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Commentary

VA Connected Health

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Contents

The term *connected health* refers to technologies that extend the health care relationship beyond the traditional in-person synchronous encounters that for so long have been the centerpiece of patient/provider interactions. Connected health technologies include telehealth, telemedicine, patient portals, mobile health applications (mHealth), wearable monitoring devices, and other technologies that connect patients to their health care team or health resources.

These connected health technologies are rapidly evolving, promoting a greater focus on patients and their caregivers, driving patient expectations for easier sharing of personal health information, and necessitating change in how health care teams interact. The U.S. Department of Veterans Affairs (VA) is taking advantage of these emerging technologies by developing new or enhancing existing Web, mobile, and point-of-care digital services to redefine traditional VA care delivery.

Currently, more than one in four VA patients is engaged in the use of a connected health technology. One of VA's goals is to increase participation even further, with an objective of improving the quality and experience of care for our patients and their caregivers, while simultaneously broadening access to care.

Drivers of Connected Health

Driving the accelerated adoption of connected health is the simultaneous improvement in information technology and the emergence of the increasingly engaged and empowered patient. We anticipate increased demand for connected health technologies, which will be driven by consumers' expectations that health information, knowledge, direct care, and support should be delivered virtually—when and where it is needed, with ease of access and use.[1]

As part of this health care consumer revolution, connected health technologies are expected to provide *enhanced patient participation in self-care* through remote health tracking, disease management support systems, and simple communication tools. Consumers prefer systems with an easy-to-use interface, trustworthy source, perceived value, and effective integration with the other communication channels of the business. The ability of these self-care connected health technologies to improve patient outcomes will likely continue to be driven by individual tailoring, personalization, behavioral feedback, and clinical integration.[2,3]

More effective bi-directional exchange of health data between patients and their health care teams is a second major shift occurring as a consequence of the growth in connected health technologies. Patients are empowered by the health care system's newfound ability to make personal health data available in near real time via digital tools for their personal consumption. Increasingly, VA expects that patient-generated data, supported by powerful algorithms, will be a key ingredient used by health care organizations to personalize the patient experience. Patient-generated data will further drive the shift from the still common paradigm that patients neither own nor control their health data to the emerging concept that the data belongs to them.

Director's Letter

As VA works on solutions that will allow Veterans to use their mobile devices to interact with their health care team, learn about their medical needs, and access tools to help improve their health, it is important to consider the role of research in this fast-changing field.

Research assessing the individual effectiveness of the thousands of health apps already in circulation isn't possible, or even useful. Although one can simply assume the market will sort it out—that patients and clinicians will gravitate to those products they feel work best for them—this view sells short the value of research and research-derived knowledge.

One role for research is to steer app developers to effective strategies for supporting behavior change. Apps should incorporate functions that increase self-efficacy, assist problem-solving, and provide context-sensitive prompts—all strategies shown to be effective. Similarly, research has proven the effectiveness of peer support, nurse-led care management, and caregiver support, approaches that can be facilitated by well-designed apps. To be fully effective, VA apps will need to communicate appropriately with the team members who can adjust treatments and determine need for follow up.

So, what are key research questions for the development of mobile health applications? Here are two:

- How can we use mobile apps to collect patient-reported outcomes to better inform treatment decisions, performance measurements, and real-world effectiveness studies?

- How can mobile apps and Internet tools enhance approaches using peer support and community-based care?

I will expand on these ideas in my blog, where I invite you to suggest additional questions worthy of research. VA readers can send comments to my blog and non-VA readers can send suggestions to cider.boston@va.gov.

David Atkins, M.D., M.P.H.
Director, HSR&D

The increasing demand and interest in *virtual care delivery*, either synchronous (example: clinical video telehealth) or asynchronous (example: secure messaging) is a third major shift being powered by connected health technologies. These virtual care delivery modalities do not replace existing health care relationships, but augment them. Virtual care delivery has the potential to reduce inefficiencies in traditional health care delivery, allowing improved access to care and a reduction in geography-related disparities.

Priorities of VA's Connected Health Office

In early 2013, VA created a dedicated Connected Health Office with responsibility for overseeing the execution of a unified connected health strategy and ensuring its alignment with VA's overall strategic plan. The office's overarching goals are three-fold: (1) increasing and improving access; (2) supporting Veteran self-care; and (3) enabling VA employees to better meet Veterans' needs. These high-level goals have been further defined by the following priorities: (1) create a seamless, unified experience for Veterans across all VA patient-facing technologies; (2) expand Veteran access to care; (3) engage Veterans and their families in self-management of their health; (4) create patient-centered care through personalization of VA health care; (5) improve information sharing to increase the value of communication; (6) increase VA health care team efficiency and quality by moving relevant clinical data closer to the point of care; and (7) systematically and intentionally deliver innovations that will improve health care.

The future impact of connected health technologies will depend upon both the effectiveness of the technologies and their reach—the number and percent of Veterans with access to, adoption of, and use of the technologies. VA should adopt strategies to enhance access to these technologies for all Veterans, including at-risk populations, such as Veterans with lower income, lower health and technology literacy—and those Veterans with health issues, including traumatic brain and spinal cord injuries that can make access to technologies more challenging.

VA's Under Secretary for Health, Dr. Robert A. Petzel, has maintained that VA's goal is to put Veterans at the center of the agency's care and treat the whole person, not just symptoms or diseases. He argues that connected health technologies are a critical tool to allow us to achieve that goal and that they are rapidly changing how Veterans access the resources and information available to them. At a recent showcase of VA's leadership in connected health, Dr. Petzel remarked, "These technologies are helping us create a system of care without walls, a virtual system of care. This is where medicine is going—the virtual care delivery system."

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Response to Commentary

Connected Health

Thomas K. Houston, M.D., M.P.H., FACMI, Timothy P. Hogan, Ph.D., and Lorilei Michaud Richardson, Ph.Dc., M.S., all with the VA eHealth Quality Enhancement Research Initiative (QUERI), Bedford, Massachusetts

Connected health technologies, or virtual care, constitute a new "Model of Care" for augmenting efficient, safe, high-quality, continuous, coordinated delivery of evidence-based services to Veterans and families. In the prior sentence, "augmenting" is an important word. Connected health must not be viewed as a replacement for current high-quality care, but follows instead from the fundamental theorem of informatics: a person or teams (including health care providers, Veterans, and informal caregivers) working in partnership with a supportive technology or information resource is "better" than unassisted individuals working alone.[1] As with health informatics, a parent discipline, connected health is more about people, workflow, and the interactions between people than it is about the specific technology itself.

Ongoing HSR&D and QUERI Research

Considerable research related to connected health, funded by HSR&D and QUERI, is underway. Example projects extend from observational analyses related to connected health implementation and efficiency, to implementation research initiatives testing the potential use of existing technologies. Like other health care systems across the nation, VA is committed to understanding the implications of connected health technologies for cost and value. Recognizing the need for evidence, VA investigators conducted a retrospective cohort study of 132 VA facilities that were implementing patient-to-clinical-team secure messaging in primary care. The study revealed that higher secure messaging use was associated with lower urgent care utilization rates; early adopters of secure messaging achieved a greater decrease in urgent care utilization over time than later adopters (-20 urgent care visits per 1,000 patients per month).[2] Although these findings need

replication, identification of potential return on investment (i.e., reduction in unnecessary urgent care) is critical to driving future connected health implementation.

Further, in an ongoing QUERI Service-Directed Project (SDP 12-258), VA investigators are evaluating the potential of proactive, pre-visit secure messaging. After training patient-aligned care teams in the potential of pre-visit planning to support patient engagement and effective doctor-patient communication, secure messages are being sent to Veterans to encourage them to plan for their visit and reply to the message with "three things" they would like to talk to their health care provider about during their upcoming appointment. The investigators are evaluating the impact of an external implementation program on adopting the practice of pre-visit secure messaging in a randomized stepped wedge implementation trial. A review of HSR&D and QUERI databases reveals a variety of other projects related to connected health, including several that advance the basic science of health informatics through efforts to mine clinical data and provide patient-centered decision support (HIR 09-005, Qing Zeng).

Importantly, connected health should not be viewed as focused solely on Veterans. As noted in the commentary by Evans and Frisbee, co-directors of the Connected Health Office, in its ideal state, connected health is bi-directional and involves both Veterans and the teams of professionals providing VA health care. All technologies that connect with our Veterans have reciprocal repercussions for health care providers and the clinical system, some intended and positive, some unintended and negative. Research in this area must consider the perspectives and experiences of all stakeholders: Veterans, their families, their health care providers, and broader health care systems.

Framework to Guide Future Research

Studies should also be designed to detect potential positive effects on health care and health, and also the unintended consequences of these technologies. VA investigators have published a new eight-dimensional sociotechnical model specifically designed to address the challenges involved in design, development, implementation, use, and evaluation of information technology (such as connected health) within complex adaptive health care systems.[3] Highlighting the interdependent factors that influence connected health, this sociotechnical model is being used to guide a project recently funded by QUERI. Dr. Stephanie Shimada is principal investigator of this rapid response project titled, "Developing a Taxonomy of Unintended Consequences of eHealth Implementation." This ground-breaking pre-implementation project hopes to lay a framework to guide future research initiatives.

Technologies are currently reshaping the experience and practice of health care as much as they have in finance, commerce, and other sectors of the economy. In approaching this exciting transformation, VA scientists must balance understanding of connected health from the patient and from the health care system perspectives. We must also be mindful of the duality of positive effects and possible unintended consequences. The commentary also addresses the important issue of equity. As we implement connected health strategies, we must avoid health care disparities—and encourage approaches that will ensure adoption of connected health by all Veterans. Challenges, both new and those yet to be identified, may emerge as health care systems attempt to pursue connected health as a model for augmenting efficient, safe, high-quality, continuous, and coordinated health care. VA HSR&D and QUERI programs have begun and must continue to lead the way in researching these promising technologies.

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Research Highlight

The eHealth Measures Compendium

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eHealth is a multidisciplinary field focused on the delivery or enhancement of health information and health services through information and communication technologies.[1] eHealth also improves access to health care services by offering novel channels for communication and information flow that complement existing systems.[2] eHealth QUERI investigators are leading a project focused on identifying and evaluating patient-facing eHealth-specific metrics. The goal of this project is to conduct a thorough review of potential metrics that could be used in any study involving eHealth interventions in Veterans, and to create a standardized compendium of recommended metrics that will support both U.S. Department of Veterans Affairs (VA) operations and research.

The project team includes investigators from the Iowa City (Bonnie Wakefield, Carolyn Turvey) and Bedford (Tim Hogan, Stephanie Shimada) VAs, and the My Health*e*Vet program office (Kim Nazi) under the auspices of the eHealth QUERI, directed by Thomas Houston. Following a systematic review of the literature to identify potential metrics, investigators are utilizing a standardized review form to document metric properties. We also invite investigators across VA to submit suggested measures for review and inclusion in the compendium.

Unique Characteristics of eHealth Implementation

eHealth implementation has several unique characteristics that warrant investigation of effective metrics. First, eHealth implementation requires the evaluation of technology platforms for their usability, functionality, and availability to target users. Metrics pertaining to technology platforms are most often seen in design, technology, and engineering literature. For eHealth implementation, however, these metrics must be tailored for use in health care settings. Second, eHealth implementation assumes that a particular technology is being promoted to improve aspects of quality like efficiency or accessibility. For example, eHealth may reduce the distance between services and the target user, or reduce physician or patient work load for a specific task. Though intervention studies may include metrics that attempt to quantify these characteristics, as of yet, there are no widely agreed upon measures. Without such metrics, one can imagine how cost analyses and related initiatives may fall short in determining the full benefit of an eHealth intervention to Veterans and to VA. Finally, almost all eHealth interventions aim to improve communication in one form or another. Metrics are needed that quantify the degree to which communication is improved.

Metrics for eHealth Interventions

Ultimately, consistent and well-validated metrics of design, efficiency, and improved communication are necessary to determine the true benefit of any eHealth intervention. Without such metrics, VA cannot: (1) calculate return on investment of eHealth technology; (2) effectively address barriers to adoption that are revealed by these metrics (i.e., usability, accessibility of a technology); or (3) accurately estimate the likelihood of adoption. For example, VA operations may use My Health*e*Vet Secure Messaging to disseminate a health education message. Optimally, that approach would be evaluated both in terms of the workload burden on providers and the accuracy of patient comprehension of medical advice provided electronically. Metrics identified in this project could inform VA operations of the value of using Secure Messaging versus other dissemination strategies. Furthermore, the identification of metrics will assist VA operations offices to select effective measures that support 'post-market surveillance' of currently deployed technologies.

VA has made a substantial investment in eHealth technologies to improve care for Veterans. The proportion of proposals in both the HSR&D and QUERI pipeline where eHealth is a component has risen dramatically. VA's ability to gauge the impact of this work hinges on the measurement tools that investigators have available and ultimately choose to use. The measures identified by this project will be critical to initiatives across a number of operations offices, including the My Health*e*Vet Program Office, the Connected Health Office, the broader Office of Informatics and Analytics, the Office of Telehealth Services, and even resource centers like VIReC. The results of this project will provide critical insights into existing eHealth measures and identify gaps where new metrics are needed. The results can also inform future studies, ensuring that investigators can meaningfully compare and synthesize across projects.

The author invites investigators across VA to submit suggested measures for review and inclusion in the compendium to bonnie.wakefield@va.gov

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Research Highlight

Update on VHA TeleICU

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Multiple studies have demonstrated mortality reduction in intensive care units (ICUs) that implemented evidence-based practices, improved ICU organization and teamwork, and used a high intensity critical care physician model. The Veterans Health Administration (VHA), responding to this evidence base, developed a system to track ICU performance and implemented national initiatives to reduce hospital-acquired infections. Although intensivists provided primary ICU care in more than 44 percent of VA ICUs compared to 24 percent in the private sector, 71 percent (135/188) of VA ICUs in 2007 experienced difficulty in recruiting intensive care physicians like the private sector. Demand for intensivists continues to be greater than supply in the United States, driving compensation for critical care services upward. A variety of strategies can manage the shortage of intensivists, including use of mid-level providers, regionalization, and contracting for tele-intensive care services (TeleICU).

VISN Implementation of TeleICU Models

Interest in improving ICU outcomes as well as increasing access to intensivist care in VHA led leaders in VISNs 10, 19, and 23 to pilot models of TeleICU that ranged from systematic utilization of existing VHA information technology (IT) (V19), to adoption of advanced commercial TeleICU systems (V10, V23). These systems include real time visualization, communication, and integrative software with advanced algorithms to alert clinicians about changes in patient status. In the VISN 19 system, expert nurses review patient status and new admissions in each VISN ICU, consult where needed, and facilitate access to services, procedures, and expertise. In VISNs 10 and 23, expert nurses monitor 25 to 35 patients 24/7, while physicians may follow as many as 100 patients in the TeleICU monitoring center. Physicians, nurse clinicians, and informatics experts lead VISN implementation of these programs. VA Tele-Health Services facilitated learning and planning across the pilots through a variety of means, creating a national TeleICU workgroup, developing an implementation checklist, and funding leadership and coordinator positions. Implementation of the pilots across hospitals within each VISN took place sequentially to allow for the development of workflow analysis, training, and communication systems.

Most of the TeleICU programs described in the literature involve either a single large hospital or hospitals in the same community. The VISNs' innovative regional approaches to TeleICU implementation add some complexity compared to programs in single hospitals. The qualitative evaluation of VISN 23's TeleICU implementation highlights the socio-cultural elements that contribute to staff acceptance, including training, local coordination, needs assessment, interpersonal relationships (particularly development of trust), and system design.[1]

TeleICU Best Practices

The importance of a strong relationship between the physical ICU staff and the TeleICU staff can be inferred from a study of more than 118,000 patients in 56 ICUs across 32 hospitals and 19 health care systems that identified four best practices associated with improved outcomes in TeleICU: (1) intensivist case review within one hour of admission; (2) timely use of performance data; (3) adherence to ICU best practices; and (4) faster alert response times.[2] Creating the tools and relationships important in user acceptance requires development, testing, and revision to manage needs of multiple ICU cultures and staffing scenarios and, most of all, time. In a study that reviewed the logs of TeleICU nurses, Anders described an increase in interaction initiated by the unit nurse caring for the patient and in coordinating activities by the TeleICU nurse over two years.[3] Studies of other technologies also describe such a shift—where changes in attitudes and beliefs over time can translate to increased use of the technology. Valid and reliable analyses regarding the impact of TeleICU on VHA ICU outcomes will need to span multiple years.

Funded by the Networks, ICUs in VISNs 7 and 15 will be added to the TeleICU system in VISNs 10 and 23 respectively; and VISN 21 is adopting the VISN 19 approach, resulting in TeleICU support of 24 percent of VHA ICU beds. Work by the national TeleICU Workgroup and the TeleHealth Service facilitates a system-wide approach where appropriate. Once established, the Networks will need to analyze their utilization of the best TeleICU practices described above to achieve the full promise of TeleICU.

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Research Highlight

Providing Care Closer to Home:
The Role of Virtual Points of Access

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Ensuring access to health care has been a VA focus and is highlighted in the work of HSR&D through its measurement and interventions to improve access. Fortney, et al. expanded upon the traditional definition of access to "represent the potential ease of having virtual or face-to-face interactions with a broad array of health care providers including clinicians, caregivers, peers, and computer applications."[1] This new definition further describes actual access (i.e., directly observable and objectively measurable dimensions) and perceived access (i.e., self-reported and subjective dimensions). Fortney et al. demonstrate that, in fact, geographic distance is just one of many barriers that prevent Veterans from getting the care they need.

Though VA providers have a broad array of telehealth technologies at their fingertips, care for Veterans with complex chronic conditions requires innovative applications of these tools, for considerable barriers to care remain. The technology used—be it clinical video telehealth (CVT), home monitoring, or mobile devices— needs to match the clinical need. Whatever technology selected, the innovation must also address cultural, workflow, workload, and policy issues that affect access.

Three Telehealth Innovations
We will describe three examples of telehealth innovations that take a comprehensive approach to overcoming barriers to access, and where technology is just one component of the intervention. These projects, funded through collaborations between the VA Office of Rural Health, Veterans Rural Health Resource Center-Central Region, and the Comprehensive Access and Delivery Research and Evaluation (CADRE) Center at the Iowa City VA Healthcare System, all address identified disparities in access to care

for rural Veterans, but can be applied to other populations with access barriers.

The first example overcomes an often under-recognized form of access for rural Veterans: availability of multidisciplinary treatment team approaches to complex chronic illnesses. Ohl et al. have expanded upon standard single provider CVT use to create a Telehealth Collaborative Care (TCC) model that provides access to team-based consultation for rural Veterans with HIV.[2] TCC integrates team-based HIV specialty care delivered in Community Based Outpatient Clinics (CBOCs) using CVT with primary care delivered by local Patient Aligned Care Teams (PACTs). Preliminary studies at the Iowa City VA indicate that TCC is well-accepted by Veterans and PACTs and it maintains previously-existing high quality HIV care. Planned studies will evaluate factors influencing spread of TCC serving rural Veterans with HIV.

The second example addresses improving access for rural Veterans through greater VA collaboration with local non-VA health systems. A team headed by Carolyn Turvey established a campus-based tele-mental health clinic at Western Illinois University (WIU) in Macomb, IL through extensive negotiation between the Iowa City VA Mental Health Service Line and Student Health Services at WIU. Now, Veterans making use of their military benefit to pursue a college degree can receive expert care for service-related mental health issues directly from VA providers using CVT.

Finally, a novel home-based cardiac rehabilitation program developed by Bonnie Wakefield provides Phase 2 cardiac rehabilitation in the home of eligible Veterans.[3] Only 25 percent of VA hospitals provide cardiac rehabilitation on-

site. Thus, most Veterans who receive cardiac rehabilitation are enrolled in community-based programs through non-VA care. To provide an alternative, the team developed a home program that uses two forms of telehealth. The first uses the most basic modality, the telephone, to engage patients in weekly sessions covering important topics such as activity, diet, and stress management. The second utilizes CVT to enroll patients from CBOCs. In this program, Veterans are offered the option of a home-based or center-based program. Not only does the majority choose the home program, but completion rates are higher. This intervention goes beyond standard home-based symptom monitoring and actually conducts a much needed clinical service right in the Veteran's home.

Lessons Learned
The unifying principle of all these programs is the desire to bring a broad range of health care services closer to Veterans' homes, improving the convenience of these services and thus, improving compliance. Although all three examples were ultimately successful, each was accompanied by significant implementation barriers that are common across VA: workflow barriers to multidisciplinary care, administrative barriers to closer collaboration with non-VA providers, health information technology issues, hiring of personnel, and under-recognition of the value of actual care delivery closer to home.

Though the ever-expanding availability of sophisticated communication technologies is dazzling, implementing the technology was the easiest aspect of the three interventions described. Rethinking clinical roles, optimal site of care, and the role of VA within the larger health care system was far more challenging.

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Research Highlight

Improving Digital Access to Evidence-Based Psychotherapy

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The "population impact" of a treatment depends not only on its clinical effectiveness, but also on the degree to which it reaches the target population. Highly effective treatments that are delivered face to face in specialty health care settings often have limited population impact due to barriers to care. To maximize population impact, it is critical that VA develop treatments that are both clinically effective and highly accessible. Participants of VA's 2010 *State of the Art (SOTA) Conference on Improving Access to Care* envisioned a new conceptualization of access for the digital age. Participants redefined access as the potential ease of having virtual or face-to-face interactions with a broad array of health care providers, including clinicians, caregivers, peers, and computer applications.[1] By adopting mHealth and eHealth technologies, VA can improve digital access to care in order to overcome geographical, temporal, and cultural barriers to care.

Models of Virtual Delivery

Protocol-driven, evidence-based psychotherapy is an example of an efficacious specialty care treatment that could potentially have a greater population impact if it were more accessible to Veterans. Psychotherapy lends itself well to virtual delivery. While VA has been an early adopter of interactive video, relatively few telepsychiatry encounters entail the delivery of psychotherapy.[2] In two recent HSR&D-funded randomized non-inferiority trials (PIs: Agha, Morland) conducted in Community Based Outpatient Clinics (CBOCs), cognitive processing therapy (CPT) was shown to generate equivalent PTSD outcomes when delivered face to face and via interactive video. HSR&D investigators need to replicate these findings for home-based computer video technologies, which have the potential to improve digital access to psychotherapy even more than clinic-based interactive video technologies.

Building on these non-inferiority trials, investigators at the HSR&D Center of Innovation (COIN) at the Central Arkansas Veterans Healthcare System recently completed the *Telemedicine Outreach for PTSD* (TOP) study (PI: Fortney), which focused on improving digital access to CPT for rural Veterans with PTSD. Embedded within a telemedicine-based collaborative care management model, CPT was offered to Veterans at CBOCs via interactive video. Nurse care managers encouraged initiation of CPT and promoted session attendance and homework adherence. Over half of the Veterans randomized to the intervention group initiated CPT, which contributed to improved outcomes compared to treatment as usual. This randomized trial demonstrates that one evidence-based model of integrating mental health into primary care (Collaborative Care Management) can be delivered virtually to increase population impact. Building on these findings, investigators at HSR&D's COIN at the Central Arkansas Veterans Healthcare System recently received funding approval for a study (PI: Fortney) designed to test whether the other predominant model of integrated care (Co-Located Collaborative Care) can be delivered virtually to CBOC patients. The co-located collaborative care model involves primary care providers facilitating warm handoffs of patients with mental health problems to physically co-located mental health specialists staffing open access clinics, thereby maximizing both geographic and temporal access.[3] This study will test whether an open access clinic can be staffed with "virtually co-located" mental health specialists delivering brief evidence-based psychotherapies.

Potential of SmartPhone Apps

Protocol-driven psychotherapy can also be delivered effectively by a computer program, further improving digital access for Veterans. Based on a recent literature review conducted by the Evidence Based Synthesis program, HSR&D implementation researchers should consider developing strategies to promote the adoption of computer-delivered Cognitive Behavioral Therapy programs. SmartPhone apps are another technology that have great potential to improve digital access to evidence-based psychotherapy. Investigators at the Palo Alto VA Medical Center have developed a suite

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Wilt Receives 2014 Under Secretary's Award

Timothy J. Wilt, M.D., M.P.H., is the recipient of the 2014 Under Secretary's Award for Outstanding Achievement in Health Services Research, the highest honor for a VA health services researcher.

Dr. Wilt has made significant contributions to VA health care through his research, particularly in his efforts to synthesize evidence in order to provide clarity on issues of importance to Veterans' health. Dr. Wilt's Prostate Cancer Intervention Versus Observation Trial (PIVOT), with results published in *The New England Journal of Medicine*, demonstrated the lack of benefit and increased harms associated with radical prostatectomy in localized prostate cancer compared to observation, thus having immediate implications for the 10,000 Veterans diagnosed with prostate cancer in VA each year. These findings were incorporated into practice guidelines issued by VA and the U.S. Preventive Services Task Force, the American College of Physicians, the American Society of Clinical Oncology, and the American and European Urological Associations.

Dr. Wilt is a Professor of Medicine and staff physician at the Minneapolis VA Health Care System and University of Minnesota Medical School; he is also a core investigator with HSR&D's Center for Chronic Disease Outcomes Research, also located in Minneapolis.

of SmartPhone apps designed to deliver or augment provider-delivered, evidence-based psychotherapies. Apps include *CPT Coach* for Cognitive Processing Therapy, *PE Coach* for Prolonged Exposure Therapy, *ACT Coach* for Acceptance and Commitment Therapy, *CBT-I Coach* for cognitive behavioral therapy for insomnia, *Mood Coach* for Behavioral Activation, *Moving Forward* for Problem Solving Therapy, and *Stay Quit Coach* for smoking cessation. These apps have the potential to greatly improve both temporal and geographic access for Veterans and are in the early stages of empirical testing.

Two ongoing pilot studies are underway at the HSR&D COIN at the Central Arkansas Veterans Healthcare System. The *Moving Forward* app is being evaluated with HSR&D pilot funding (PI: Grubbs) and the *Mood Coach*

app is being evaluated with pilot funding (PI: Brady) from the South Central Mental Illness Research, Education, and Clinical Center (MIRECC). Due to the potential for these SmartPhone apps to be highly cost-effective, HSR&D implementation researchers should consider developing strategies to promote adoption among Veterans and their providers.

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