



A CONVERSATION ON CONNECTING HEALTH GLOBALLY

43RD SURGEON GENERAL, UNITED STATES ARMY

**Telehealth: Connecting Health Globally to
Increase Readiness, Access, Quality, and Patient Safety**

Army



Telehealth



May 2015



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MAJ (Dr.) Pedro Lucero explains the capability of an electronic Intensive Care Unit (eICU) telemedicine system installed at Tripler Army Medical Center. The Army is piloting eICUs to encourage collaboration between highly experienced critical care providers and remote site clinicians on ICU patients' medical diagnosis, plan of care, and treatment. This collaboration is expected to promote increased quality and patient safety. (U.S. Army photo by Kevin Downey, Tripler Army Medical Center Public Affairs)

*“I firmly believe that telehealth is the future of medicine...
it’s a core clinical capability of Army Medicine.
We need to be virtual when we can, live and
in-person when needed.”*

Lieutenant General Patricia D. Horoho
U.S. Army Surgeon General and
Commanding General, U.S. Army
Medical Command



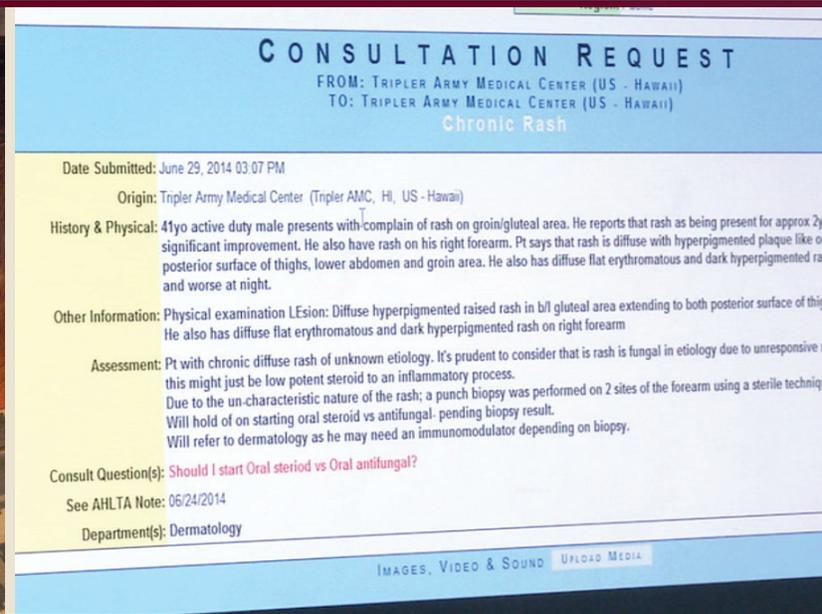
Introduction

Since 1775, the Army’s medical personnel have supported America’s sons and daughters – standing with them in battle, receiving them at home, and being ready to put their own lives on the line when called upon to do so¹. Though the challenges of medical care in an era of persistent conflict are great, the Army’s talented clinical teams are well-prepared to care for the combat and noncombat injuries of our nation’s Service Members, Families, Retirees, and Civilians – our partners in health.

Many lessons learned over the past 13 years of conflict have driven research and innovation to advance Army Medicine and enable medical teams to better care for our partners in health². One of the most innovative lessons learned is the use of telehealth (TH). TH in the Army can be traced back to the early 1990s when the Army pioneered its first satellite-based TH system in Somalia. Since then, Army Medicine has built an integrated global system of TH care covering our partners in health in over 30 countries and territories.

All of our past success and future plans in TH revolve around one core concept – connecting health globally to increase readiness, access, quality, and patient safety. TH helps Army Medicine to use its clinical capacity effectively across the world, cross-leveraging clinical expertise when and where it is needed without having to physically move providers or patients. As a modality without geographic limits, TH expands the influence on our partners in health in the Lifespace, the time outside the brick-and-mortar walls of our hospitals and clinics². Using TH, the best of Army Medicine across the world can be brought to the patient wherever they are, promoting patient-centered, quality, and safe care.

Because of the immense benefits of TH, Army Medicine is expanding its use. Join us in our conversation as we explore how to provide tomorrow’s healthcare and health today in support of our Nation’s heroes.



SGT Nicholas Brown, Non-Commissioned Officer in Charge for Army Substance Abuse Program Clinical Services at Schofield Barracks, Hawaii, depicts a Soldier engaged in a virtual behavioral health assessment interview via Defense Connect Online. He is in one of ten specially designed booths that were assembled for the Virtual Behavioral Health pilot project conducted in October and November 2009. (U.S. Army photo by Liana Mayo / 311th Signal Command)

Image right: Pacific Asynchronous Telehealth (PATH) is a web-based teleconsultation system supporting over 30 specialties and is available anywhere in the world with an internet connection. Here, a request for Teledermatology is visible on a computer monitor. (U.S. Army photo by Marlowe Gungab)



As beneficiaries of the telehealth (TH) program, the Daniels family enjoys time together at their home in Hinesville, GA. In 2011, their daughter Asyria (center) became extremely ill while they were stationed in Okinawa. She was medically evacuated to Tripler Army Medical Center (TAMC) in Honolulu where she was diagnosed with lupus erythematosus, an autoimmune disease. After being treated for her illness, Asyria returned to Okinawa where she remained under the care of a pediatrician from TAMC utilizing TH to monitor her medical condition and lab tests, prescribe medications, and provide medical advice. Asyria has since recovered and is now a student at The Citadel in Charleston, SC where she plans to pursue a career as a physical therapist. (U.S. Army photo)

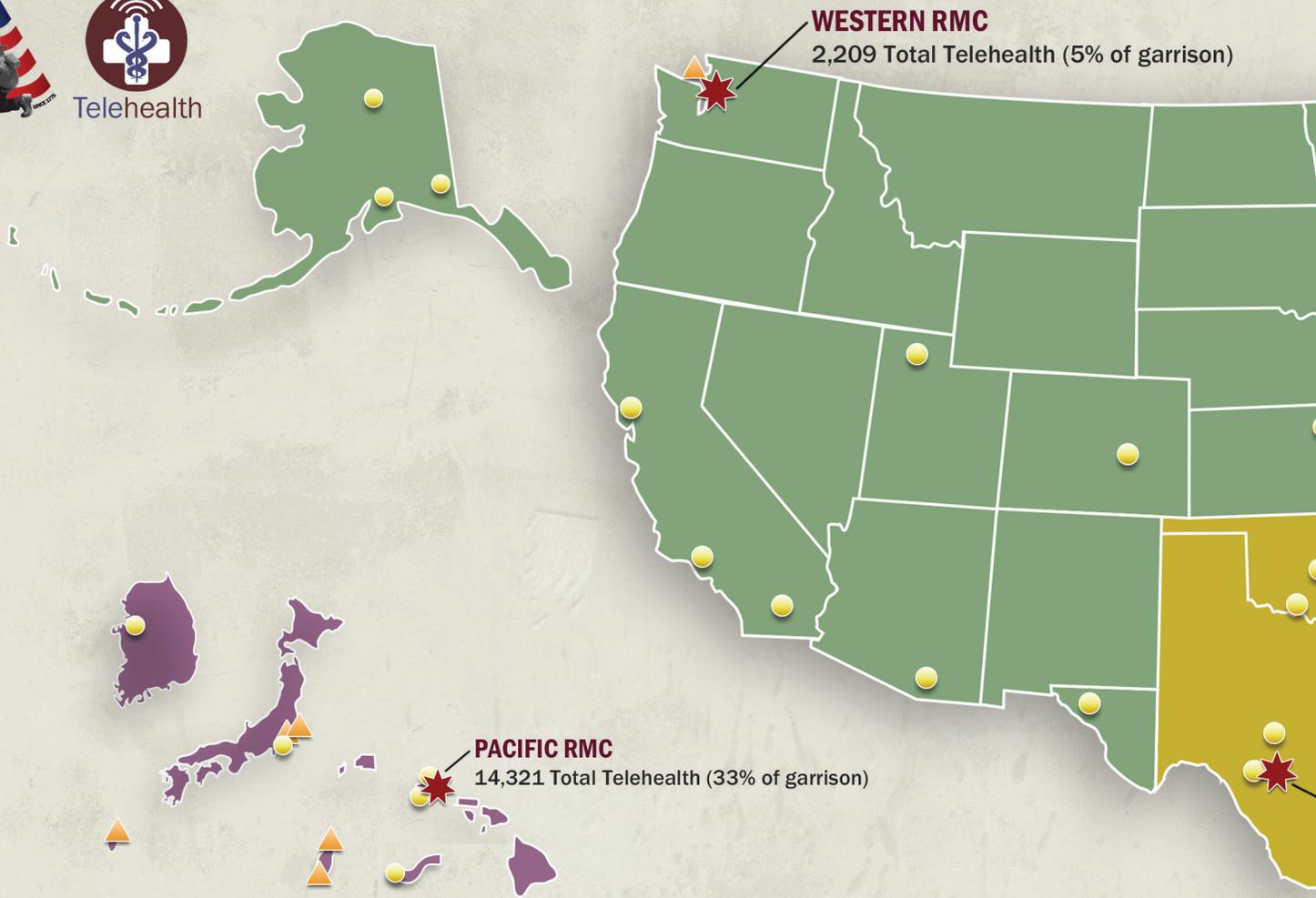
What is Telehealth?

The term “telehealth” covers a variety of clinical services. Overall, TH is the use of telecommunications and information technologies to connect people to healthcare across distance. Clinical specialties ranging from behavioral health to cardiology to surgery can benefit from TH. Services that can be provided via TH include patient-provider encounters, medical imaging, remote monitoring, mobile and virtual health, specialty consultations, and education. Further, a variety of technologies – including clinical video-conferencing (VTC), web sites or platforms, and secure email – can be used to deliver TH services. TH is a powerful set of clinical tools rather than a single modality.

The Army leverages TH to provide world-class care, health readiness, and information across the globe

including garrison and deployed locations for all of our eligible partners in health³. Some examples of TH currently used in the Army are:

- Patient care via clinical VTC. A provider in one location offers diagnosis or treatment directly to a patient in another location, perhaps thousands of miles away, eliminating geography as a barrier to quality patient care.
- Provider consultation via secure web platform. A provider in one location receives advice on patient care from a provider with specialty expertise in another location. This empowers our primary care clinicians and their patients with the best specialized expertise Army Medicine has to offer, promoting safe care closer to duty stations.



- Regional Medical Command (RMC)**
- Army Spoke**
- Non-Army Spoke**

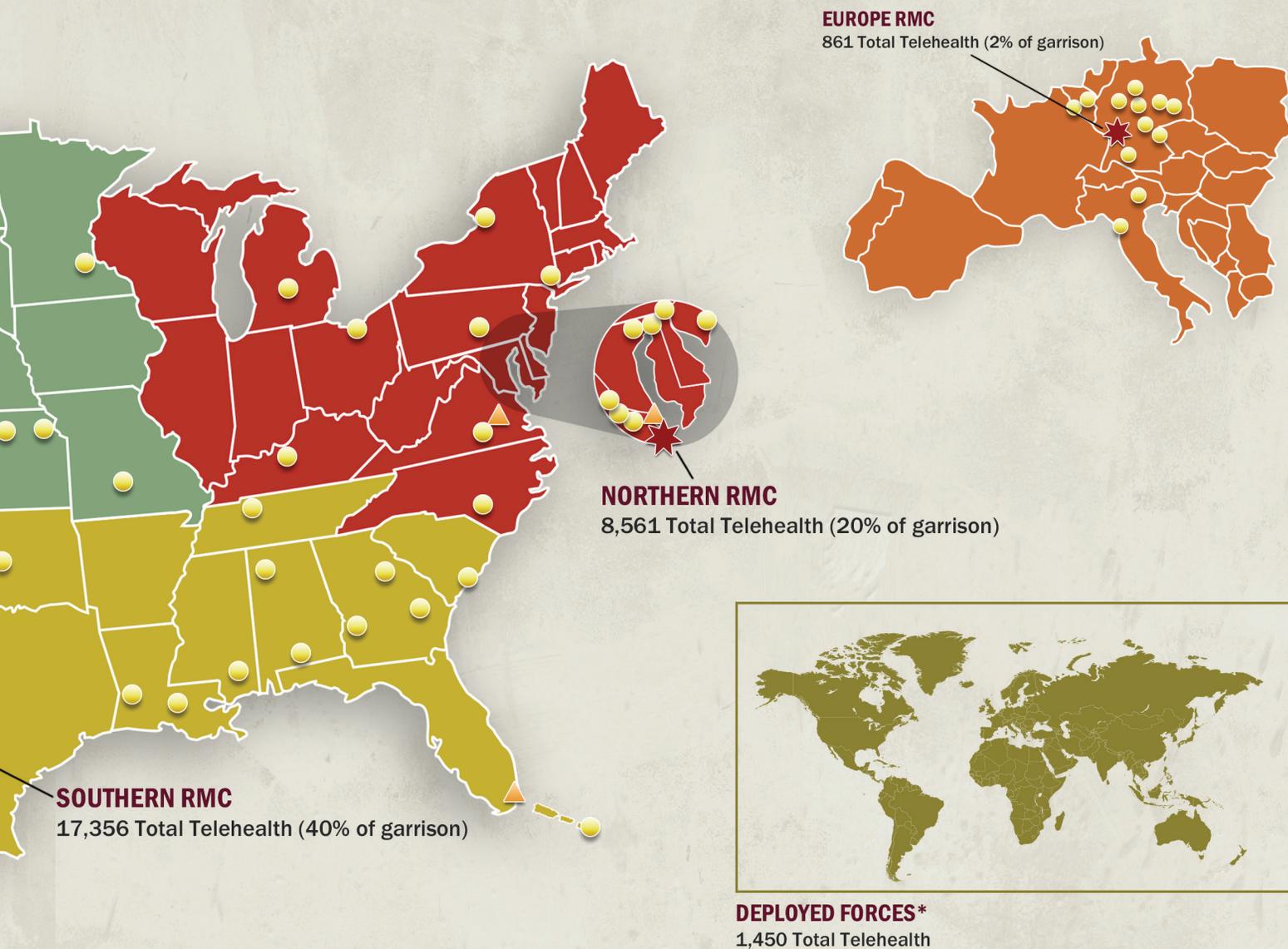
Army Telehealth Today

The U.S. Army Surgeon General is making strategic investments in TH providers and staff, program support, research and development, and technology because of the immense value of TH to the military. These efforts are already resulting in substantial TH growth across Army Medicine and are helping to make TH become a routine part of care for our partners in health.

In fiscal year (FY) 2008, Army Medicine conducted approximately 4,300 encounters in innovative pilot programs. Since then, Army Medicine has taken the many lessons learned from these early efforts to increase annual services, with additional expansion underway. During FYs 2008 - 2014, Army TH

provided over 150,000 patient encounters and provider consultations in support of our partners in health. Army TH is now available in over 30 clinical specialties such as psychiatry, dermatology, cardiology, radiology, and nutrition. Today, Army TH spans 18 time zones and 30 countries and territories, covering the widest geography of any TH system in the world, civilian or military.

In FY14 alone, Army clinicians provided approximately 45,000 provider-patient encounters and provider-provider consultations in military treatment facilities and operational environments such as combat zones. Additionally, the Army developed and used mobile health applications to



*Per Tele360, Telehealth reporting platform for Army Medicine.
* Data on deployed forces partially based on hand counts due to mission requirements. Data is FY 14 (Oct 13 - Sept 14).*

support care coordination for traumatic brain injury patients. In FY14, over 2.0 million secure messages were sent between over 234,000 patients and 9,000 clinicians/staff users in Army Medicine.

Army TH chose to build a best-in-class Telebehavioral Health (TBH) system of care as its first flagship TH program. TBH currently accounts for 88% of current TH services in the Army (FY14). A typical Army TBH encounter involves a clinician (e.g., psychiatrist, psychologist, psychiatric nurse practitioner, or social worker) in one location providing direct care to a patient in another location using clinical VTC systems. To provide this care, Army Medicine has invested in

three TBH provider hubs at three key locations with the majority of current TH investment for provider and staff salaries. These hubs are strategically located across the world to ensure routine and emergency surge support coverage on the “awake clock” (where someone is always awake and ready to support the mission). The Fort Hood shooting is an example of emergency surge support. After the April 2014 Fort Hood shootings, clinical support from Washington D.C., Honolulu, HI, and San Antonio, TX, was surged quickly via TBH to support our Soldiers at Fort Hood, TX. TBH is offered in both garrison and operational settings.



Other important TH programs include:

- mCare: A secure bi-directional messaging system between geographically dispersed patients and providers using patients' existing mobile devices.
- Garrison-Theater Teleconsultations: A secure email-based program connecting deployed providers across the world with specialty expertise.
- Veterinary Pathology: A clinical VTC and secure web-based program capability for consultations within the military and with partner nations.
- Garrison Teleconsultations Systems: Secure web platforms supporting consultations between providers in multiple specialties and clinical areas such as dermatology, cardiology, and oncology.
- Army Secure Messaging Service: This system is deployed across the U.S. Army Medical Command to support patient and provider communications.
- Project ECHO (Enhancing Community Health Outcomes): A telementoring program that offers clinical skills building as a multidisciplinary team approach between specialty and primary care providers.

“It prevents you from feeling alone. mCare is just comforting. When the messages pop-up, you know someone’s there.”

Army Patient with traumatic brain injury

Case Study: Patient Satisfaction with Collaboration via Army Teleconsultations

“While living in Okinawa Japan in 2011 my daughter suddenly became ill. Her pediatricians at U.S. Naval Hospital Okinawa immediately began to consult pediatric specialists (pediatric cardiology, rheumatology, and nephrology) in Hawaii via telemedicine/telehealth, which led to her rapid medevac to Tripler Army Medical Center. Ultimately, she was diagnosed with systemic lupus erythematosus and glomerulonephritis. Telehealth was instrumental in her receiving quick access to specialized care, and early diagnosis and treatment of her condition. It also provided remote management of her disease once we returned to Okinawa. Today my daughter is a cadet at The Citadel Military College where she has received a scholarship for track and field. She is healthy, happy, and doing well. I attribute her success to all of the military providers (both Navy and Army) involved in her care and the availability of telehealth which made early management of her lupus possible.”

Ms. Alexandria Daniels
Mother of patient and Army Nurse

“Simply put, Pacific Asynchronous Telehealth [Army multi-specialty provider consultation system] has been an indispensable lifeline for the Soldiers, Civilians, and Family Members requiring care or medical opinions from Tripler [Army Medical Center, Honolulu, HI]. It is the cornerstone of our patient referral outside of Japan.”

Colonel Michael Brumage
Deputy Commander for Clinical Services
Medical Department Activity (MEDDAC)-Japan

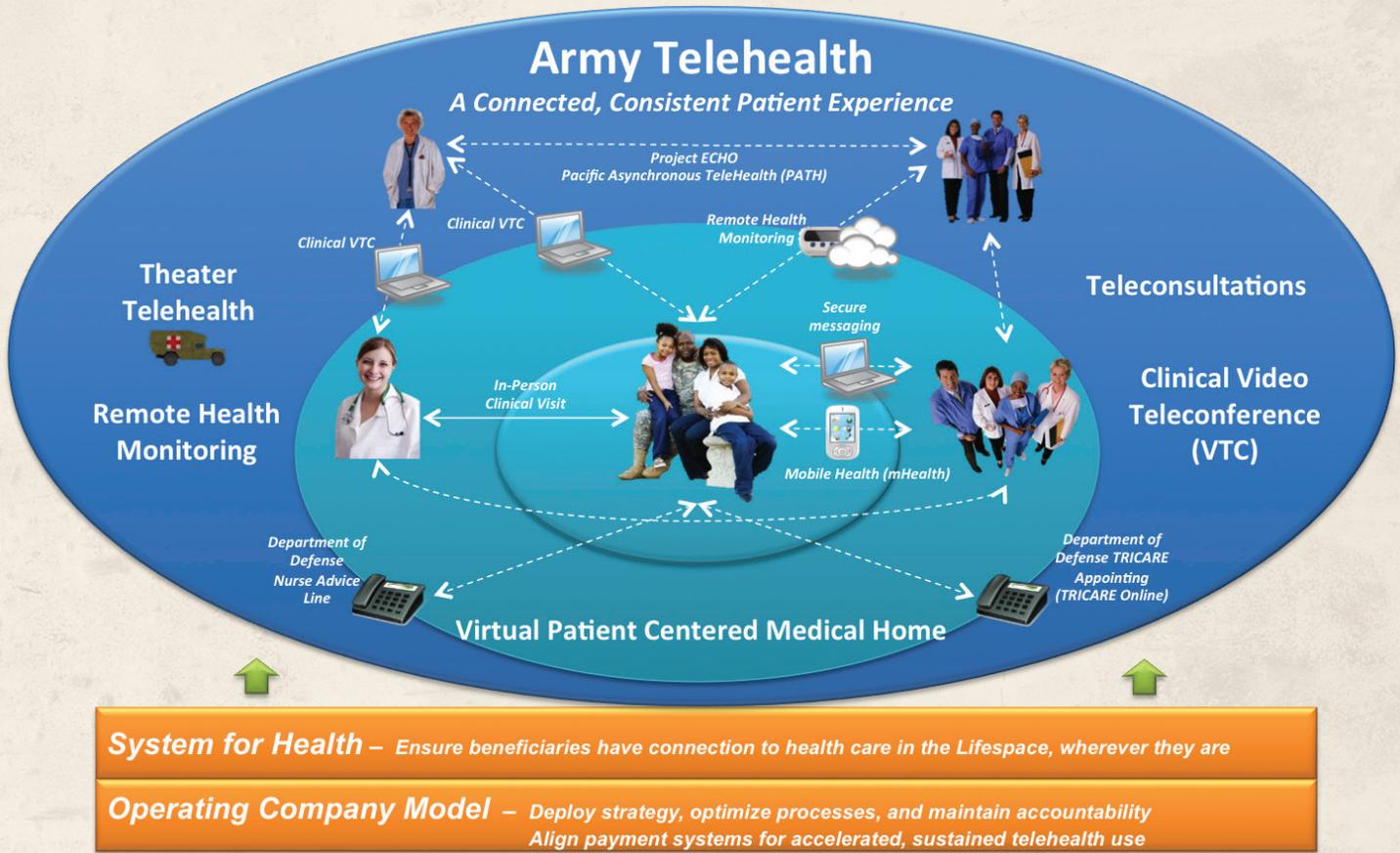


The above scene depicts an example of a provider-to-provider (VTC) consult. The person on the right is a primary care provider (PCP) in a closed door secured room conducting a VTC with a remote specialist provider pictured on the computer screen. The PCP is discussing a patient's assessment, diagnosis, and treatment plan with a specialist located over 500 miles away for collaborative patient-centered care. (U.S. Army photo by Danny Paul Farley, Fort Meade, Kimbrough Ambulatory Care Center Public Affairs)

To provide a sense of our current capabilities, consider these Army TH programs across our global operations:

- *Europe:* Landstuhl Regional Medical Center in Germany routinely provides comprehensive specialty care to outlying clinics via TH. Patients connect directly to their specialists using VTC augmented by digital devices (e.g., otoscopes and stethoscopes). These devices allow the specialist to receive biometrics from the patient in real-time, despite the patient and provider being in two separate locations. This program reduces travel costs, decreases time away from duty, and increases patient satisfaction.
- *Pacific:* Clinicians across the Pacific have come to use Pacific Asynchronous Telehealth (PATH) as part of their everyday routines. Using this web-based teleconsultations system, providers collaborate with one another to share specialty expertise and, when needed, facilitate medical evacuations. For example, if a primary care provider in Japan suspects a child has a heart murmur, they can upload the child's "heart sounds" to PATH. A Pediatric Cardiologist in Honolulu then listens to these sounds and makes a diagnosis. If the child needs to be sent to Honolulu for treatment, staff at both sites can then collaborate in PATH to ensure the child receives the help needed.
- *Northern:* The TBH cell in Northern has been a pioneer in deploying TH technologies. From their desks in northern Virginia, TBH providers reach out to patients across the region and beyond to provide clinical care. This keeps Soldiers at their duty stations and increases access to care.
- *Southern:* Since 2008, deployed clinicians have been able to receive specialty consultations from other clinicians, no matter where they are in the world. This is made possible through Army TH's garrison-theater teleconsultations program, implemented by the Southern Regional Medical Command. Consults are available in any specialty. "On call" rosters ensure coverage across all time zones. For example, a deployed primary care provider in Afghanistan can upload images of a skin lesion and receive a dermatology consult from the next available provider in the world. In Army TH, someone is always awake and ready to support the mission.
- *Western:* Army Medicine's Child and Family Behavioral Health System facilitates routine TBH support to adolescents across the West. At our medical facilities and several schools, providers are able to offer needed BH services to children using Army TH. These services enable us to reach out to Army Families in remote locations to support their care.

The Future: A Connected, Consistent Patient Experience



Army Medicine is expanding TH to create a Connected, Consistent Patient Experience (CCPE). The CCPE is an innovative three-year TH expansion plan that creates a 360° care continuum around patients using advanced TH modalities. The CCPE augments current Army TH to provide world-class capabilities to our partners in health and partner nations.

As a glimpse of the future, some core elements of the CCPE are as follows:

Global Teleconsultations System. Army Medicine is building a seamless, global teleconsultations platform that optimizes and integrates its current systems. From battlefield to bedside, providers will be able to access specialty expertise from their colleagues – wherever in the world they are working. This effort creates one teleconsultations system for Army TH and enables patients to receive the best specialty

expertise Army Medicine has to offer. One system creates a virtual global cell of provider expertise that providers can reach into whenever and wherever they need it.

Remote Health Monitoring. The CCPE is developing Army Medicine’s capabilities in remote health monitoring using advanced biometric devices. In a FY15 pilot program, patients with diabetes will be given remote, Bluetooth-enabled glucometers, blood pressure cuffs, and other devices to track their vital signs. Vitals are uploaded securely and seamlessly to a bi-directional application and can be seen by a patient’s care team. Using this Army-developed application, the care team can then connect back to the patient for treatment as needed. This pilot program marries mobile health applications and biosensors and moves the Army closer to a single platform for the integration of any kind of biosensor, for any specialty. Overall, the use of remote health



An Army radiologist at a large medical center reviews a patient's computed tomography images. The Army uses teleradiology every day to support remote clinics that do not have an assigned radiologist. This enables secure transmission of images for interpretation and/or consultation between primary care providers and specialists to confirm a diagnosis. (U.S. Army photo courtesy of Womack Army Medical Center)

monitoring in this way will create a focus on care coordination and early medical intervention, preventing poor outcomes and unnecessary emergency room visits and hospitalizations.

Global Health. Army Medicine is also incorporating TH into our Global Health Engagements strategy plan. Using TH, Army Medicine will work with partner nations through Combatant Commands to improve foreign armed forces and foreign civilian authorities' health system capacity in support of national security objectives.

Operational Telehealth Support. Army Medicine will continue to mature its TH programs in operational environments (e.g., combat zones), benefiting from world-class TH research and development at the Telemedicine and Advanced Technology Research Center (TATRC). TATRC is a component of the U.S. Army Medical Research and Materiel Command (USAMRMC). TATRC's capabilities in leading the development of deployed TH systems are enabling Army Medicine to innovate its provision of care downrange. Its current portfolio includes applications in biomonitoring, point-of-care medical monitoring, mobile healthcare, and other technologies designed to support TH capabilities across the spectrum of the Military Health System mission.

Army TH Operating Company Model (OCM). A key aspect of the CCPE is developing an OCM

across Army TH under the Telehealth Service Line (THSL). The U.S. Army Surgeon General established the THSL to accelerate and integrate the standardized adoption of TH across Army Medicine by creating consistency, clarity, relevancy, and accountability. The THSL's vision is to place the standardized use of TH into the toolkit of every clinician in Army Medicine in support of combat casualty care; readiness and health of the Force; a ready and deployable medical force; and the health of Families and Retirees. In addition, it supports enhancing medical diplomacy and expanding boundaries with Combatant Commands.

Fiscal Incentives. To support the growth of TH, Army Medicine created incentives for TH use. These incentives pay for the resource costs of TH and will help hospital commanders build their TH capabilities for the future. Using fiscal incentives to promote TH is an innovative payment model among TH programs, and our experience should inform the national conversation on TH business models.

Overall, expanding TH supports Army Medicine's continual journey towards a High Reliability Organization. Access, quality, and patient safety are enhanced as TH (i) offers a clinical capability that enables providers across time zones and locations to consult and collaborate with other clinicians to obtain specialty expertise and second opinions and (ii) extends access to care for patients in remote locations.



Physician Assistant Steve Cain is performing a tympanic membrane examination during a real-time TH appointment. Cain is also viewing the patient's chest x-ray results while sharing this image with the patient, located hundreds of miles away. (U.S. Army photo by Stephanie Garner)

“If you want to go fast, go alone. If you want to go far, go together.”

~ African Proverb

The Conversation Continues

In Army Medicine, our conversation on connecting health globally has begun. But the evolution towards providing quality care across distance continues. We invite you to join us in this conversation. We are confident that the ongoing conversation will change the face of medicine. TH will strengthen the health of our Nation by improving the health of our Army.

Serving to Heal...Honored to Serve.

“This is what Army Medicine is... it's being innovative, it's moving the ball forward, and it's making a difference in the lives of those who we have the privilege to serve.”

Lieutenant General Patricia D. Horoho

U.S. Army Surgeon General and
Commanding General, U.S. Army
Medical Command



Army Medical Department

The Army Medical Department (AMEDD) is a global System for Health in five continents with the largest training campus in the world. It has a diverse range of capabilities and assets, all focused on the mission of preserving and providing compassionate care to our partners in health. The Army Surgeon General is responsible for policy, organization, and management of an integrated Army-wide health services system. In addition, The Surgeon General oversees joint field operational activities for the Secretary of Defense with Army medical units being key players in many joint deployments and exercises. The Surgeon General became dual-hatted as the Command General, U.S. Army Medical Command (MEDCOM), when MEDCOM was established in 1994. MEDCOM is organized into ten Major Subordinate Commands (MSCs) with an \$11.7 billion budget and cares for more than 3.87 million people. Activities within MEDCOM are inextricably linked to both Army and Joint Services readiness and resilience.

In addition to the second-to-none patient care provided throughout our Dental Command and five Regional Medical Commands, the MEDCOM's MSCs perform vital missions to maintain, restore,

and improve the health of our partners in health. The AMEDD Center and School trains our medical personnel and serves as a 'think tank,' with a mission to envision, design, and train a ready and deployable medical Force in support of our national security. USAMRMC conducts innovative medical research to keep Army Medicine at the forefront of both health and healthcare delivery. USAMRMC includes six research laboratories and five subordinate commands that focus on medical materiel advancement and development, strategic and operational medical logistics, and medical research and development contracting. The Warrior Transition Command serves as the lead proponent for the Army's Warrior Care and Transition Program. The U.S. Army Public Health Command missions include workplace safety and health, healthy living, health surveillance and evaluation, deployment and environmental health, emergency preparedness and response, laboratory sciences, food and drinking water protection, and animal medicine. All of these capabilities ensure that the AMEDD is ready and relevant to the Army and joint mission priorities.

Army Medical Command Leadership



LTG Patricia D. Horoho
The Surgeon General and
Commanding General,
U.S. Army Medical Command



CSM Gerald C. Ecker
Command Sergeant Major,
U.S. Army Medical Command



MG Joseph Carvalho, Jr.
Deputy Surgeon General/
Deputy Commanding General (Support)
U.S. Army Medical Command



Mr. Uldric L. Fiore, Jr.
Chief of Staff, U.S. Army Medical Command



MG Jimmie O. Keenan
Deputy Commanding General (Operations),
U.S. Army Medical Command/
Chief, U.S. Army Nurse Corps



Resources

References

- ¹ LTG Patricia Horoho, Testimony Before the Senate Committee on Appropriations, Subcommittee on Defense, Second Session, 113th Congress, 09 April 2014.
- ² Our Health, Our Future, 43rd Surgeon General, United States Army, September 2014.
- ³ Military Health System (MHS) Telehealth definition as approved by the Medical Operations Group on 17 April 2014.

Notes

The U.S. Army Telehealth Service Line is located at the Defense Health Headquarters in Falls Church, Virginia. For questions or comments, please contact the Telehealth Service Line at 703-681-4423.

Websites

- Army Medicine: armymedicine.mil
- Army Telehealth: armymedicine.mil/pages/telehealth.aspx
- Army Telehealth Service Line Collaboration Site (CAC enabled):
<https://amp.amedd.army.mil/com/tsl/SitePages/Home.aspx>
- Army Telehealth Training (instructions available upon request): swankhealth.com



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Integrity

Personal Courage