

2010 Military Health System Conference

Virtual Technologies to Improve Healthcare

Sharing Knowledge: Achieving Breakthrough Performance

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26 January 2010



National Center for Telehealth and Technology



These statements do not represent the official policy or position of the U.S. Government, Department of Defense, or U.S. Army and no official endorsement should be inferred.

Agenda



1. Barriers to Care, Including Limited Resources, Perceived Stigma, and Physical Access Issues
2. Technology Solutions to Address Barriers
3. Virtual Worlds (VW) Affordances
4. Potential Uses of VW Technology
5. Current T2 Efforts in VW Development
6. Potential Barriers Specific to Certain Telehealth Applications

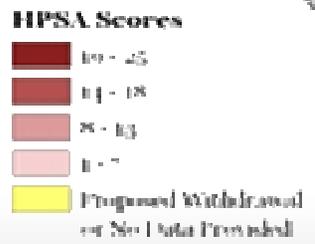
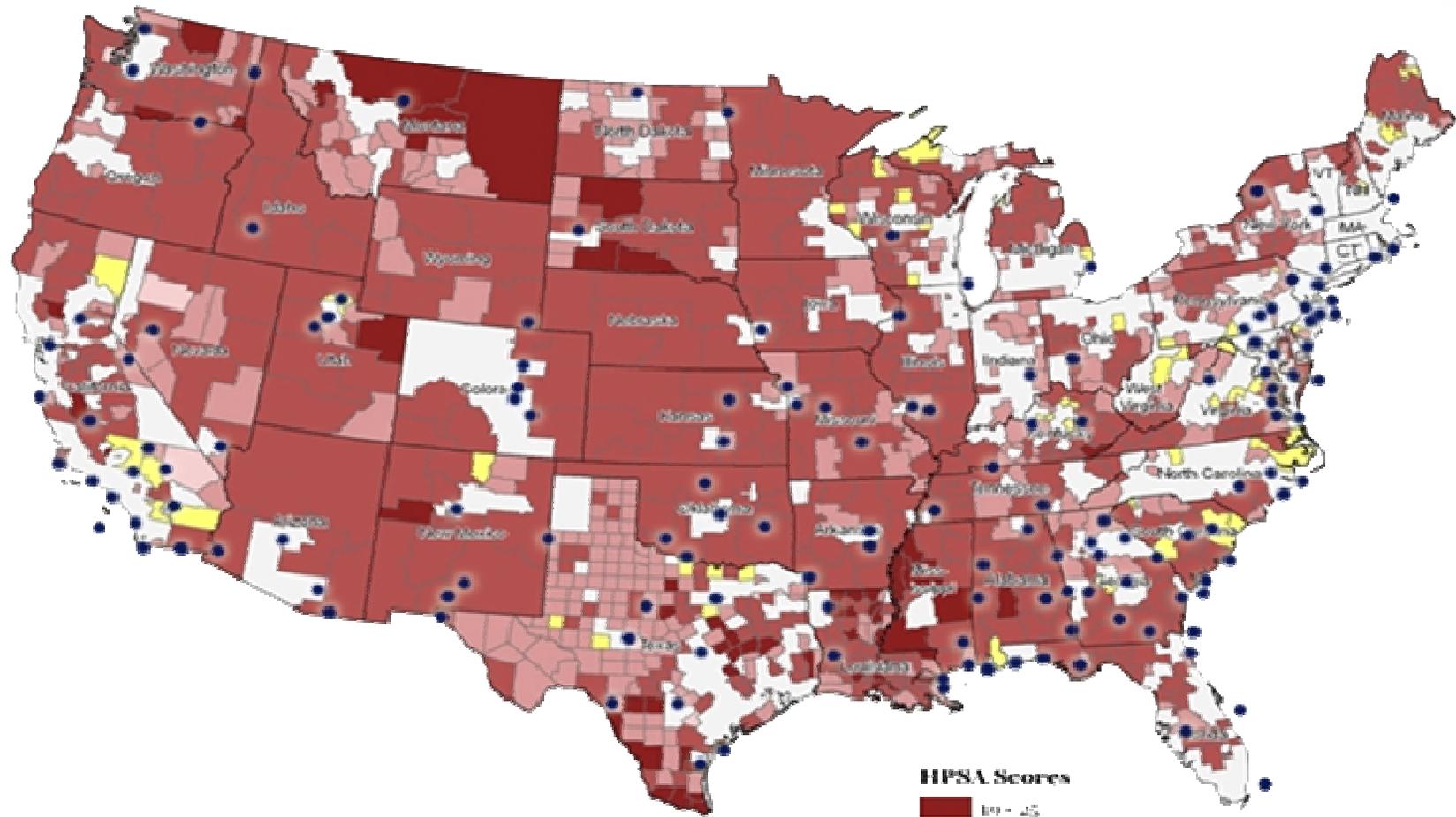
Limited Resources



- Approximately 40% vacancy of AD licensed clinical psychologist in Army and Navy
 - Shortages aggravated by high attrition rates, deployments, “compassion fatigue”
- Dissemination of empirically validated treatments across DoD/VA providers
 - 10%-20% military BH providers trained to deliver any of the four treatments deemed VA/DoD “best practices” for PTSD
- Wait times for next available appointments

Johnson, S.J, Sherman, M.D., Hoffman, J.S., James, L.C., Johnson, P.L., Lockman, J.E., Magee, T.N., and Riggs, D. “The Psychological Needs of U.S. Military Service Members and Their Families: A Preliminary Report”, American Psychological Association Presidential Task Force on Military Deployment Services for Youth, Families and Service Members, February 2007.

Location of MHS Facilities and Mental Health Professional Shortage



Limited Resources



- Possible solutions
 - Increase Incentives for Psychologist Commissions
 - Hire more Civilian Providers
 - “Force Multipliers”
 - E.g. Emphasis on Group Treatments
 - Automate Services Not Requiring Actual Interface with Trained Providers
 - Improved Provider Training

Perceived Stigma



- Negative and erroneous reactions of the general public to persons with mental illness is common (Crisp et al., 2000)
- When individuals are aware of public stigma, barriers to care may occur (Green-Shortridge et al., 2007)
- Particularly challenging in military cultures where a key shared value is strength (Reger et al., 2007)

Perceived Stigma



- Those who screened positive for a mental health disorder were twice as likely to report fears of treatment stigma and barriers to care (Hoge et al., 2004)
- Only 38% to 45% of those screening positive for a mental health disorder were interested in care (Hoge et al., 2004)
- Service Members may be hesitant to access treatment that will identify psychological problems

Table 4.35 SELECTED MENTAL HEALTH TREATMENT ISSUES, PAST 12 MONTHS, 2002–2008

Mental Health Measure	DoD Services ^{a,c}			All Services ^b
	2002	2005	2008	2008
Perceived Need for Mental Health Counseling	18.7 (0.6)	17.8 (0.6) ³¹	19.8 (0.6) ²	19.8 (0.6) ²
Receipt of Mental Health Counseling				
Any counseling professional ^d	12.5 (0.5) ²³⁴	13.9 (0.5) ¹³⁴	17.0 (0.7) ¹²	16.9 (0.7) ¹²
From a military mental health professional	6.1 (0.4) ²³⁴	7.8 (0.4) ¹³⁴	10.2 (0.6) ¹²	10.1 (0.6) ¹²
From a general physician at a military facility	4.4 (0.3) ³⁴	4.3 (0.2) ³⁴	7.3 (0.5) ¹²	7.3 (0.5) ¹²
From a military chaplain	5.4 (0.3)	5.5 (0.3)	6.1 (0.3)	6.0 (0.3)
From a civilian mental health professional	2.1 (0.2) ²³⁴	3.0 (0.2) ¹³⁴	4.7 (0.4) ¹²	4.7 (0.4) ¹²
From a general physician at a civilian facility	1.1 (0.1) ³⁴	1.0 (0.1) ³⁴	2.7 (0.2) ¹²	2.7 (0.2) ¹²
From a civilian pastoral counselor	2.2 (0.1) ³⁴	2.3 (0.2)	2.8 (0.2) ¹	2.8 (0.2) ¹
From a self-help group (AA, NA)	NA NA	2.1 (0.2)	2.4 (0.1)	2.4 (0.1)
Concerns Sought Help For				
Depression	NA NA	7.4 (0.3)	7.8 (0.5)	7.8 (0.5)
Anxiety	NA NA	4.6 (0.3) ³⁴	5.9 (0.4) ²	5.9 (0.4) ²
Family problems	NA NA	7.3 (0.4)	7.5 (0.4)	7.4 (0.4)
Substance use problems	NA NA	1.8 (0.2)	1.6 (0.1)	1.6 (0.1)
Anger or stress management	NA NA	5.9 (0.3) ³⁴	7.4 (0.5) ²	7.3 (0.4) ²
Other	NA NA	4.8 (0.3)	4.9 (0.4)	4.8 (0.3)
Perceived Damage to Career				
Definitely would	18.3 (0.6) ²³⁴	16.1 (0.5) ¹³⁴	13.0 (0.4) ¹²	12.9 (0.4) ¹²
Probably would	30.5 (0.5) ²³⁴	28.0 (0.6) ¹³⁴	23.1 (0.5) ¹²	23.1 (0.5) ¹²
Probably would not	35.6 (0.8)	34.1 (0.7)	34.4 (0.6)	34.6 (0.6)
Definitely would not	15.6 (0.4) ²³⁴	21.7 (0.7) ¹³⁴	29.5 (0.5) ¹²	29.5 (0.5) ¹²

Note: Table displays the percentage of military personnel by Service who reported the mental health issues indicated in the rows of this table. The standard error of each estimate is presented in parentheses. Estimates have not been adjusted for sociodemographic differences among Services.

^aDoD Services includes Army, Navy, Marine Corps, and Air Force.

^bAll Services includes Army, Navy, Marine Corps, Air Force, and Coast Guard.

^cSignificance tests were conducted between 2002, 2005, 2008 DoD Services and 2008 All Services. A superscripted number # beside an estimate indicates the estimate is significantly different from the estimate that appears in column #. In other words:

¹Indicates estimate is significantly different from the estimate in column #1 (2002) at the 95% confidence level.

²Indicates estimate is significantly different from the estimate in column #2 (2005) at the 95% confidence level.

³Indicates estimate is significantly different from the estimate in column #3 (2008, DoD Services) at the 95% confidence level.

⁴Indicates estimate is significantly different from the estimate in column #3 (2008, All Services) at the 95% confidence level.

^d2005 and 2008 estimates for “Any counseling professional” reported here may differ from what is reported in other tables. “From a self-help group (AA, NA)” was not included in the “Any counseling professional” estimates reported in this table to preserve consistency with the 2002 study.

+ Data not reported. Low precision.

NA Not applicable or data not available.

Perceived Stigma



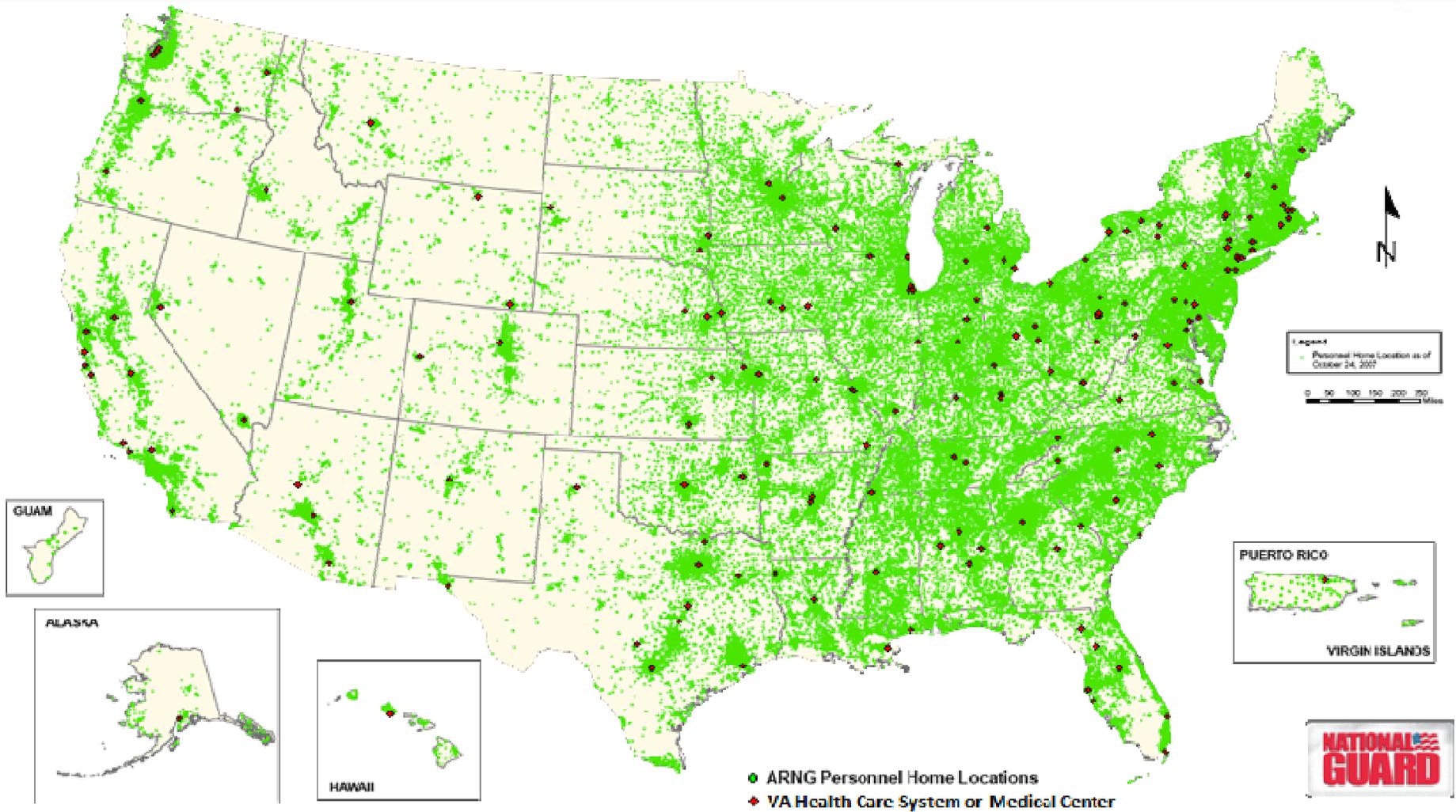
- Possible solutions:
 - Anonymous Access to Care
 - Receive Care at Home/Residence
 - Not Seen Entering/Exiting Mental Health Clinic
 - Education and Outreach
 - Service Members
 - Chain of Command
 - Family
 - Peers
 - Other Providers
 - Public

Physical Access



- Distance From MTF or VA
 - Particularly for Guard/Reserve Component
 - Regular Psychological Health Visits Difficult
- Physical Injuries Precluding Travel
- Physical Injuries Making Access Difficult

VA HCS & MCs In Relation to ARNG HORs



Physical Access



- Possible solutions:
 - Build more MTFs, Outpt Clinics
 - Retrofit MTFs, Outpt Clinics for Accessibility
 - Receive Care at Home/Residence
 - Smaller “Outpost” Style Access
 - Bring Care to the Customer

Technology Solutions



- Avoid “Gadgets for Gadgets Sake”
- Same Objective Not Met By Simpler Approach
- Cost/Benefit Ratio Acceptable
- Good Fit Between Technology Characteristics and Identified Problem(s)
- Ethically and Competently Delivered
- Acceptable to Target Population

Rizzo et. al. (2002)

Technology Survey Participants



352 Soldiers Surveyed

Mean Age: 25.9 (SD = 5.8)

Rank: E1-E4 (58.2%)
E5-E9 (36.6%)
Officers (5.2%)

Men: 91.5%

Education: HS Grad or GED (48.6%)
Bachelors or Higher (8.8%)

Wilson et al. (2008) CyberPsychology and Behavior

Technology Survey Method



- Convenience Sample Surveyed in the Context of Post Deployment Mental Health Assessment (SWAPP)
- 54 Item Self-Report Survey Assessing:
 - Current Technology Experience/Knowledge
 - Comfort Using Technology in Treatment
 - Willingness to Use Specific Technologies as Augments to MH Treatment

Technology Survey Results



Proportion of Respondents Who Indicated Being “Interested” to “Very Interested” In Receiving Care Through the Following Modalities:

Talking with therapist by email	61%
Live Chat	55%
Video Teleconference	56%
Text Messaging	48%
Handheld Device	55%
Virtual Reality	58%



Technology Solutions



- Web-based self help services
 - Afterdeployment.org
 - RealWarriors.net
 - Many others
- Video Teleconferencing (VTC) technologies
- Mobile Devices
- Web-based provider services
 - Webcam telehealth
 - Email, chat, SMS
- Virtual Worlds



afterdeployment.org

Service Members Veterans Families Providers sign up | sign in

afterdeployment.org LOCATE CHAT CALL

Wellness resources for the military community. Outreach Center 866.966.1020
National Suicide Hotline 800-273-TALK (800-273-8255)

Home Topics Assessments Videos Community Resources Feedback

Post-Traumatic Stress

Depression

Life Stress

Families & Friendships

Work Adjustment

Physical Injury

Anger

Sleep

Alcohol & Drugs

Families with Kids

Spirituality

Health & Wellness

Anxiety

Resilience

Military Sexual Trauma

Sigma

mild Traumatic Brain Injury

Tobacco

Real Strength in Action
Click here to watch videos from the Real Warriors campaign.

REAL WARRIORS + REAL BATTLES
REAL STRENGTH

Assess Yourself

- Post-Traumatic Stress
- Depression
- Stress
- Anger

Assessment Video

- Alcohol & Drug Use
- Social Support
- Post-Deployment Support
- Marital Satisfaction
- Friendship Scale
- Hope
- Caregiver Stress

Health Tip

Physical activity is one of the most potent pain relievers. Staying active distracts your mind and reduces the attention you can devote to your pain.

[Printable Version \(PDF\)](#)

Podcast: Add the There & Back podcast to your iTunes account. It's free, easy and best of all will keep you upto date. [Click Here.](#)

News Feeds: [The US Army today finalized the various aspects related to TBI & PTSD treatment centers throughout the US.](#)

Topics, Assessments and Videos

Post-Traumatic Stress	Physical Injury	Anxiety	Health & Wellness	Military Sexual Trauma	Tobacco	Community	About
Depression	Life Stress	Alcohol & Drugs	Families with Kids	Resilience	Sigma	Resources	Contact
Families & Friendships	Spirituality	Anger	Work Adjustment	mild Traumatic Brain Injury	Sleep		

Featured Sites

REAL WARRIORS + REAL BATTLES REAL STRENGTH | vesemeworkshop | My Healing Vet | PTSD

Defense Centers of Excellence | DOD | MHS | 508

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afterdeployment.org: A Self-Help Model



Accessible **24/7/365** anywhere an Internet connection is available

Access is **private**, confidential, and anonymous

Users log in on their own schedule and work at their **own pace**

“Self-help” resources **eliminate barriers** to care (finding a provider, scheduling an appointment, getting time away from work, sitting in crowded waiting rooms)

Users take **assessments** and complete interactive **workshops** at their own pace

Non-acute concerns can be managed **independent** of provider intervention

For acute concerns, online resources **supplement** face-to-face care

Online tools support National Guard/Reserve units who **live distantly** from a treatment facility

This screenshot shows a workshop titled "handling stress: personal stress profile". The main content area features a spiral-bound notebook with the title "Personal Stress Profile" and three sections: "Physical Changes", "Behavior Changes", and "Emotional Changes", each with handwritten notes. To the left of the notebook is a small white card with more handwritten text. The interface includes a top navigation bar with "SELF-HELP WORKSHOP", "MY DATA", and "LOGOUT". Below the main content, there is a progress bar and a control bar with buttons for "BACK", "PAUSE", "NEXT", "READ-ONLY", "PRINT", and "WORKSHOP MENU".

This screenshot shows a workshop titled "recognizing the signs of anger: using the anger meter". The main content area features a semi-circular "anger meter" scale from 0 to 10. The scale is divided into zones: "completely calm - no anger" (0), "Safe Zone" (1-3), "irritability" (4), "moderate anger" (5), "increasing anger - losing control" (6-7), "Boiling Zone" (8-9), and "explosive rage - loss of control" (10). A text box on the left prompts the user to "Describe an anger incident in the Boiling Zone" with the example "Out of in traffic". The interface includes a top navigation bar with "SELF-HELP WORKSHOP", "MY DATA", and "LOGOUT". Below the main content, there is a progress bar and a control bar with buttons for "BACK", "PAUSE", "NEXT", "SUBMIT", "PRINT", and "WORKSHOP MENU".

afterdeployment.org Partners



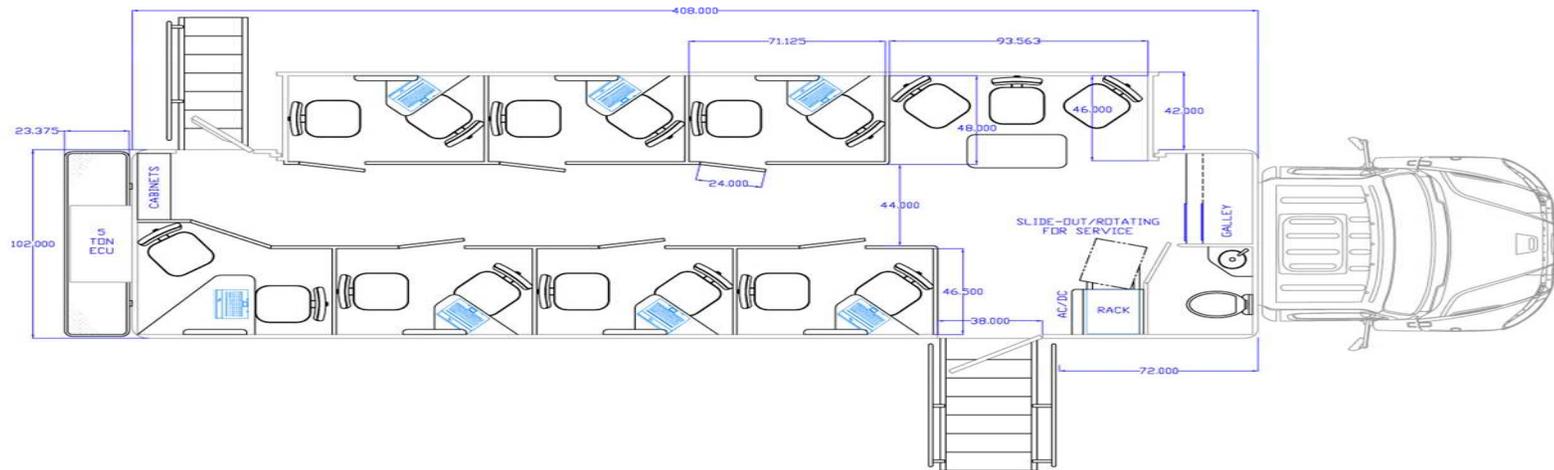
- TRICARE Management Activity, Health Affairs
- VA National Centers for PTSD
- Army Medical Centers: Madigan (project office), Tripler, Brooke
- AMEDD Center / School Pastoral Ministry Training
- Real Warriors Campaign
- Defense and Veterans Brain Injury Center
- National Center for Deployment Psychology
- Center for Health Promotion / Preventive Medicine



Mobile Telehealth Units



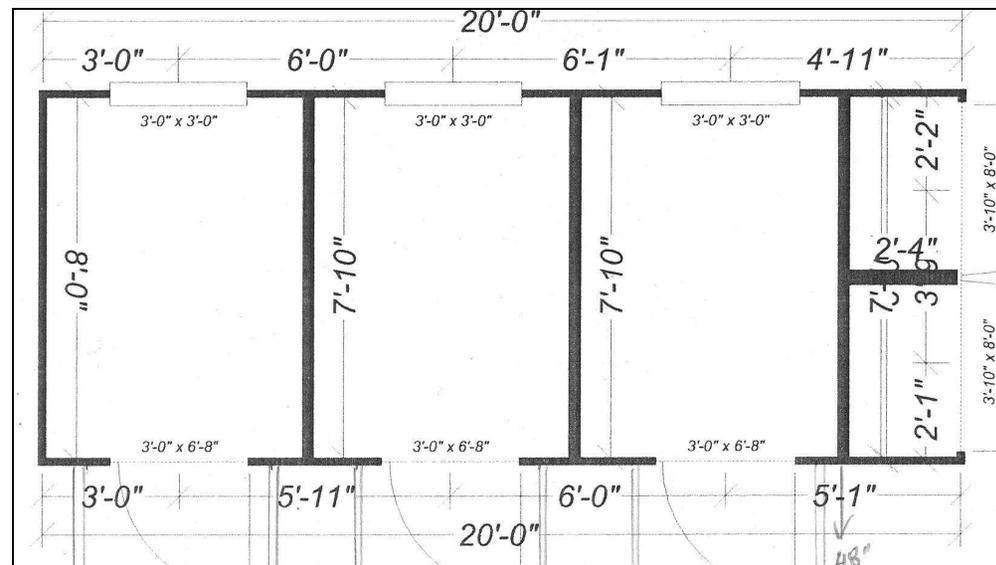
- Connect Beneficiaries with Distant Providers
- Especially Reserve/Guard Component
- Driven Between Communities with Limited Access to Specialty Care



Transportable Telehealth Units



- Long-Term, Temporary Placement
- Connect Beneficiaries to Distant Providers
- Augment Available Clinic Space in "Surge"
- Utilize VTC Technology



Transportable Telehealth Units



Mobile Devices



Virtual Worlds



A virtual world is a three-dimensional, **persistent**, computer-based **simulation** environment intended for its users to inhabit and **interact** via **avatars**.

Users can **manipulate** elements of the modeled world and **interact** with other users in the **shared** virtual space, thus experiencing **telepresence** to a certain degree.

Affordances of Virtual Worlds



- Anonymity
- Proximity Enhancement
- Shared Presence
- 3D Modeling
- Create Environments, Experiences That Do Not or Cannot Exist in RL
- Naturalistic Interactions With Others/Environment/Data
- Immersive and Experiential

Rationale for Virtual Worlds

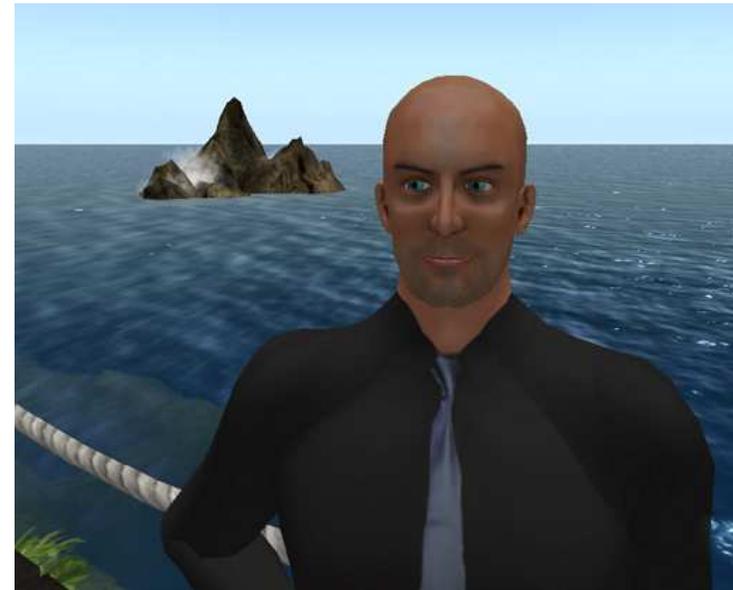


- Improved Access to Care
 - Possibilities for **Telehealth**
 - **Web-Based**
- Reduced Stigma
 - **Anonymous** access
 - Educational Opportunities: SMs, Vets, Families
- Improved Care
 - Interactions/interventions not possible in RL
 - Education/Training for Providers
 - Expert Consultation at a Distance

Avatars



- Virtual Representation of Self in 3D Space
- Naming = Anonymous
- Interaction With Others and Objects
- Personalization
- “Idealized” Self
- Can be Non-Human



Current T2 Second Life “Islands”



- Psychological Health Region
 - “Public Access” Islands
 - Target Opening Date: 5 April 2010
 - Education and Outreach
 - Social Support and Reintegration
 - Controlled-Access Islands
 - Clinical Consultation
 - Provider Training
 - Clinical Services
 - VRET



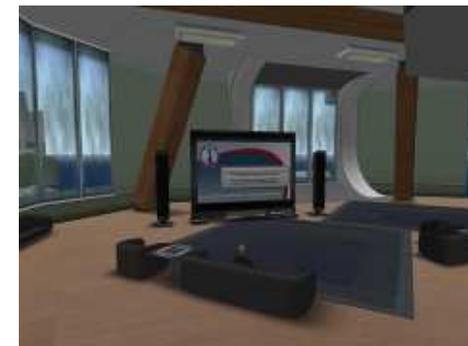
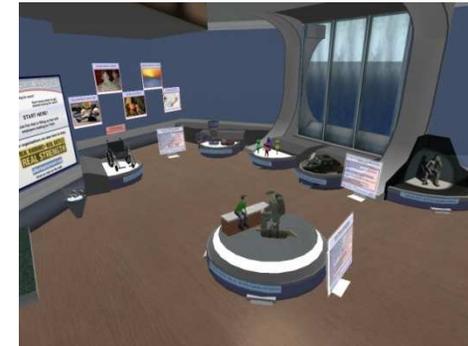
Education and Outreach



- Experiential Learning: e.g. Virtual PTSD
- Educational Gaming
- Post-deployment Psychological Health
- Library of External Links to Resources

- Service Members
- Spouse/Family re: PH and TBI
- Supervisors (NCOs, COs)
- Community At Large

Education and Outreach



All images are of projects piloted at Psychological Health Region (in Second Life) by the National Center for Telehealth and Technology (T2).
2010 MHS Conference

Social Support



- Isolation Common
- Augmented by Anhedonia and Avoidance
- “Don’t Fit” With Deployed Peers nor Garrison
- Relationships Suffer
- Interacting with Others with Similar Concerns
 - Normalizing
 - Practice Relationship Skills in “Safe” Place
 - Shared Experiences
 - Shared Recreation

Social Support



All images are of projects piloted at Psychological Health Region (in Second Life) by the National Center for Telehealth and Technology (T2).
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Provider Support and Training



- Peer and Expert Consultation
 - Deployed Providers
 - Providers in Small Facilities
 - Access to Experts
- Provider Training
 - Evidence-Based Therapies Dissemination
 - Avoid Costly and Disruptive TDYs
 - Access to Experts for Supervision

Provider Support and Training



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Provider Support and Training



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Clinical Services



- Psychotherapy
 - Telehealth for Psychological Intervention
 - Reduced Stigma
 - Reduced Access to Care Issues
 - Access to Expertise, Military Culture Competence
 - Virtual Reality Exposure
 - Virtual Environments Developed Faster, Cheaper, and More Customized
 - Stepping Stones for In Vivo Exposure

T2 Virtual Clinic



All images are of projects piloted at Psychological Health Region (in Second Life) by the National Center for Telehealth and Technology (T2).
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Virtual Exposure Therapy



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Second NICoE



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Challenges



- Access to Virtual Worlds, such as SL
 - Unpublished Survey, April 2008
 - Convenience Sample, N=223;
 - 181 Male (81.2%)
 - 2 (0.9 %) had ever used Second Life
 - 1 had used SL > once, mostly as a “griefer”
 - 17 (7.6%) had ever heard of Second Life
 - Of those, 13 (76.5%) would be “somewhat” or “very” likely to use Second Life for education or training
 - 98 (43.9%) had used other virtual worlds
 - e.g. World of Warcraft, HALO, Call of Duty
 - Technical Issues re: Access
 - SM’s Computers Capable of Using VWs?
 - Network Security Issues, e.g. open ports
 - User Skills Needed to Use VWs Successfully

Challenges



- Anonymity
 - Reduce Stigma, Increase Utilization
 - Useful For Education, Self-directed Activities
 - Clinical Concerns: Authentication, Risk
 - Avatars as Facade vs. Outward Expression of Inner Self Image

- Staffing
 - Clinical Services Staffed by Real People
 - AI Cannot Replace Live Clinician
 - Acceptability By Clinicians

Challenges



- Regulation and Liability
 - Licensing of Providers / Jurisdiction
 - Managing High Risk Situations
 - Emergency Resources
 - Degrees of Anonymity
 - Appropriate Documentation & Billing Codes
 - Assuring Confidentiality on Public Grids

- Second Life Culture
 - “Griefers”
 - Intellectual Property Rights

Live Demos



- Visit **Booth 829** in Exhibit Hall
- Hours:
 - Tues, 26 Jan
 - 0930-1300
 - 1430-1700
 - Wed, 27 Jan
 - 0930-1600





“A new century is at hand, and a fast-spreading technology promises to change society forever. It will let people live and work wherever they please, and create dynamic new communities linked by electronics, improve the lot of the poor, and reinvent government...”

-an article about the telephone, 1898

Contact



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