



Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury (DCoE) Webinar Series

November 20, 2014, 1-2:30 p.m. (EST)

“Integrating Technology into DoD Efforts to Promote Psychological Health”

Welcome, everyone, and thank you for standing by. At this time, all participant lines are in listen-only mode. Following the presentation, we'll provide an opportunity for a Question and Answer Session. At that time, press “star 1” on your phone to ask a question. I would also like to remind everyone that the call is being recorded. If you have any objections, please disconnect at this time. Now I'll turn the call over to our host for today, Dr. Lolita O'Donnell. Dr. O'Donnell, you may begin.

Good afternoon and thank you for joining us today for the DCoE Psychological Health November 2014 Webinar. The title is: Integrating Technology into DoD Efforts to Promote Psychological Health.

Our moderator today is Dr. Kathleen Charters. Dr. Charters is a certified professional in Healthcare Information Management. She spent 25 years as a nurse and played a key role in informatics in the United States Navy. She is currently a Nurse Consultant for the Defense Health Agency, Healthcare Operations Directorate in the Clinical Support Division. Her current area of focus is on creating infrastructure to support enterprise quality assurance, patient safety and risk management. Dr. Charters participates in transition planning for moving from legacies to modern electronic health records including eMeasures, Blue Button and patient portals. Welcome, Dr. Charters.

Thank you. Before we begin, let's review some webinar details. Lived closed captioning is available through Federal Relay Conference Captioning. Please see the pod beneath the presentation slides.

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Throughout the webinar, you are welcome to submit technical or content-related questions via the Q&A pod located on the screen. All questions will be anonymous. Please do not submit technical or content-related questions via the Chat pod.

I will now move on to today's webinar: Integrating Technology into DoD Efforts to Promote Psychological Health. Many behavioral health providers are beginning to incorporate modern technologies into the psychotherapy relationship and process, often at the encouragement of patients who bring apps and downloaded Internet material into clinical settings. This presentation will articulate various opportunities for enhancing the therapeutic impact inherent in several current technologies, including web and mobile applications, simulations, and distance collaboration technologies and will highlight the necessary steps for moving forward with an integrated model of behavioral health care.

During this webinar, participants will learn to understand and articulate reasons why the standard of practice in behavioral health does not currently incorporate the use of modern technologies, to include web and mobile applications and distance collaboration technologies. Participants will also learn to describe some promising opportunities for improving behavioral health care through the use of these technologies as an adjunct to standard treatment. And participants will learn to outline the steps needed for moving forward with the integration of these technologies into their standard practice.

Dr. Don Workman is Director of the Emerging Technologies Program at the National Center for Telehealth and Technology, also known as T2, at Joint Base Lewis-McChord. The program has developed technology solutions to promote psychological health and TBI care through mobile applications, as well as virtual reality and virtual roles products.

Dr. Workman is licensed as a clinical psychologist and holds a doctoral degree in clinical psychology, as well as a master's degree in theology. He has more than 20 years of experience in providing psychological services and consultation in the inpatient primary care, psychiatric, and rehabilitation settings, as well as outpatient behavioral health.

Dr. Robert Ciulla is Director of the Mobile Health Program at the National Center for Telehealth and Technology, also known as T2, at Joint Base Lewis-McChord. The program is focused on developing psychological resources across a spectrum of technology platforms to meet the needs of the military community. He is dedicated to ensuring that the military system is attuned to mobile health concepts as it moves toward a system for health. His team's efforts are particularly focused on website development and mobile applications.

Thank you for joining us today, Dr. Workman and Dr. Ciulla.

Thank you very much, Dr. Charters. Appreciate the introduction.

A couple of business items – we have a number of disclosures. The views that we're expressing are our own views and not necessarily those of the Department of Defense. We do not have any relevant financial relationships to disclose. And we will be discussing a number of applications which may fall under FDA purview. And when we have FDA questions, we consult with the Division of Regulated Activities and Compliance for guidance.

We've discussed the learning objectives. We're going to talk today about the standard of care in behavioral health and why it does not include modern technologies; promising opportunities that actually require us to adopt those technologies; and then steps that are needed for us to move forward. We're going to understand some of the essential reasons for integrating technology into practice, why we've been cautious and, at times, perhaps slow to do so; and steps needed to actually reach what Malcolm Gladwell calls the "tipping point," the point in time where there's a major shift or change or disruption in our system so that technology becomes a part of standard of practice.

There are numerous references to the notion of stigma with mental health and mental health issues and seeking mental health care. In the 2012 IOM Initial Assessment of VA and DoD treatment of PTSD, the statement is made that the fear of negative consequences for a military career, including decreased potential for promotion and perceived stigma by peers and leaders is a significant issue.

At a personal level, if we consider the concept that Alfred Adler put forward – Adler was the contemporary Freud – Adler is known for coining the term, "the inferiority complex." The inferiority complex is something that Adler believed we struggle with through life as we try to make ourselves feel at least as good as, or even better than, individuals around us.

Coming in and asking – first of all acknowledging that the service member is not able to control their emotions, and then needing to come in and ask for help, are certainly things that trigger feelings of inferiority. In order to compensate for inferiority, Adler noted that some people will adopt compensatory strategies, sometimes even a superiority complex. And if you think about the notions of battle minds, the Warrior Ethos, there certainly are significant ways in which the service members are trained or learned to adopt a performance level that does not include not being able to control their emotions. So again, the whole context for coming in for care is one where this notion of inferiority, perhaps, is peaked.

And so I want to note up front that this is something that we'll say a number of times. We believe that including technologies, like smartphone technologies, in our clinical practice may help move a service member more feeling like, in fact, they are in control and helping them compensate for what may have been feelings of inferiority.

In a recent blog post, the story of a Daniel Folsom was related. Daniel was a Civil War soldier who apparently developed what we would today call PTSD and was put in an asylum by his family following a suicide attempt. Eventually, Folsom got better; and he wrote a letter to his sister promising, "I shall try and be a man." And what he meant was, I shall try and restore myself, my sense of dignity. And he did that by reenlisting after discharge and then eventually successfully returning to life -- this again underlining this notion of inferiority that comes from having emotional or behavioral health problems.

Access to care is also an issue that we frequently talk about. And while it may take up to two hours, or perhaps longer, for a service member to seek out 50 minutes of time with a provider, mobile applications or websites are tools perhaps that they have available within seconds. They are also tools that they have closer to the natural environment, or the time and place when, in fact, they're having difficulties that we may be wanting to help them with as providers.

In terms of access to care, we have a number of empirical studies showing that humans are actually more honest and open with computer-generated virtual agents than they are in face-to-face encounters with humans or on pencil and paper questionnaires.

For instance, in this last year, Pollina and Barretta published a study reporting on the effectiveness of a national security screening interview when it was conducted by a computer-generated agent; that is, compared to filling out a self-report questionnaire. They found that asking questions about mental health, drug, alcohol and criminal histories, actually the number of admissions made during the computer-generated interview exceeded the number of admissions made using a self-report questionnaire.

In terms of the quality of care, there are some interesting anecdotes. A flyer who came in for PTSD was reluctant to acknowledge the symptoms and even more reluctant to seek treatment. But when provided with the notion of using Prolonged Exposure Coach, or PE Coach, brightened and made the statement, "This is cool. I have my therapy on my smartphone," so recognizing a sense of ownership, perhaps, of his therapy but also a sense of having control over, or having some competence in, the things that would make him better.

We've discussed a number of reasons why technology needs to be integrated into health care. Smartphones are familiar. Computers are familiar. They reduce the foreignness, perhaps, of

psychotherapy; and they increase the control and efficacy. And then they are also available 24/7 in a mass practice in the white space.

In a thoughtful analysis of the future of telepsychology, including telehealth and other technologies, Maheau and her colleagues analyzed a number of promising technologies that point to the need for behavioral health professionals to understand and incorporate them. They note that we need to understand these technologies that have actually changed the way that people communicate, process information, and relate to each other.

At T2, we have developed a curriculum for training in-depth behavioral health providers to use these kinds of tools in clinical practice. And we actually had our first face-to-face workshop last week. Of note, one of the attendees wrote in their review, "I think the technology piece is congruent with the way my current population operates. I see women who communicate with their husbands primarily through text, sometimes from the other side of the same couch. My patients do everything on their phones or devices. Technology, mobile apps, et cetera, is the language they understand."

And I think we need to understand that this is a significant change in the way that people relate to each other. Those of us who have digital natives at home have observed them and the way they interact. We're often frustrated, for instance, that I call my son and he never answers the phone. He simply doesn't want to talk on the phone. "Dad, why don't you just send me a text? It's so much easier – or tweet."

The digital natives of today, the younger people, they interact with each other using Facebook, texting, twittering, snapchat, et cetera. And those digital forms of communication are essential to their relationship. At 16, I would ask my son what he was doing on the weekend. He'd say he was hanging with his friends, and yet he was sitting in his own room with his headphones on and Xbox Live running. He'd be interacting with his friends and colleagues, having a running conversation, regardless of whether they were gaming or streaming TV on Netflix or a movie. So again, the way that people relate has changed.

You don't have to be around a military base very long to observe someone looking at their smartphone for some reason. The first time I really noticed this change in cultural patterns or communication patterns was at Northwestern University. I had just finished a lecture back in 2009 and was exiting the building. It was one of those nice spring days where the birds are chirping and everything just seems right with the world.

And as I walked through the lobby, there were about 20 coeds sitting on the couches, sitting on the floor, standing leaning against the wall; and there wasn't anyone speaking. The room was silent. And I was shocked because in my college experience, there never would have been 20 coeds sitting in the room not engaging, at least some of them, in interesting conversation. But they were busy texting and laughing at the jokes and sharing things with each other. And I noticed the same pattern among the adolescents at a family holiday gathering later that year.

In an interesting study published in *Science*, Wilson et al reviewed 11 studies they had done having to do with people tolerating the notion of sitting alone with their thoughts. And one of the things that we noticed is that whenever people sit down for very long, in a waiting room or other environment, those smartphones seem to come out very quickly. The instructions that the participants were given in these studies were they were to turn in their smartphones and any other books or things they were carrying, to go into a room and sit down at a desk, and just entertain themselves with their thoughts for between 6 and 15 minutes.

Interestingly, in some of these studies, they put a device on the desk that they told the participants they could use if they wanted to shock themselves – a little electrical shock. Interestingly, many of the participants actually preferred to shock themselves rather than focus only on their thoughts for 6 to 15 minutes. In fact, 67% of men gave themselves at least one shock; and there was one in the group who actually administered 190 shocks to himself within that period of time. Of the women, only 25% chose to shock themselves. But the authors know what is striking is that being alone with their own thoughts for 15 minutes was apparently so aversive that many of them preferred to shock themselves rather than being left along with their thoughts.

The authors conclude that, "The untutored mind does not like to be alone with itself." And so, again, if the smartphone is coming out frequently, perhaps it's an ideal place to put some of the adjuncts or some of the assignments, some of the things that we want in the behavioral health treatment to help people get better.

Those of us with behavioral training may well remember the Premack Principle. The notion is that if you're trying to train upward behavior, one of the best ways to do it is to pair the new target behavior with a behavior that is frequently occurring already in the person's environment. So if I want to train up time spent doing homework, then I allow my child to spend time watching television following homework if, and only if, watching television is something that they're frequently wanting to do already in their life.

And so if we think about it, again, the frequency with which smartphones come out, with which people are accessing the Internet, it would seem that placing our homework assignments, our exercises, our other tools to help with psychological health in those environments makes perfect sense.

When we consider the kind of technologies that our service members use at work, they're certainly at the cutting of high tech. Then in their play, we can see these images of people playing the video games online. And these are not only ways of passing time and playing, but also ways of connecting with people. They are ways of forming groups across the geographic divide that puts people in a synchronous environment where they engage in simulated activities together. So the notion of belonging, the notion of being together, the notion of relaxing and playing, enjoying themselves, all get tied up in these technologies.

And then in relationships, here we see service member participating in a ceremony of a family member – so again, across geographical divides, people are able to be connected, connected in ways that, as psychologists and other behavioral health professionals, we need to understand.

So why is the use of technology not yet standard of care? We've heard the term – and I've used it – the Digital Divide. And it's used to describe a number of things. In 2011, Mark Prensky coined the terms digital native and digital immigrant in an article where he was talking about issues in the educational system, and what he perceived as a failure or a pending failure. He stated, "Our students have changed radically. Today's students are no longer the people our educational system was designed to teach." And he attributed this change to the fact that the arrival and rapid dissemination of digital technology had gripped the U.S. in the last several decades.

Today's students, perhaps, represent the first generation to grow up with this new technology. And that's how Prensky defies digital natives. They've spent their entire lives surrounded by and using computers, video games, digital music players, video cams, cellphones, and all the other toys and tools of the digital age.

And so if we think about the patients in behavioral health care, we're not treating the same patients anymore. And so we need to make sure that we have interventions that are relevant to digital natives – digital natives who are fundamentally different than many of us in the room.

The others are digital immigrants. And digital immigrants are, in Prensky's definition, people who have not grown up with those technologies but for whom those technologies are introduced later. So one of the simple ways to think of it is, if you remember aerosol deodorant and hairspray, you're probably a digital immigrant.

A number of people have defined this Digital Divide in different ways. I've just mentioned the idea of cohort or birth year, when you were born, the time in which you grew up. But there are also other factors that divide immigrants from natives. Certainly some cultures are much quicker in adapting and using digital technology. SES stratification is another issue. If you don't have the funds or don't have access to some of these technologies, then again, you will be an immigrant later in life.

And then the last consideration for why it's not the standard of care, some of the ethical and legal concerns, and we'll certainly talk more about them. Clinicians often ask questions about what does this mean in terms of privacy, what does this mean in terms of confidentiality, and are these tools something that we're ready to use and able to use based on our license credential status?

So how do we move forward toward the tipping point? It's important that we have innovative thought leadership. And we have a number of good examples of people who are pushing out in front within the DoD and outside to think about ways in which we can incorporate these technologies in our practice. T2, the National Center for Telehealth and Technology, is a DoD organization that is solely focused on exactly that question: How do we use emerging and innovative technologies in order to support the psychological health and TBI care of our beneficiaries?

TATRC is another organization, as well as recently the MHS Innovation Council. The Innovation Council is currently headed by Steven Steffensen and Mark Goodge's office, the Chief Technology Officer in DHA. There are a number of offices working within the DoD to support these integrations. We also have numerous websites and virtual development, both internal to the military as well as external. And we have academic partners, such as Skip Rizzo at the USC Institute for Creative Technologies and his SIM Coach application. And we have Barbara Rothbaum and her folks at Virtually Better, Inc., both academic partners and DoD partners from the external economic environment.

If you do a Google search looking for empirical evidence or empirical support, and if you type in the term "mobile health," you get 3.9 million results. A similar search using "psych info," which is a much more germane to behavioral health practice, returns almost 3,000 references. So while there certainly is need for additional research and more specific research on the efficacy of specific apps, specific ways of applying these technologies, there is a great deal of empirical support for using the tools.

Our next T2 webinar in the DCoE webinar series, which will be Wednesday, December 17th, is on the topic, The Evidence Base for Using Technology Solutions in Behavioral Healthcare, and will provide a rich overview of some of this literature.

One of the technologies or one of the innovative tools that T2 has developed is the T2 Virtual PTSD Experience. And if you look at the URL at the bottom of this PowerPoint slide, it will lead you to a web page here at T2 that gives more information about how to access the T2 virtual PTSD experience. Let me provide you with a quick warning. It's not a website that you can visit from a DoD computer. We did not develop the PTSD Experience in Second Life for use on government computers but for use in the white space. So it is a tool that you can access at home using the Internet. It's free access, but it requires downloading a Second Life browser.

The simulation that we developed in Second Life is an engaging experience that includes game-like activities for learning. It provides a simulation of PTSD symptoms, showing individuals who have PTSD perhaps; the kinds of triggers, as well as some of the ways of treating the symptoms; and then helping people who don't have PTSD better understand, perhaps, what the causes and the treatments of the disorder may be.

Finally, the environment includes information that will hopefully be of help for individuals to get additional information regarding the disorder. At this point, in two years, we've had more than 10,000 unique avatars come through the site. The rate is more than 11 a day. And so it's a site that you visit as an avatar, moving through and interacting with, again, a simulated environment.

At several points in the experience, there are surveys posted; and the surveys ask questions. This is not a scientific survey, but it a convenience sample where we ask people for their feedback regarding the impact of their experience. There is a preponderance of individuals who say they strongly or agree with the statement that they better understand the causes of PTSD having gone through the experience. They also better understand the symptoms of the disorder, as well as treatments. And most importantly, there's an attitude question that asks whether they're more likely to seek treatment or refer somebody to

treatment. And again, the majority, 79%, strongly agree or agree with the statement that they're more likely to seek or refer people for treatment.

Another innovative use of the simulated world is avatar to avatar to psychotherapy. There is a special edition of the *APA Monitor* in December of 2011 that included a number of articles where individuals talked about virtual reality and the use of avatars or other virtual reality experiences to support psychotherapy.

Kevin Holloway is a psychologist currently with the Center for Deployment Psychology, who was a T2, and began just an early study on doing avatar-to-avatar psychotherapy to provide prolonged exposure for PTSD. While this isn't a conclusive study, it's an early pilot with some promising anecdotal results. The avatar-to-avatar context, if you think about it, it allows people to engage in an immersive and engaging relationship, communicating and talking about their thoughts and feelings, but it's at an arms-length distance. You're watching yourself engaging as an avatar with another avatar that has a psychologist behind it or a behavioral health professional.

There are a number of studies that have been published to show the beneficial behavior change that occurs following individuals engaging in simulated behaviors, individuals who exercise using exercise bicycles. Again, their avatar is only a representation of the self; but there seems to be some very interesting carryover of the impact of doing rehearsal in a simulated environment in our real world.

So for psychotherapy, the goal of helping a patient get a fresh perspective on themselves, perhaps, is augmented by a context where, again, they can watch themselves interact with somebody else. Quick data scan – these are the data from only two subjects – again, not conclusive evidence, but an early anecdote that in fact the pilot study of evidence-based practice in a virtual world was effective at reducing symptoms.

PE Coach is another application that we developed at T2 for supporting the use of prolonged exposure in clinical practice. In a study of clinicians prior to releasing the application, clinicians, when it was described to them thought that the apps sounded favorable, sounded like it would be useful in enhancing compliance with patients and compliance with homework assignments, as well as assignments with the clinician to follow the evidence-based practice model.

In another study that was done after release, we looked at the impact or the interest in using PE Coach in the VA provider community with 271 clinicians who had been trained in prolonged exposure. Almost half of them said that they already used PE Coach as a mobile app; and of those who did not, a large percentage said that they intended to use it in the near future. And then a significant portion intended to continue the use of the application.

We turned to theory and asked the question, why? Why would these mobile applications and websites be helpful? I think Bandura's Self-Efficacy Theory is helpful. He defines self-efficacy as, "The belief in one's capacities to organize and execute the courses of actions required to manage prospective situations. Belief in one's ability to succeed is highly relevant. Individuals with a strong sense of self-efficacy view challenging problems as tasks to be mastered. They develop a deeper interest in the activities in which they participate, and they form a stronger sense of commitment to their interest in activities, as well as recovering more quickly from setbacks or disappointments."

I'm just going to touch on this very briefly; but according to Bandura, there are four major sources of self-efficacy. Mastery experiences are the most effective. In mastery experiences, people learn to accomplish a task and gain successful mastery of the skills required to do that task. Again, I would mention that the use of modern technologies is an environment where a service member may quickly feel competent to master tasks like relaxing, like recording their thoughts, as opposed to an unfamiliar environment, like sitting down and talking to somebody. Again, it doesn't replace that environment; but it may very effectively supplement it.

The second is social modeling. Witnessing other people successfully complete a task is another important source of self-efficacy. And so 3-D simulations, videos that can be contained in websites and mobile apps, as well as attending a person-to-person session with a behavioral health provider, are all ways that we can offer social modeling of appropriate and healthy behaviors.

The last two are social persuasion and psychological responses. And those are, again, both ways of building self-efficacy that the use of modern technologies will support.

An important note, "YAVIS," which is a term coined by William Schofield, stands for "Young, Attractive, Verbal, Intelligent and Successful." And these are characteristics Schofield thought when the patient had those characteristics, the therapist was likely to interact with them in ways that would increase the success or the likelihood of success of treatment.

It's important to point out that verbal notion has really changed over time. And so as we think about our verbal interactions with patients today, like the quote from an attendee of our education session, that needs to include digital communication. If a husband and wife sitting on the same couch use texting as a way of communicating, we need to think about and understand what that means for our relationships, including those as behavioral health providers.

To quickly summarize, those of us who are digital immigrants may be slow to move into the modern technology space, but are patient. The younger people are already there. Technology provides a quick tool and a familiar tool for helping them get the upper hand on their emotions. They're also ego-syntonic, and I believe they contribute to a sense of self-efficacy.

And then finally, using the technologies may be helpful for them to regain a sense of who they are, including understanding the time in which their emotions were perhaps more difficult for them to control.

So a number of references, which are in the slide deck if you want to download it. And I will now turn the podium over to Dr. Ciulla.

Thank you, Dr. Workman.

Good morning and good afternoon.

I'll be covering these topics: an overview of mobile health; possible barriers that might be getting in the way of bringing mobile health technologies into clinical practice; a look at some tools that are emerging or that you may see in the near future; and then finally, some next steps for bringing technology into clinical settings.

An NIH consensus group defined mobile health as, "the use of mobile and wireless devices to improve outcomes, services and research in health care." This definition is very much like the definition of mobile health used by the Defense Health Agency in their mobile application framework paper. The DHA defines mobile health as, "the use of mobile devices to wirelessly deliver healthcare services."

Of course, there's a lot more to say about mobile health and some key developments in health care. We can start with the Army Surgeon General's call to move from a healthcare system to a system for health. At a minimum, this involves the idea that patients become more active in their care, more empowered as decision makers. And this is consistent with the patient-centered medical home that some of you have no doubt heard about, that model of care which takes the view that the patient is at the center of care delivered by a coordinated team of healthcare professionals.

The white space or lifespace – did you know that most of us spend about 100 minutes a year in a health care professional's office? That leaves a lot of lifespace, about 500,000 minutes, that we spend away from the health care setting. A system for health is residing in the lifespace and is where technologies will play a key role. Technologies are accessible, always on, can be activated remotely. And because they can be used privately, they get around issues like stigma – the concern that many service members have

that if they see a provider face-to-face, it will hurt their career or a diagnosis will be put in their record that will be problematic for them.

Clearly, more and more data are needed about mobile health than is at our fingertips right now. Dr. Workman points out a number of studies on the way, and we have some here as well. And eventually, these technologies will communicate with one another.

For example, we look to the day when our mobile applications will talk to the electronic health record. In short, mobile health is transforming health care. A user can research a diagnosis on a website, order prescription refills from a mobile device, view their health record from their desktop or via a mobile app. A provider can view a patient's record remotely and receive standardized testing results. And mobile health introduces new ways to communicate and evaluate.

I talk about Web and mobile really as a matter of convenience. In fact, the distinction between Web and mobile is becoming increasingly blurred. They are distinctions that the end user probably doesn't discriminate between. A recent technology usage study found that 56% of those surveyed are multiplatform users. They use more than one device over the course of a typical day. Smartphone use predominates in the morning, desktop use during the day, and tablet use in the evening. Users aren't necessarily thinking Web versus mobile, they're thinking, "Which form factor works best for my immediate needs," or, "What device is readily available to access digital content right now?"

Mobile-friendly websites are software applications that are easily viewed on both computers and mobile devices. The software detects the screen size and resizes the content to fit the screen. This type of software development is also known as "Responsive Web Design." We're seeing more and more of this. Again, the Web versus mobile distinction is becoming more and more non-significant.

At this point, I'd like to get some feedback from the audience. Here's a poll question: Do you use websites to obtain medical information either for yourself or for someone else -- Yes or No?

[Pause for poll response]

That's great. And then the second question was: If you do access medical information on a website, how often do you do it – daily, weekly, a few times a month, or rarely?

[Pause for poll response]

Okay, great. I'll give you these numbers in a moment. I have one more poll question for the audience: Do you carry at least one health-related app on your personal smartphone? That might include an activity app, a calorie counter, and so on. And if you have one or more health apps on your phone, how often do you use such apps?

[Pause for poll response]

Okay, here are the results. To the question -- Do you use websites to obtain medical information and, if so, how often? -- 93% of you said that you access a website either for yourself or for someone else to get health care information. And my quick jotting down of numbers indicates about one-quarter of you do that on a fairly regular basis.

And to the question --Do you have health apps on your smartphone; and if so, how often do you use them? – about 72%, about three out of four of you, said that you have a health-type app on your phone. And again, about one-quarter of you said that you use those apps on a fairly regular basis. So those are quite interesting numbers.

Let's look at some industry data in comparison. By the way, just this past March, the World Wide Web turned 25 years old; so it's been with us for a quarter of a century now. Let's look at some recent industry data. A 2013 Pew Research Center study found that more than half of those sampled stated that the

Internet would be very hard to give up, up from the 38% in 2006. And more than half of all Americans look online for health information. And more than one-third use the Internet for diagnostic information.

How about mobile applications? One-third of cellphone users and one-half of smartphone users seek health information on their phones. And nearly one out of five smartphone users – that's one out of five – have at least one health app on their phone with, in this particular study, exercise, diet and weight apps being the most popular types of apps. And then the second and third bullets show the rise of adult ownership of cellphones and smartphones. And these data are from 2012-2013, and so the numbers are probably a little higher now.

The takeaway on this slide is that if you are not much of a smartphone use, please recognize that your patients, if they happen to be service members, probably are smartphone users.

But here's what we don't know. We don't have a good understanding about whether the technology tools we're discussing with you today are in use in military settings. Of course, we have anecdotal information. We have heard from providers who have downloaded one of our apps or used the content in one of our websites. But we lack basic information about the rates and patterns of usage of these tools across the military spectrum.

So let's consider some possible barriers to technology adoption. Dr. Workman has talked about a few. One of them is: "I still can't program my DVD player." Well, I sympathize; although I do wonder if the DVD player is going the way of 8-tracks.

"I'm waiting on the IT department." Fair enough, this is of course a legitimate issue. Particularly in military settings, we should be checking in with our IT departments about new technologies.

"I don't own a smartphone." Well, as our numbers indicate, if you do not own a smartphone, you're rapidly becoming a minority. However, at T2, we're working on a project right now that will bring our mobile applications into a Web environment so that a user or a provider will be able to log on to a website from their office and access a very close approximation to the same app that was originally developed for the smartphone.

"Using tech means more work – I'm already busy." Well, certainly that's the case; and we recognize that all of your schedules are quite busy ones. In fact, what we expect though is that our applications will probably improve your workday. They will allow you to obtain standardized measures that you can receive information from a patient potentially. And it will allow that kind of communication to occur between sessions.

"I'm still learning the new medical record." That's fair enough. In fact, what we expect eventually is that our applications will be able to talk to an electronic health record. We're not there yet, but certainly we would see that as a potential outcome.

"These apps are just a fad." Well, the industry data that I have cited and our own internal surveys suggest that this is probably not the case.

Let's take 4 and 3 together. "Technology doesn't fit into my clinical orientation and technology will interfere with the therapeutic alliance." Frankly, I hope that clinicians are asking these questions, trying to understand the impact of technology on the way that they conduct their work. We need more information about how providers are using these tools. In fact, we are planning to offer a Community of Practice Forum to begin a dialog with providers in the near future.

"Patients will be e-mailing me 24/7." I include this concern for this reason. I want to demystify the use of technology in clinical practice. The use of technology should be managed like other aspects of conducting therapy and managing therapeutic boundaries. My guess is that you all have telephones in your practice, yet you probably don't respond to telephone messages 24/7. You set the boundaries in the first session. The same would be true for these kinds of technologies.

And for the last one, "Technology is making us more isolated," there is actually data that tell us that people are finding that their relationships are becoming strengthened, that these technologies are relationship enhancers.

Let's look at some specific products that we have developed here at T2. This is a web-based application, a landing page for the depression materials on our website After Deployment. On this page, a user can review video documentaries discussing depression, take an assessment, and access a library of materials about depression. Much of this material can be printed out and used as (inaudible) in a clinic. In fact, we have developed or co-developed several websites, including one for military children, one for parenting, and one for problem solving.

What about mobile apps? These are applications developed for smartphones and tablets, and which you can download in app stores such as iTunes, Google Play and Amazon. We have developed or co-developed about 20 applications here at T2 at this point across three major typologies – apps for service members and veterans, apps for concerned significant others, and apps for providers. I want to be sure to note that much of our co-development has been with the VA. And I want to be sure to let you know if it isn't obvious that all of our apps can be downloaded free.

Here is a specific example of one of our apps. We released Breathe2Relax in March of 2011. It teaches a deep breathing exercise to help with stress. In the past, many therapists would create a relaxation tape and then hand it off to their patients. That's no longer necessary. This application, easily downloaded, walks the user through a deep breathing exercise, and has other features designed to teach about stress. Since it's been released, there have been about half a million downloads of Breathe2Relax.

In addition to websites and mobile apps, there are other clinical support tools that you will see more of in the future. As we move into a time where users will be able to track and quantify their health data, we want to find ways for users to be able to readily grasp and interpret all of that information. Dashboards offer easy-to-understand displays into complex data. This is one of our early mock-ups. At a quick glance, the desktop display or even on a mobile device, the user can see information quickly and easily and track trends.

The bottom line is that dashboard stripe with visual appeal wherein multiple measures of performance can be seen. Dashboards can also operate as a launch pad to complementary information; in other words, you can click into one of the Dashboard tiles and find more information stashed back behind the Dashboard tile.

And here is a technology development that I'm sure you've heard about, and you might even be wearing one right now. We call these "Wearables." Wearable smart electronics, such as fitness trackers, will do more than count your steps. They will contain data analysis packages or services that create useful insights for the user. They will alert a user when it's time to take a medication and then graph compliance. They will contact the pharmacy when a user is down to her last few pills. And they will provide health tips and recommend next steps. In fact, it has been projected that by 2016, Wearables smart electronics will be a \$10 billion industry.

What about simulations or avatars? Dr. Workman referenced avatars in Second Life. SimCoach used the work of the Institute for Creative Technologies down in California. Instead of taking an online assessment by clicking through several pages of radio buttons, the simulation that you see here, called Bill Ford, can engagingly take the users through an assessment. Such simulations can field questions and even provide encouragement to the user. And I encourage you to log onto this website and take a tour of this application; it is impressive.

We know that our end users comprise a wide range of backgrounds and education. And we know that psychological terminology can be complicated. Games allow us to develop learning content in a format that can be engaging, as well as instructive. Recall from an earlier slide that 65% of service members are gamers.

And finally, social robotics. And I'm not suggesting that therapists are going to be replaced by robots, at least not any time too soon.

Technology promises a lot, but there are lots of challenges going forward -- the adoption challenges that I referenced earlier and security issues. We need to encrypt the data, both data at rest and data in transit. As I mentioned earlier, we do need to be thoughtful about the impact of these technologies on the therapy setting.

The one other point that I will mention on this slide is the last bullet. Just because a person wears an activity tracker on their wrist, doesn't automatically mean that they're going to be more active. Issues about motivation, resistance to change, are all of course part of the work of therapy.

There are those challenges and probably others. Still, we seem to be moving away from a "doctor knows best" model of care and toward a model that supports an activated patient. If a user obtains health information online, then she arrives at your office, she is already equipped with knowledge. If a user is tracking his health condition on his smartphone, then he is learning about trends in his condition and how to intervene in a timely way. And if a user is sending information to her provider about her health, then the user and the provider are entering into a new form of communication.

And so, again, health technologies are poised to engage users in their actual lifespace. These tools are always on and accessible. Still, there is much to learn about these technologies. In a military context, who is using these apps? We need a full inventory of apps across the DoD spectrum. We need more controlled studies. We need clinical practice guidelines and training manuals. We need to establish a forum to have ongoing dialog with providers entering into this arena. And maybe we need to look at developing a credentialing mechanism. By the way, in the way of training manuals, we actually have developed some manuals right here regarding web and mobile applications.

We have a number of studies underway at T2. Time really doesn't permit me to walk into these. I did leave a contact for one of our research psychologists. Please feel free to contact her. We'll provide you with the information that we have regarding our current research. We've also developed here at T2 a research report, and we're happy to share that with you – that gives an overview of current studies in the mobile health realm.

"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." Is this quote talking about the Internet or about mobile devices? No. How about to an article about the telephone dating back to 1898?

We providers above all know that change isn't easy. These technologies require some new thinking. We recognize, in the language of my colleague, Dr. Workman, that some of these new applications might feel a little bit ego-syntonic to you. After all, we should keep in mind that Apple's App Store came into existence only as recently as 2008. So this is a very young industry. Truly, we have come a long way from the iconic analytic couch to mobile health.

And references and my contact information. I think that concludes our formal presentation. I believe Dr. Workman is returning to the podium with me, and we're happy to take some questions from the audience.

Thank you for intriguing presentations.

If you have any questions for Dr. Workman or Dr. Ciulla, please submit them now via the Q&A pod located on the screen.

I'd like to start with a question, which is, how can a provider determine whether an app is evidence-based?

As Dr. Workman pointed out, please return to our webinar next month. You'll get a full presentation on evidence-based information. Here's my response to that very important question. One industry expert said that these applications are not new medicine; they're a new mechanism for delivering evidence-based information. I think the best way, in the absence of having a rating system for our applications right now or even a full inventory that we can share with you across the DoD spectrum, the best way is to look at the application; download it; see if that information seems to be right from your vantage and from your background and education.

I can tell you that one of the ways we develop content here is we work with teams of experts. The reason that I showed the Breathe2Relax slide was especially for this reason. We all know that deep breathing exercise has a wealth of literature supporting its effectiveness in managing stress and other kinds of mood conditions. The information in it is evidence-based. We haven't yet determined whether that delivery mechanism, via mobile app, is as effective as face-to-face; but those are the kinds of studies that we'll need to do going forward.

If I could just add a comment. On the bottom left of your screen, there is a file resource that's labeled T2 mHealth. And that's a current summary of some of the empirical literature regarding the use of mobile health technologies. We do have more of that material available, but that is on the website right now.

What changes in documentation – clinical notes, informed consent – do you recommend when integrating technology into clinical care?

You mentioned informed consent. One of the things that is probably relevant and helpful is discussing with a patient privacy and confidentiality concerns. And so it may require you to have some at least superficial understanding of technology to note that there are ways in which the data that are currently kept on a smartphone may be subject to hackers or to loss. If, for instance, the phone isn't secured with a code or in other cases when it's inadvertent – certainly the news with Edward Snowden has made us all realize how much of our information is being shared outside of what we may be aware of.

In at least the T2 mobile apps, none of that information comes back to a server. So at least there are no concerns about our apps themselves getting information that would come back and be stored somewhere else. But it is stored on the cellphone. And so the same kind of confidentiality that you want to use for your banking app or your credit card applications, you'd want to use for any behavioral health intervention data as well.

And that, in the context of clinical care, needs to be part of an informed consent conversation. So that's, again, the kind of conversation you would have and then document in a medical record, which might be part of – I think another part of the question was documentation.

Thank you.

I see that there is a newsletter. It's called *Research on mHealth Apps for Behavioral Health*. Is that a resource that's available for people to use?

Yes, it is. And I think that's probably the research newsletter that I was referring to earlier. We're happy to put you on a mailing list if you have an interest.

Great, thank you.

I have another question, which is, how can a clinician properly assess whether technology integration is advantageous in a patient's treatment plan?

One of the first things that a clinician would need to do with technology would be similar to any intervention that they were intending, and that's to be sure that it's the right fit for the patient sitting across from them. I would not suggest to you that these technologies are the right fit for every patient. We don't

really have studies that tell us which patients do better with these technologies yet than others. And so I think that's going to be a lot of on the part of the clinician to make that determination.

Then, obviously, the second piece is to be sure that you're identifying the right application to assist that individual. One of the first things you'd do is you would simply talk with the patient about how familiar they are with technologies. And as you can see, most of your patients, at least in military environments, probably have a smartphone and probably have an app or two on it. So they're probably reasonably familiar with the notion of health technologies.

The next steps would be to walk the patient into that technology. And that would obviously mean that provider would have to have some background knowledge as to these applications and how they work.

By the way, our mobile apps are developed for the most part on both of the major platforms, both IOS and Android. You may find that more of your patients are presenting in a clinical setting with an Android-based operating software smartphone than an IOS. But that individual could download the application from either one of those two primary platforms.

Thank you.

I have a question about in the case of using an application to diagnose a medical condition, is there a possibility of mis-self-diagnosing the medical condition – like ignoring some more severe symptoms in favor of a more favorable symptom, or placing too much emphasis on a symptom to the point of being a hypochondriac type of situation?

A word of caution, diagnosis is a category that we need to be careful about. The clinicians are the ones licensed to make a diagnostic impression. A number of apps will include surveys or questionnaires to look at symptomatology. And in our applications, for instance, the PE Coach has a PCL that makes it easy and convenient for the patient to record a score. But making the leap to a formal diagnosis is something that we certainly would encourage that the professionals should do in the context of a history, et cetera, and not made merely on any one piece of data like you might get from a smartphone application.

So the apps are more focused on triggering when a patient should ask questions and what type of questions they should ask?

Yes, I think that's exactly right. We're very clear on our applications that the results you get from a self-assessment are not diagnostic. They are kind of a stepping board to maybe sit down face-to-face with a provider or healthcare professional and say, "These are my results from this particular application. I'd like to talk about them with you."

I would never make a diagnosis in my own clinical practice on the basis of one test. As Dr. Workman was saying, we would be interested in a clinician making a diagnosis on the basis of a comprehensive battery of assessments, clinical intake and so on. So there is no intention of these applications to deliver a final diagnosis.

Perhaps a word of caution that comes out of that is there are a lot of websites and mobile applications that are questionable and that may lead to conclusions that certainly would raise eyebrows by a professional. The mobile applications that we've developed do not. They don't give a diagnostic category. So again, it's one of the cautions you might raise if you're using the applications or websites with patients, that they not just go anywhere and accept what they read at face value.

Thank you.

We have a question: Are these apps currently being used in clinician research; and if so, how? And if not, what are the barriers to doing that?

We do have a couple of apps in research right now. Actually, one of our research psychologists, Dr. Nigel Bush, actually presented last month on one of our applications called Virtual Hope Box. So there's always a bit of a tension arc. If we ran all of our applications through the necessity of an IRB, we probably would have very few apps out on the market today where they're needed and they're being used.

We have brought some of them back into our shop. The VHB is one of them. Another one of our applications called LiveFarmer, a mobile app, is also in study. We do a lot of collaboration with academia and always look forward to hearing from academia about some issues that they might have with respect to our applications on our website.

On the website side of our house, we're also doing some work on After Deployment and on Military Kids Connect. So we do have some research underway at this point.

That kind of leads into the next question, which is: What differences may there be in utilizing these apps between our service members and veterans compared to the general civilian population?

Actually these apps are available on the public markets, and anybody can access them and make use of them. They are geared and were originally developed with military in mind, so it has some of the nomenclature that's consistent with the military. It talks about reactions to deployments, for example, homecomings, reintegrating. So a lot of the issues that the military face are the kinds of content that we have put into these applications, both on the Web and mobile side.

However, the approaches, the content – for example, speaking to depression, the depression module that I showed you earlier on After Deployment, that's just as useful to someone who is not in the military. If they can get around a little bit of, again, the military nomenclature, it's just as useful to a civilian as it is to someone in the military.

I personally am a big fan of your PTSD Coach. You don't have to be in the military to have experienced PTSD. And what intrigues me about it is the way that it has reminders. You tell it, I want to be reminded once a month. And it's not obnoxious. It just daily, until you take care of that, will remind you – don't you want to do this? And when you do, it gives you your trends over time. So you really feel like it's about you and the progress that you're making. And there's nothing that's specific to the military population in that tool. So I'm a big fan of the ability for anyone to be able to track and trend how they're doing over time. And I like those reminders; that's really helpful.

We have a question: Are there any apps that could be used for early warning systems to monitor communities and start an intervention before more people experience the same mental or behavioral health issues?

That would be an interesting app. As I'm thinking through our inventory, I can't think of one that really speaks to that set of issues, frankly. Actually, the VA developed a first time responder application. That might be in the vicinity of the question, but nothing in T2 that I can think of really addresses that content. Good idea.

Yes, an interesting idea.

I want to go back to the theory side of this.

Dr. Workman, you described Bandura's Self-Efficacy Theory in terms of how technology may serve as an ego-syntonic self-extender and possibly enhance the sense of self-efficacy. What theoretical models do we have to serve as a basis for how to properly integrate emergent technologies into clinical care? What guides us in that?

That's a good question. There are a number of models that look at the notion of self in care. At least in the rehab literature, there are a number of models that look at, for instance, an artificial limb or other kinds of

technologies, and the steps that a patient goes through in adopting an artificial technology as part of their capability. So there are some interesting models there.

In terms of psychotherapy models, I liked Bandura's model because in particular it talks about ways in which we can instill self-efficacy in our patients; and they seem to be particularly germane to the opportunities inherent in the technology: modeling, mastery. Those are things that, I think, very naturally fall from using either a smartphone app or engaging in a website.

We're developing a virtual Life Style Coach, a simulation to help with weight management. And part of the notion in there not only for decision making, but going through the motions as an avatar and making decisions, making commitments, et cetera – the same types of things that we would do one-on-one with a behavioral health provider should have a beneficial impact on, again, acquiring the necessary skills and gaining a sense of self-efficacy over the troubles or the concerns that bring you into the office.

So do you see the potential for synergy between this and some of the commercially-available apps, such as My Fitness Pal, that lets you actually keep a diary of what you eat and the way that My Fitness Pal can also be integrated in with other apps, such as the Jawbone Up?

Yes, I think – and Dr. Ciulla mentioned – the Wearables and the opportunities that are there in Big Data and quantified life, the notion that we can direct our behavior and understand ourselves better as we have more sophisticated mechanisms for quantifying what we're doing throughout the day.

Some of the risks inherent in any of that are the Fit Bits and some of the other commercial products store information about you in their servers or in the cloud. And certainly on one of the cautions we have with the military population is being careful not to have too much information about somebody that, again, may negatively impact on the mission.

I guess that raises the question: What can you tell patients about their concerns for privacy and confidentiality when they use mobile apps as part of their clinical care?

I guess the rule of thumb for providers to know is, first of all, whatever a patient or a user has on their phone is really their private information. Now, I would encourage everybody to have their smartphones password protected. But whatever an individual has on their phones is their own personal data. When that information gets transmitted to a provider, now it's in the provider's court and HIPAA rules apply. And it's incumbent on the provider to manage that information.

Now, within a DOD setting, we are looking to find ways to find ways to what we call "encrypt" information. And I mentioned earlier, encryption for data at risk, that's literally the data that sits on a smartphone. And we're working up a module now to be able to do that. And we will implement that in all of our applications going forward.

And then there is encryption for data in transit. That's one we're still working on, and we'll probably not have a solution for that for at least a couple of months. So the message to a patient right now, at least where our apps are concerned, is data at risk will be encrypted before long. And data that gets transmitted -- and really we only have one application that enables that kind of transmission, that's Mood Tracker – that solution is still a few months or longer away.

But bottom line for providers, once you receive the information, you need to find a way to store it and encrypt it on your system. In the old days, you had a locked file cabinet; and you put paper folders in them, and you locked them up before you went home that evening. Obviously, that's not the approach with these digital technologies.

If I could just add, the same issues are issues we've had for a number of decades in behavioral health. Where 20 years ago we would have a patient keep a diary, for instance; and we would give them a caution like, "Make sure you keep this locked up or hidden somewhere so that a spouse or children or other coworkers – the people you don't intend to see it – fall upon your private information."

We then moved into things like audio tapes, and we'd provide the same kind of cautions if we were taping something in the session and sending it home. And so for instance, the PE, prolonged exposure, traditionally involved taping or, more recently, we'd make a CD ROM of the audio session for a patient to practice. It's now in the PE Coach on their smartphone. And so it's incumbent on a provider to at least provide caution that this is data that they do want to protect with some confidentiality to maintain their privacy, even though it is not HIPAA-related. Or again, until it's in the provider's hands, it isn't our responsibility. But we want to help the patients understand what some of the risks are so that they can take reasonable steps to protect their own information.

So it gets back to if we're going to be patient-centric, then we have to make sure that patients are equipped to be partners in this?

Absolutely. And so when we think about education, I think we've probably emphasized today educating the providers. But we also need to educate the consumer and teach them how to bring mobile health into their treatment regimen.

Thank you.

One of our participants said they had not thought about using the website with their patients before or during a session. And they want to know: How do you do that when you have e-mail and Alta open on the screen? Do you have the patient pull up a chair next to the desk when you have things on there that maybe they shouldn't see?

That's one of those questions that I think a lot of us have not taken the time to think about: How would we do this? And most of us configure our desks in such a way that the screen is for our use after the session. It's for use in entering information into Alta, Outlook. Certainly one of the cautions that is raised in the question is the confidentiality responsibility for other people, as well as your own confidentiality. If a provider pulls out their own smartphone, for instance, and starts showing how an app is used, their own information – pictures of loved ones, et cetera – may certainly inadvertently be exposed. So you need to think through some of those things.

Certainly, if you're going to use a website during a session, you need to be cognizant of what else is open on your screen and perhaps think about ways of closing that so you can have access to provider information, perhaps having a second monitor that's turned to the side. And again, thinking about the configuration of the office to maximize the utility of some of those interventions. But there's a lot yet we need to learn.

The notion of a Community of Practice is an excellent idea, whether it's a local group of providers who share notes or a more distant group that shares ideas by T-con. Certainly there is a lot that we can do to think through the kinds of issues that come up.

These are the kinds of therapy practice issues that we are very open to having a dialog with all providers out there who have begun to use these applications or need some information as to how to get started. I think a lot of these questions are going to come to the surface, and it will be nice to have kind of a collective input as to how to work some of these issues.

I know the VA has done some work with having an iPad that patients can use while they're in a clinical setting. They don't send it home with the patient, but it's part of the clinic's resources. Have you had any experience with using a device like that, where its purpose is just for the communication with the patient?

We have not at this point. Actually, we're looking to begin to engage some of the clinical settings here at Joint Base Lewis-McChord. As Dr. Workman indicated, we had our first face-to-face workshop just last week with about 25 providers across the way at Madigan Army Medical Center. So we would look to begin to connect up even more, including with primary care. We know, of course, that primary care

providers see a lot of patients with behavioral health issues. So we're actually just beginning some inroads with bringing our apps into clinical settings.

Thank you.

There is, I think, a practical question here about: If I don't get a strong enough cell signal in my office to operate my smartphone, how do I show a patient how to download an app? If I can't demonstrate it for them, how do we teach them how to do these things?

That's a good question because oftentimes our locations are not ideal for accessing commercial wireless signals. And in fact, some of our security requirements in the DoD don't allow us to do that. At least one opportunity for showing somebody would be purchase perhaps of a used iPad or a piece of equipment that you would only connect to the Internet for downloading versions of the mobile applications and then could use in a session as a teaching tool to show people, much like we may pull a book off our shelf and show them a chart or some other information. That might be a way of sharing information about how to use an app.

Websites aren't going to work that way because you need to be connected to the Internet for them. And some of the functions on the applications won't work, again, if they're not connected to an Internet connection. But there are, I think, some creative and not too expensive ways of having tools around to show people like that.

Another thought, if there's a mobile application that you're interested in having a patient use, one of the things you might do is simply ask them first if they have a smartphone. And then give them an assignment to download the application and play with it to become somewhat familiar with it and bring it back during the next session. Oftentimes patients don't have time – you don't want to take time during the session to have them download it. Or again, they may not have enough of a cell signal there to do it. But that way, they have a way to look at something and bring it back in; and then you also have a notion of how motivated they are to use it. So, again, perhaps some ways of getting around cell signal issues in the office.

Have you thought about working with the VSOs? Because I know that they have set up stations to help patients how to do their personal health record and how to get to the Blue Button information. This would be, I think, another step beyond that of leveraging VSOs support for our military members to help them use this technology as well.

That's a great idea. We haven't done that yet, but certainly a very good idea and one we can certainly consider.

Thank you.

We've come to the conclusion of our question and answer session. And I just wanted to draw us back to this webinar's objectives. We wanted to make sure that our participants understood why the standard of practice in behavioral health does not currently incorporate use of modern technologies. And I think we covered that. I think people really looked at what are the barriers, and how do we try and negotiate and mitigate those barriers.

We've also looked at opportunities for improving behavioral healthcare through the use of these technologies as an adjunct to standard treatment. And we've talked a bit about steps needed for moving forward with the integration of these technologies and the potential for research. That's a huge area that is of interest.

I would like to thank you for the work that you have done in providing these tools and how well you have been able, clinicians, to leverage what we know about what works and add this to their toolbox – that they have additional ways that they can take the theories and implement them in practice. Thinking about the

role of the smartphone as a way of connecting with patients – doing the things we want to do, but in a way that's more in line with how they live and where they work.

I'm reminded when you were talking earlier of that diagram that shows the big white space of our life and then the pencil dot in it that says, this is the time we spend in the healthcare system, and all this white space is the rest of the time that we spend. So this is a nice way of expanding that little pencil dot into a broader area to further reach into how people live and where they live and what works for them.

I think that one of the things that we've touched on is that barrier of how our DoD networks don't always allow us to see what patients see, or to show patients what they would see if we weren't inside of that DoD environment. That's going to be a challenge that we need to work on.

I love the example you gave of use of avatars to gain experience that allows for an increased understanding of what's going on, but also allows us to try out new behaviors in a safe environment. It's just such an opportunity for people to look at the world through a new perspective and to practice things in a way that they can gain comfort with something new. So I think that tie-in, the congruency between how we can apply this and our understanding of theory, such as Bandura's self-efficacy theory, nice synergy in that.

And then last but not least, you talked about (inaudible) of practice. And I loved the synergy. I just left a meeting this morning at the Defense Health Agency at which we were discussing the need of having two workgroups that were assigned to look at the use of these mobile technologies in terms of what kind of policies do we need to help our adoption of this and to have a patient experience workgroup look at it through the perspective of the patient and to have another workgroup look at it through the perspective of the clinician, who is trying to leverage these technologies.

So I think we're all moving forward in a very exciting direction here.

I would like to thank everyone for participating in the seminar today. After this webinar, please visit the URL that we have given you for www.continuingeducation.dcri.duke.edu to complete the online CE post-test and evaluation and download your CE certificate or your certificate of attendance. The Duke Medicine website for online CE evaluation and the post-test will be open through Thursday, November 27, 2014, until 11:59 p.m. EST. And I would remind you, Thursday is Thanksgiving. So maybe you want to get it done before that day.

I would also ask that to help us improve future webinars, we would like you to complete the feedback tools that will open in a separate browser in your computer. To access this presentation and the resource list from this webinar, you may download them from the Files box on the screen. Or you can go to the DCoE website at www.dcoe.mil/webinars. Also, an audio version and edited transcript of the closed captioning will be posted to that link in about a week.

We will leave our Chat function open for an additional ten minutes after the conclusion of this webinar so that attendees can continue to network with each other. And I see that you have been diligent in exchanging information and asking great questions there as well. So I encourage you to continue that conversation in the appropriate box.

I would like to remind you to save the date. We have a DCoE Telehealth and Technology webinar topic on "Technology Resources of Use to the Clinical Care of Military Sexual Trauma," on December 17, 2014, from 1:00 p.m. to 2:30 p.m. EST.

And the next DCoE TBI webinar will be on "Performance Triad: Sleep, Nutrition and Exercise." Yes! I am so passionate about that triad! And that is scheduled for January 8, 2015, from 1:00 p.m. to 2:30 p.m. EST. So I hope that you will come to future webinars, and I thank you for attending this one today. Have a great day, everyone. Take care.

Thank you for your participation in today's conference. You may now disconnect at this time.