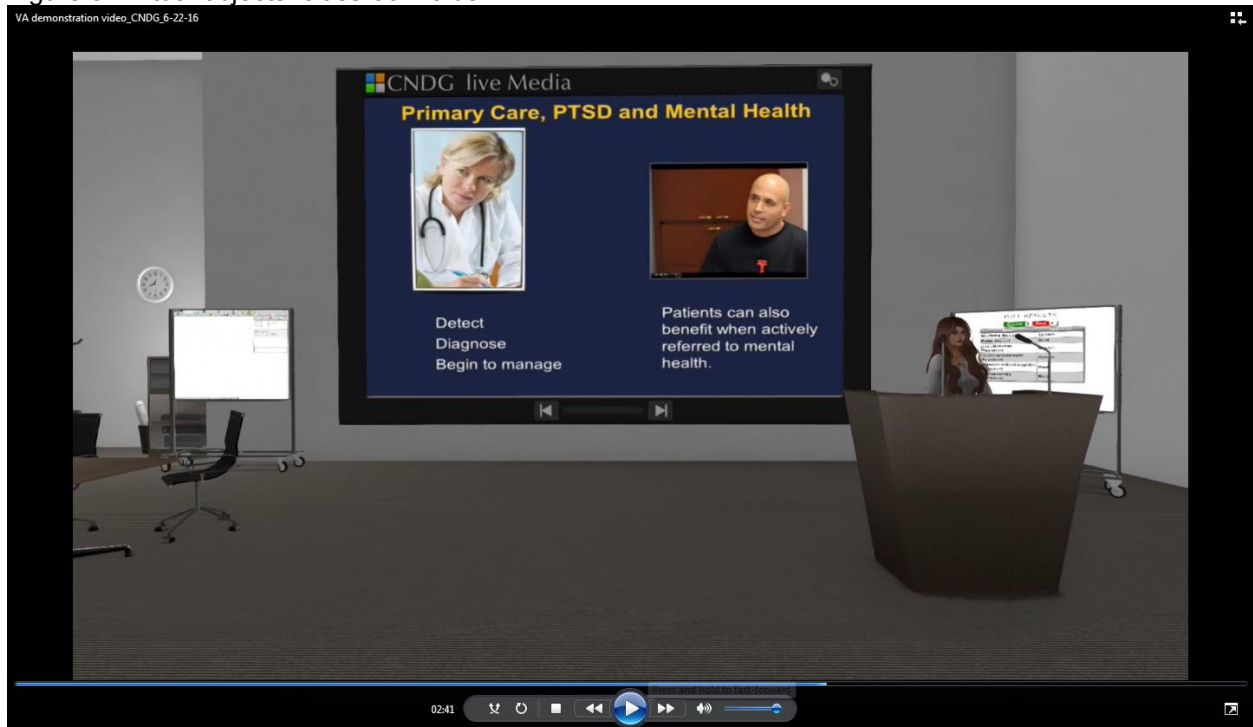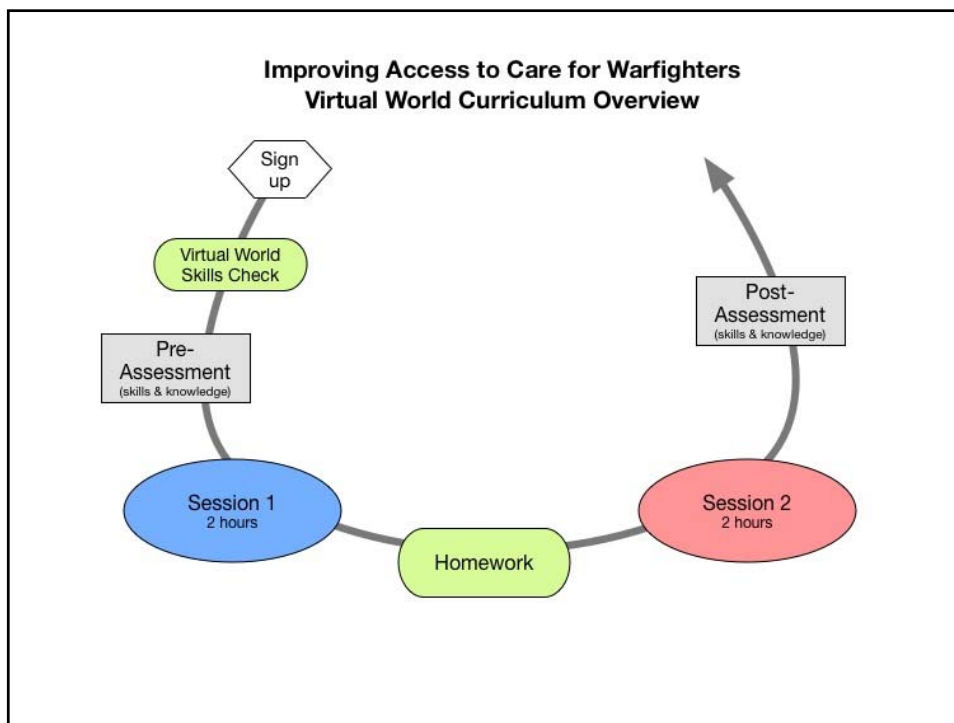
Figure 5. Virtual objects: classroom aids

Figure 6. Veteran case study simulation

Figure 7. PCP avatars observing the Standardized Patient in an exam room

PTSD Project

Overall Notes

9.23.16

Improving Access to Care for Warfighters
Virtual World Curriculum Overview

Sign up

Virtual World Skills Check

Pre-Assessment
(skills & knowledge)

Post-Assessment
(skills & knowledge)

Session 1
2 hours

Homework

Session 2
2 hours

Session 1

Session 2
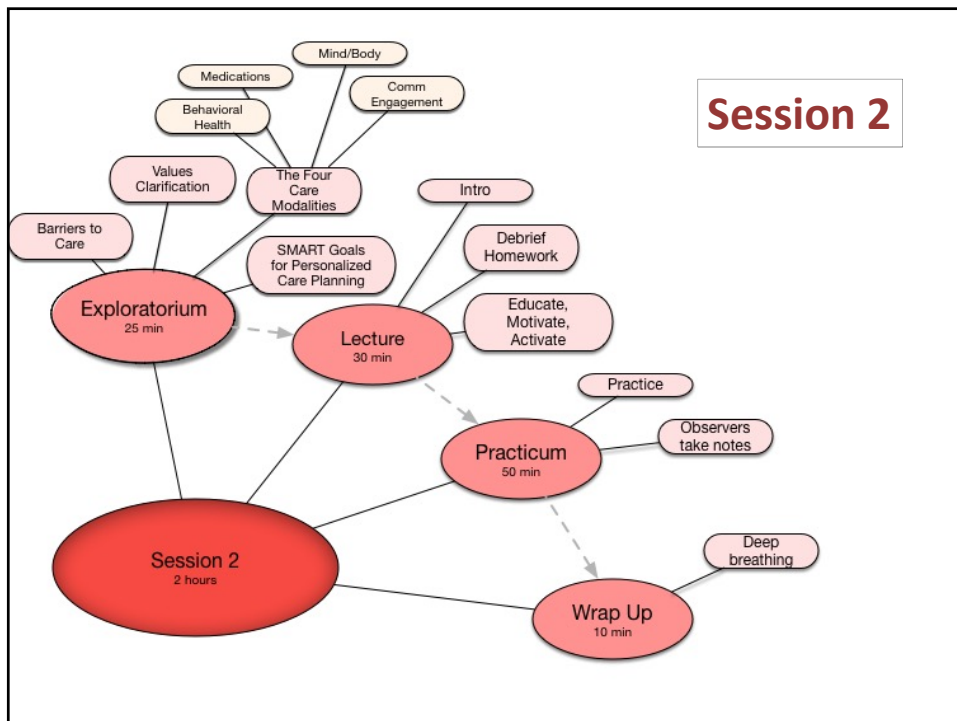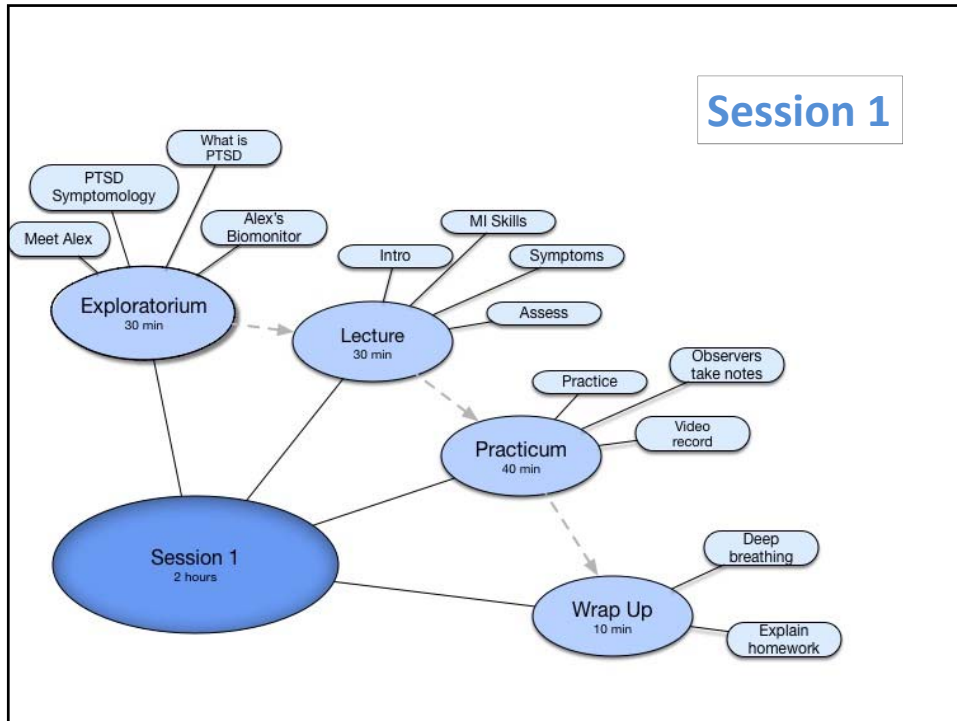
Overall Look and Feel Summary

- Location to be reminiscent of the SF VA facility with view of the channel into the SF Bay, greenery, etc.
- Open-air amphitheater, automatic seating for 25 avatars, stage area with screen (for slides) and a back screen for speakers' reference.
- Nearby building that resembles (inspired by?) the SF VA hospital (a large, art deco, stucco building) where the Exploratoriums and the small groups will take place) – see photos.
- Will need some official landing place where everyone enters.

San Francisco Veterans Administration Location

**San Francisco Veterans
Administration Location**

Exploratorium 1 and 2

- Exploratoriums 1 & 2 are located in two separate areas of our hospital lobby.
- The lobby should look like a modern hospital lobby (you can tell you're in a hospital but it's nice – plants, natural light, couches).
- Exploratorium 1 will be available to them upon arrival for session 1 and will remain available. Exploratorium 2 will only be available upon arrival for session 2.
- The two Exploratoria will consist of numbered stations that the learners will explore in numerical order as a group. They can return, asynchronously, to revisit.
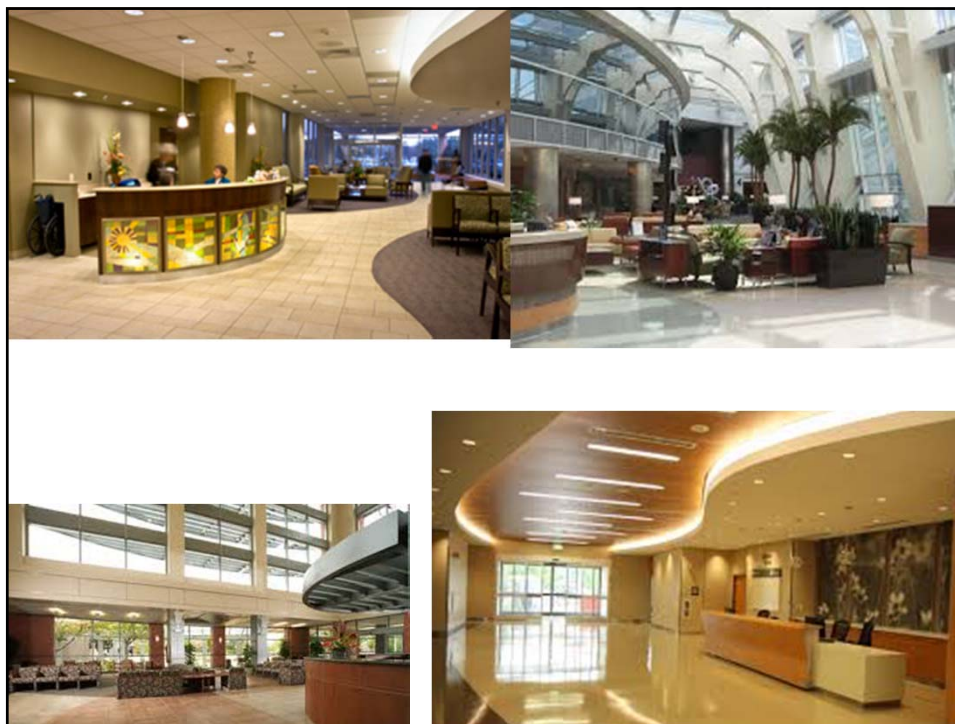
Amphitheater

- Both sessions will include a didactic portion to take place in a spacious and attractive open-air amphitheater.
- Automatic seating for 25 avatars
- Screen for PPT slides
- Reference screen for speakers
- Teleporters easily available to access the small group breakout rooms
- Possible display of completed "boards" from the Exploratorium activities in the amphitheater

Small Group Rooms

- We will have 18 learners at each session, broken into 3 small groups of 6 learners each for the practicum portion of the curriculum.
- After the didactic session, the learners will be teleported to their rooms (all within the "hospital") for the role-play practice to take place in their small groups.
- Rooms should be identified by some easy reference – possibly color (blue room, green room, etc). We will pre-assign avatars to groups/ rooms.
- Each small group room will be an examination room (familiar to our learners) that will include two obvious chairs where the standardized patient and the learner will sit (one by one) to perform their role play. The other learners in the group will also have seating with a clear view of the examining room where the role plays take place.
- Sitting in all chairs should be automatic, on click.
- Place an obvious looking timer for the Small Group coach to keep track of time (8 – 10 minutes per role play).
- Large screen visible that includes the facts of Alex's case that everyone will be using.
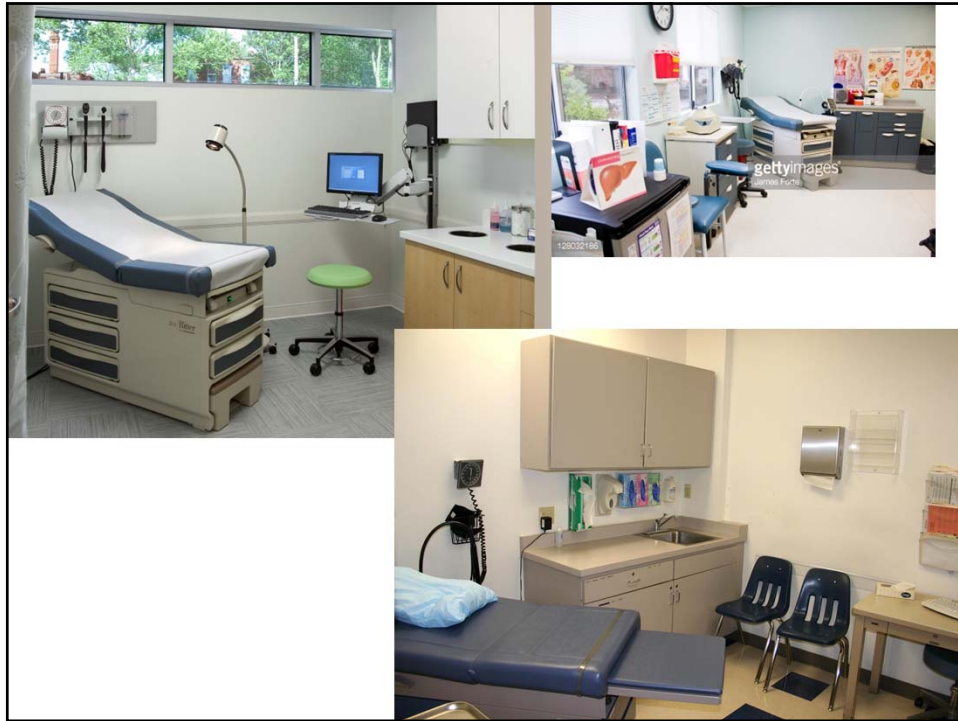
Avatars

- Will need 18 avatars for the learners, all looking professional with business casual attire. Three cohorts don't overlap so these avatars can be re-used.
- Mixture of male and female, different skin tones, ages, weight. Women should not be over-sexualized. Provide a healthy mix so the audience looks diverse.
- Also avatars for the presenter, the 3 small group coaches, and ~6 avatars for staff.
- Presenter and coach avatars should have built in animation actions (typical speaker movements).

Homework

- There will be homework for the learners between Session 1 and Session 2.
- All small group interviews will be video recorded and posted (TBD) for review.
- Learners are asked to review their own recording and those of 2-3 others and comment on them.
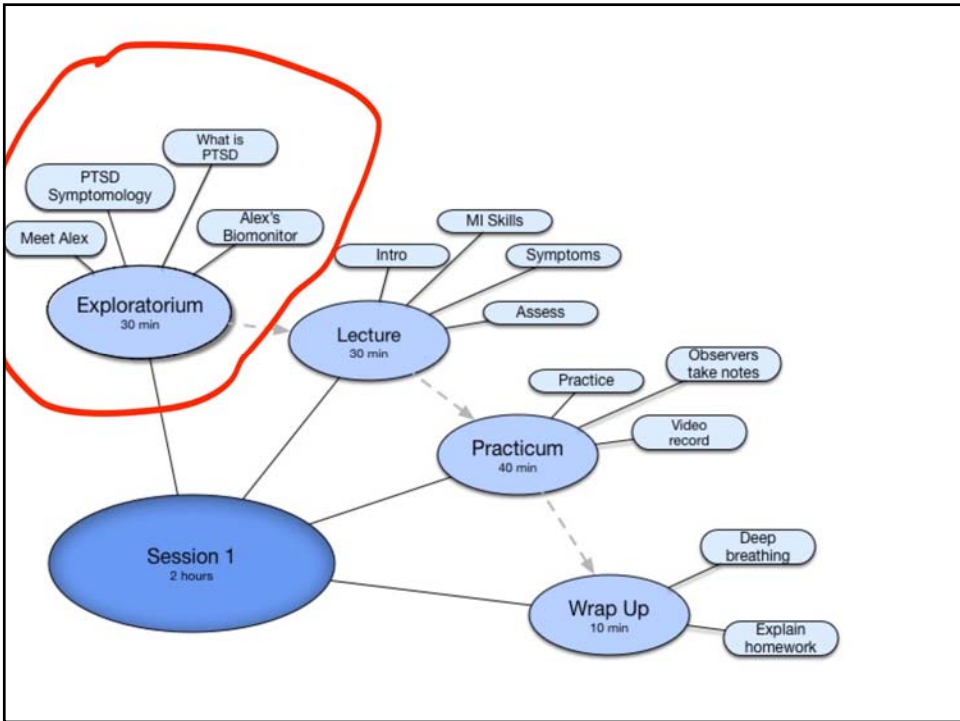- Facilitator will debrief the homework at the start of Session 2 didactic section.

Session 1 Exploratorium:
An Immersive Introduction

9.23.16 Draft

Learners will spend 30 minutes in the
Session 1 Exploratorium

1

Learning Stations

1. Meet Alex with Introduction to Motivational Interviewing
2. PTSD Symptomology
3. What is PTSD?
4. Alex's Biomonitor

3

1. Meet Alex

- "Alex" will be the case that runs through both sessions. Here the learners meet Alex and get to know his situation.
- The learners enter an examination room – a scene with Alex sitting on an examination table, a doctor in a lab coat, a large computer screen showing his medical chart with facts visible, a video monitor, and an MI poster on the wall.
- A video launches of a doctor/patient conversation. This is the first of two videos (aka "standard interview"), ending with doc wishing she could learn more.
- After the first video, a second video launches with better results.
- At the conclusion of the 2nd video, the door to Alex's apartment opens.
- Learners are instructed to enter the door on the right to explore Alex's home.

4

Alex's Medical Chart

38 YO Iraq Vet here for follow-up	
Active Issues	**Medications**
Weight gain Chronic low back pain Disordered sleep Poor memory and concentration Anxiety and Depression Hypertension	• Percoset 5/325 1-2 tabs po q8 prn • HCTZ 25 mg po daily
Vital Signs	**Appointment History**
• Age: 38 • Weight:210 • BMI: 29 • BP: 145/94	• Primary Care: 2 months ago • Mental Health: NO SHOW • Physical Therapy: NO SHOW
Service History	
• Operation Iraqi Freedom • Completed two deployments • Ended service 2 years ago	

Motivational Interviewing
Summary Poster

– Express empathy (non-judgmental approach)

– Develop discrepancy; encourage change talk

– Support patient's self-efficacy

6

Video #1 Production Notes

- PCP is female, dressed in a blazer, wearing stethoscope, has glasses
- Characteristics
  - Judgmental tone, fast talking, doesn't wait for a response from Alex before moving on to the next question
- PCP body language
  - Looking at medical chart , not necessarily at the patient
  - She looks over her glasses at Alex in a patronizing way
- Alex's body language
  - Very stiff, unchanging, arms crossed, clearly not engaged

Video #1: Interview Script

K: Hello Alex. How's it going? How can I help you today?

A: Fine.

K: So, looks like you've put on some weight, even since last time- didn't we go over a diet and exercise plan? And my goodness, guess the blood pressure meds aren't working so well…your blood pressure is still high. Are you taking the medication?

A: Well uh…sometimes I forget and forgot this morning.

K: And I got a message from my nurse that you're requesting your Percoset a week early…Is there something going on that you want to talk to me about?

A: No, not really, just the pain is worse; can't get to the gym and school is NOT going well.

K: Sorry to hear that Alex. Is there some way I can be of help? Do you want to talk about it? Do you want to see a colleague of mine in mental health? I know you didn't show for your last mental health appointment, but I can re-refer you. And what about physical therapy for your pain?

A: Well not really; I talk to my wife and the PT doesn't help my pain. The meds do.

K: You mean the Percoset?

A: Yeah because if I don't have that I'm gonna drink more to deal with the pain.

K: The pain? You mean your back pain or the thoughts about what happened to you and your buddies in Iraq….

A: All that's in the past. I don't want to talk about it.

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Video #2: Production Notes

- Same PCP (female, dressed in a blazer, wearing stethoscope, has glasses)

- PCP body language
  - Faces Alex and engages him. "Open" affectation. Nods with understanding.
  - Eyeglasses: will take off glasses and fully engage in eye contact while speaking with Alex.

- Alex's body language
  - Starts with arms crossed and gaze averted. He then gradually eases, opens his arms, makes eye contact, sits forward

Video #2: Interview Script

K: Hello Alex. It's been awhile. How are you today?

A: Fine.

K: What's going on for you?

A: Just want my meds- my back pain is worse and I'm drinking behind it cuz I can't get enough meds.

K: **Sounds really rough. Tell me more about that.**

A: Look- I need to get home to take care of my kid- wife's got to work. I'm trying to hang in at school so I can get a job. I just don't have time for this right now.

K: **Sounds like you have a lot of pressure on you and I know you've been through quite a lot.**

A: Yeah – it's rough. And I have these thoughts- like I am just right back there and there's nothing I can do to stop it- it just happened- boom- and them he was gone. My buddy was gone. But I'm ok.

K: You're ok?

A: Yeah… I am (*slow*), but when I get these thoughts my pain gets going in my back. I need more medicine, but then that's not enough, so I start to drink. I'm getting so sick of this cycle – like I really need some help doc, but I don't have time; I don't want to go over it again with someone new.

K: **Alex, what I'm hearing is that on the one hand you don't have the time or don't want to look at it, but on the other hand you really care about your wife and child and want to graduate and get a job.**

A: Yeah. My wife and kid are everything to me right now and I want to be there for them.

K: **I hear you.** **You know, becoming more aware of what's really going on is Step #1. You are well on your way.**

Blue = Expressing Empathy

Purple = Developing Discrepancy

Green = Supporting Self-Efficacy

Red= Change Talk

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Enter Alex's Apartment

- As the second (MI-infused) video concludes, the door to Alex's home opens (as if the conversation has "unlocked" our view into Alex's world)
- Learners enter Alex's home
- Items to observe: see next slide

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Item	Significance
Living room couch is made up as a bed	Indicates sleep disruption
Toddler in a play pen, off to the side, rotating through series of upset motions and wife standing, rotating through a series of gestures indicating her frustration	Indicate disconnect from family
Framed picture of Alex and wife hugging upon his arrival home (classic reunion shot)	Value of family to Alex
#1 Dad coffee mug or trophy	Value of family to Alex
Prescription pill bottles (2) on the table	Opioid dependence, chronic back pain
Recycling bin with many beer cans	Alcohol dependence
Bottle of whiskey next to the pill bottles on the table	Alcohol dependence
Legacy running shoes and fishing pole visible in a nearby closet	Former hobbies and interests
A collection of framed pictures on the wall – one large one of Alex & wife – including a photo of Alex in running gear crossing a finish line and another of Alex holding up a just-caught fish	Used to run, used to fish – these activities were clearly important to him at one time.
School books open on the table	Trouble with concentration

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6

Transition:
Summarize Observations
About Alex's Apartment

- The learner is guided to observe the important (tell-tale) items, as they walk around the room.
- After they exit the apartment, learners are asked to: "Name two observations in Alex's apartment which will help with your assessment."

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2. PTSD Symptoms

- Learners move to station #2 to find out more about PTSD symptoms
- A circular screen emerges from the floor, surrounding the learners.
- Projected on the screen, a series of still images accompanied by audio of Alex's voice, making statements about his situation. The still images depict the facts that Alex describes. Words appear on the screen that categorize the symptoms he describes. The cycle repeats.

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Alex's Symptoms

What Alex says	Symptom Category	Image
There was an IED explosion - that was very close, but I'm ok.	Traumatic event	IED explosion near a tank in Fallujah
When I was sitting in class or trying to do homework, I kept thinking about what happened in Iraq. I also have some crazy dreams about it.	Intrusions/Re-experiencing	Young man, representing Alex, sitting in a classroom, trying to concentrate. Person thrashing around in bed, having a nightmare.
I'd really rather not talk about it- best to just put it to rest.	Avoidance	Young man, representing Alex, head in hands, not communicating
When I think about what happened, it really bums me out. I feel like it didn't have to happen.	Negative alterations in cognition and mood	Our young man looking lost, sad, depressed.
It was hard for me to be in a crowded classroom. My heart started racing and I just needed to get out.	Alterations in arousal and reactivity	Our young man in a crowded scene – room full of people.
My wife isn't too happy with me lately and that's why I'm here today. I also lose my temper with my kid sometimes and that makes me feel bad.	Negative impact on functioning (Employment, parenting, relationships)	Alex's wife, looking angry, fed-up, hands on hips.

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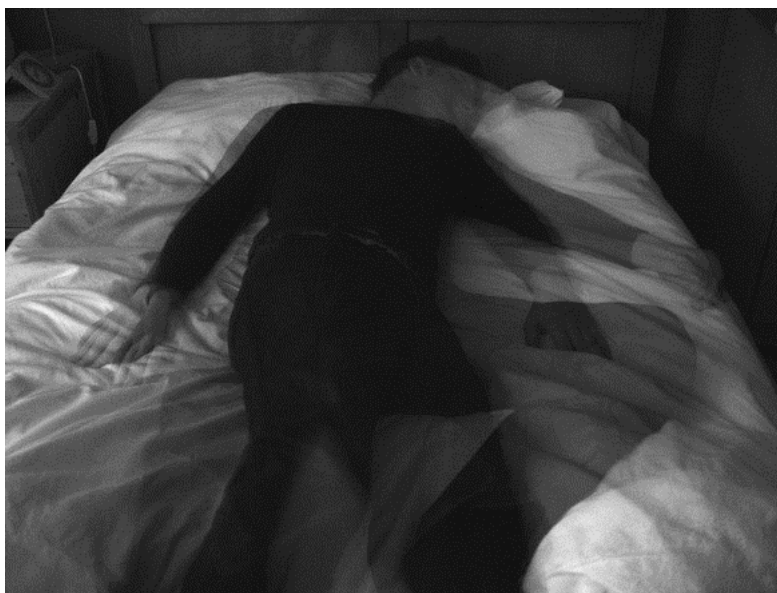
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Transition

- After the images and audio finish, the circular screen from station #2 lowers back into the floor and Alex's voice says, "What is going on with me?"

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3. What is PTSD?

- Alex's question leads them to the start of the next learning station - a simple poster titled 'What is PTSD?'

  PTSD (Posttraumatic Stress Disorder) is a mental health problem that some people develop after experiencing or witnessing a life-threatening event, like combat, a natural disaster, a car accident, or sexual assault.

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Further Explanation

- A second poster explains:
  - With time, good self-care, and in some cases, treatment or counseling, most people recover completely from trauma.
  - In some individuals the symptoms following trauma do not resolve or get worse, can last for months or even years and can interfere with daily functioning.

- Let's take a look at the biology behind this…

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The Biology of PTSD

- The learners move on to examine the biology behind the condition
- The path takes them to a 3D image of the brain with "Parasympathetic Division" on one side and "Sympathetic Division" on the other. They are instructed to click on Sympathetic first.
- When they click on Sympathetic, they see a signal start in the brain, travel down the spinal column, hitting nerve centers along the way, and the information displays.
- At signal's end the words come up "Fight or Flight Response"
- When they click on Parasympathetic, a signal starts in the brain and goes just to the brain stem, and the information displays.
- At signal's end the words come up "Rest and Digest Response"

24
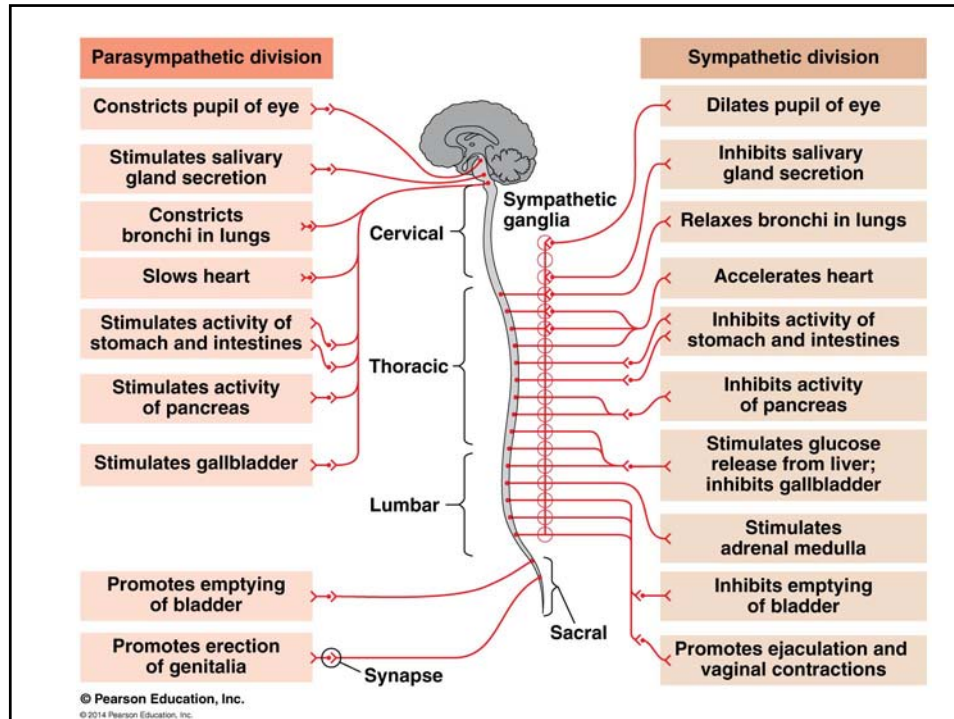
Voice Over

- Experiencing fear during a trauma is a normal and adaptive response. Fear activates the sympathetic division of the nervous system which releases epinephrine and norepinephrine that act on different organs in the ways you see here. This is termed the "fight-or-flight" response.

- Frequent repeated arousal of the sympathetic response can lead to chronic stress- related health problems such as hypertension, obesity, cardiovascular disease and diabetes.

- Patients suffering from PTSD become fearful not only of the trauma itself, but of their reactions to the trauma. Body signals that were once providers of key information become "dangerous". In this way it becomes a terribly vicious circle, reinforcing itself.

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Comorbidities

PTSD is complex because it rarely exists on it's own. Individuals with PTSD typically have other comorbid mental health problems, the most common of which is depression. PTSD can also co-occur with anxiety, panic, traumatic brain injury (TBI) and substance used disorders, most commonly alcohol abuse/dependence, but also opioid abuse/dependence and other drugs, including tobacco.

Statistics

- As the learners leave this third station, there will be a final display of statistics of the disease for them to wander through.

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PTSD Statistics

— About 10 of every 100 (or 10%) of women develop PTSD sometime in their lives compared with about 4 of every 100 (or 4%) of men.

— About 11-20 out of every 100 Veterans (or between 11-20%) who served in Iraq and Afghanistan have PTSD in a given year; more than 30% of Iraq and Afghanistan presenting to VA have received a diagnosis of PTSD.

4. Alex's Biomonitor

- Learners move to the fourth and final station in Exploratorium 1.
- Show a video with a companion vital signs monitor (see slide for suggested layout). Watch video and accompanying monitor changes in vital signs.
- Video 1 shows a soldier, Alex, driving tank through Fallujah streets, with extreme adrenergic response (demonstrated through increase in blood pressure, heart rate, and respiratory rate)
- Video 2 shows Alex driving a car on a California highway with normal vital signs. Trigger event (car in front of him back-firing) and his vital signs shoot up.
- CA video morphs into Fallujah scene at the end. 30

Biomonitor Mock-Up
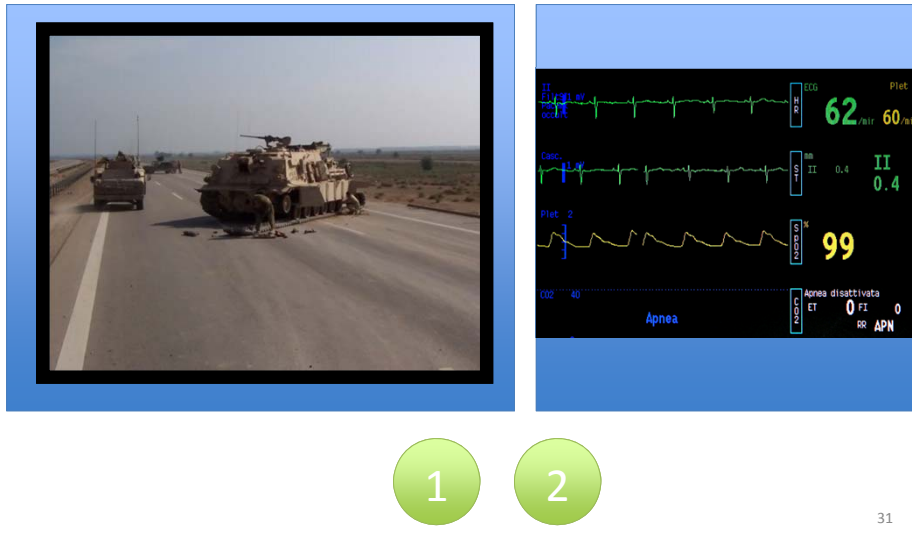
31

Physiology Values: Video #1 (Fallujah)

- Resting vitals:
  - BP: 136/85 (slightly stressed from driving tank)
  - RR: 14 breaths per min
  - Pulse: 85 BPM

- Activated:
  - BP: 180/100
  - RR: 22 breaths per min
  - Pulse: 127 BPM

Physiology Values: Video #2
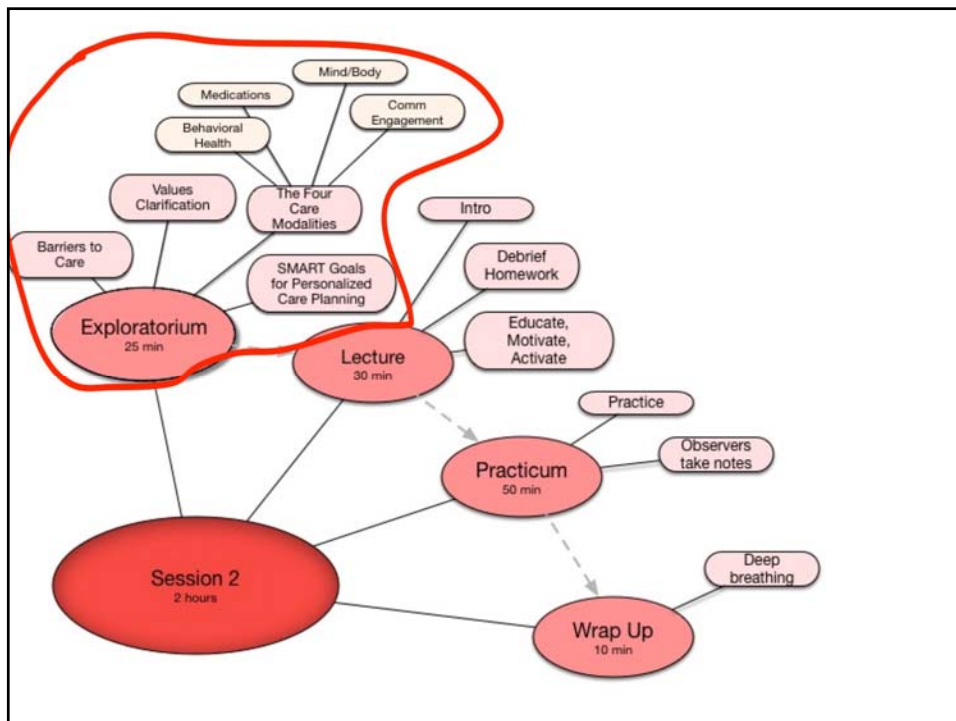## (CA Highway 1)

- Resting vitals:
  - BP: 129/80
  - RR: 12 breaths per min
  - Pulse: 75 BPM

  - BP: 180/100
  - RR: 22 breaths per min
  - Pulse: 127 BPM

- Activated:

End of Exploratorium 1

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Session 2
Exploratorium: An Immersive Introduction

9.23.16 draft
Learners will spend 25 minutes
exploring the Session 2 Exploratorium.

Learning Stations

1. Barriers to Care
2. Clarifying Your Patient's Values
3. The Four Care Modalities
    1. Behavioral Health
    2. Mind-Body/Integrative
    3. Medication
    4. Community Engagement/Psychosocial Approach
4. Personalized Care Planning using SMART Goals

1. Barriers to Care

- Learners will enter the session 2 Exploratorium through a barriers-to-care jungle. As they walk along a green, leafy path, various representative 'barriers to care' will sprout up out of the ground, waft by them, dive-bomb from above, seeming to block their way to the next learning station.

Sample Barriers to Care

- Not enough time with each patient
- I don't know when to refer
- I am not a mental health practitioner
- My patient has a 'warrior mentality', just tough it out
- Stigma around PTSD
- My patient is in denial
- I am not a mental health practitioner
- Screening tools aren't working for me
- Live too far from services
- My vet patients are avoidant

2. Clarifying Your Patient's Values
What Really Matters to Alex?

- Coming out of the Barriers jungle, learners arrive in the Care Planning Board construction area.
- Welcoming open space with a blank Care Planning Board for each participant ringing the room.
- Learners are asked to remind themselves of Alex's values.
  - Reflecting back on Alex's home environment, which you saw in session 1, what do we know about him? His values? What matters most to Alex?
  - What are Alex's symptoms?
- Find your Care Planning Board and type what you remember about Alex into the first and second quadrants.

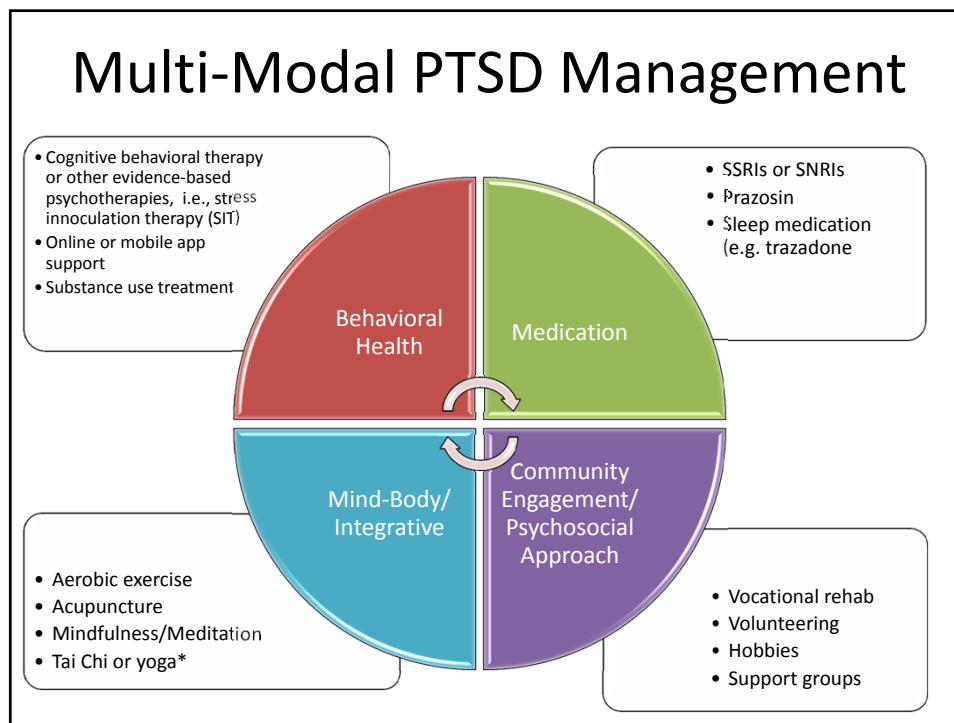| PCP AVATAR NAME	
Alex's Values	Alex's Symptoms
Alex's Treatment Options	SMART Goal

What matters most?

Learners could revisit Alex's apartment to gather observations…

Item	Significance
Framed picture of Alex and wife hugging upon his arrival home (classic reunion shot)	Family matters
#1 Dad coffee mug or trophy	Family matters, specifically being a father.
Legacy running shoes and fishing pole visible in a nearby closet	Being fit and having hobbies
A collection of framed pictures on the wall – one large one of Alex & wife – including a photo of Alex in running gear crossing a finish line and another of Alex holding up a just-caught fish	Used to run, used to fish – these activities were clearly important to him at one time.
School books open on the table	Working toward a better future; getting an education; getting a job

3. Four Care Modalities

- Once the first quadrant of the Care Planning Board is filled in for all, the transport vehicle arrives.
- Hop aboard the transport vehicle and travel to the four modality display areas
- Each display area includes one diorama for each treatment option
- Learners select what they think will be good treatment options for Alex, based on his values
- Their selections are captured on some kind of a PDA/HUD
- Return to Care Planning Board construction area, "upload" your selections to your own Care Planning Board

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Multi-Modal PTSD Management

- Cognitive behavioral therapy or other evidence-based psychotherapies, i.e., stress innoculation therapy (SIT)
- Online or mobile app support
- Substance use treatment

- SSRIs or SNRIs
- Prazosin
- Sleep medication (e.g. trazadone)

Behavioral Health

Medication

Mind-Body/ Integrative

Community Engagement/ Psychosocial Approach

- Aerobic exercise
- Acupuncture
- Mindfulness/Meditation
- Tai Chi or yoga*

- Vocational rehab
- Volunteering
- Hobbies
- Support groups

Behavioral Health

Intervention	How to Depict in a Diorama
Cognitive Behavioral Therapy and Other Evidenced-Based Psychotherapies	Two people facing each other in chairs. One is a doctor and has a notepad and the other is Alex
Online or mobile app support	Smart phone with apps showing (e.g. PTSD Coach, afterdeployment.org)
Substance Use Treatment	Semi-circle of chairs with a whiteboard and an obvious facilitator writing words such as "craving" and "breathe" (group therapy)

Medication

Intervention	How to Depict in a Diorama
SSRIs and Antidepressants	Bottle of SSRIs (with readable Rx)
Prazosin	Bottle of Prazosin
Sleep medication	Bottle of Non-benzo Sleep Aid

Mind-Body/Integrative

Intervention	How to Depict in a Diorama
Aerobic exercise	Alex wearing a pair of running shoes and running shorts.
Acupuncture	Alex laying face down on table with acupuncture needles in place along his spine.
Meditation	Alex seated on ground, on a zafu; straight-backed position, eyes closed.
Tai Chi or Yoga	Alex in a downward-dog position, on a yoga mat

Community Engagement/ Psychosocial Approach

Intervention	How to Depict in a Diorama
Vocational Rehab (job training)	Alex seated at a computer with someone beside him implying teaching. Screen can say "HTML Basics".
Hobbies	Alex with a fishing pole
Support Groups	Full circle of people sitting in chairs (including Alex) looking at one another and listening attentively.
Volunteering	Alex wearing a T-shirt that says "Coach" next to a track with some little kids.

Transition from #3 to #4

- Once the learners download their choices to their Care Planning Board, they move to learning station #4

4. SMART Goals for Personalized Care Planning

- Large poster board with the definition of a SMART goal (see next slide)
- Another display with Alex's original medical chart (reminder)
- Learner is presented with a series of sample patient-constructed goals
- For each sample goal, they vote "yes" or "no" (is it a SMART goal or not?)
- Feedback presented based on your selection

What is a SMART Goal?

What is a goal?

- Something patients are <u>not</u> currently doing
- Something that is a reach or a stretch for them

Smart Goals

- **S** • Specific
- **M** • Measureable
- **A** • Attainable
- **R** • Results Focused
- **T** • Time-Focused

Sample Un-SMART Goal A

- "I'm going to volunteer at the Boys & Girls Club to get out of the house and help others."

- Feedback: This is not a specific goal and it's vague (so tough to measure). Without a specific plan or a regular schedule, will be hard to initiate, stick to and measure progress.
- Positives: This is a good start, because it's something patient and provider can work on without relying on referrals to specialists.

Sample SMART Goal A

- "I am going to take a yoga class at the local YMCA twice a week for a month to reduce stress and back pain."

- Feedback: Right! This goal is specific, measureable, attainable, results-focused, and you can check in with the patient at the end of one month.

Sample Un-SMART Goal B

- "I'm going to detox tomorrow and I'm never going to touch another pain killer again."
- Feedback: While the patient sounds motivated, this goal isn't realistic. The patient needs more information about substance-use programs and how they work (to understand the commitment). You might need to discuss medication-assisted treatment.

Sample SMART Goal B

- "I'd like to stop taking pain killers but don't think I can do that without help. I want to spend the next week investigating substance-use programs and talking this over with my family. Can you point me in the right direction?"
- This is a very realistic goal. If the patient devotes time to investigating possible programs, he will better understand what's involved, the level of commitment required, and the impact on him and his family. He's also giving himself a week to investigate, with an endpoint (decision timeframe) in mind.

Wrap Up

- Learners return to the Care Planning Board area to conclude this last activity
- Type in at least one well-constructed SMART goal for Alex

PCP AVATAR NAME

Alex's Values	Alex's Symptoms
- Alex cares about his family. - Alex cares about being physically fit	- Sleep disruption - Weight gain - Opioid dependence - Concentration & memory issues
Alex's Treatment Options	SMART Goal
- Substance abuse treatment - Yoga - Coach boys soccer for rec dept - Start walking for exercise	- Will attend a weekly support group at the VA until the next primary care visit

End of Exploratorium 2