

Chapter 31

WHAT PHYSICIAN ASSISTANTS NEED TO KNOW ABOUT OPERATIONAL VIRTUAL HEALTH

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Introduction

Since the invention of the telegraph, military medicine has utilized virtual health (VH) technologies to deliver health care to the point of need.¹ Digital health care delivery is a tool to assist decision-making at the point of need and address the challenges of time and distance, limited medical resources, and the requirements of immediacy in health care delivery. The multi-domain battlefield and the anti-access, area-denial future combat models demand an innovative health care delivery toolkit, including prolonged field care and VH.

Existing VH technologies offer a spectrum of modalities to provide a range of options for providers. The variety of options enables providers to utilize available bandwidth and connectivity tools depending on the military situation and their local resources. This chapter reviews existing asynchronous and synchronous technologies; highlights their innovative use by providers, both as the tools were designed and outside of their original design intent; and concludes with a view toward the future of VH.

Asynchronous Tele-Consultation

Asynchronous tele-consultation uses store-and-forward technologies to enable communication when there is no immediate timing requirement. The Pacific Asynchronous TeleHealth System (PATH) and Health Experts OnLine Portal (HELP) platforms are web-based, asynchronous,

provider-to-provider tele-consultation platforms available to US government medical providers and ancillary providers to provide care for their beneficiary population. Although PATH and HELP utilize the same background technology, they cover different geographic regions: PATH is best suited to providing feedback for patients located on the West Coast and Pacific region, while HELP covers the East Coast, Europe, and Africa. Entering the patient into the appropriate site based on location can improve response times because the information does not have to be passed to the “sister” site.

Patients must have a valid Department of Defense identification number to be entered into the system. The system also accommodates military working dogs, with veterinary staff available for consultation. After the originating (patient) site provider enters pertinent patient and consultation information, consultations are answered in 8 to 72 hours by specialists at a distant Role 4 medical center. Originating site providers receive an email response when the specialist reply is available. Both systems support more than 50 specialties, are available in garrison and operational environments, and notably do not require a Common Access Card (CAC) for use (Figure 31-1). Multiple studies have validated both the requirement and benefit of asynchronous consultation on land and sea.^{2,3}

There are recognized limitations to these systems, which are being addressed as the two programs are unified under a future “Global Telecommunications Portal.” In the operational space, the inability to upload end-user documents from a smart phone or a tablet compromises full capabilities; a computer is needed for this function. In the austere environment, providers are unable to ask specialists about dermatologic conditions or send electrocardiograms or ultrasound images through a smart phone. However, this limitation and others should not preclude end users from adding this valuable capability to their toolkit.

In addition to provider-to-provider tele-consultation across the US European Command (EUCOM), Africa Command (AFRICOM), and Central Command (CENTCOM), the HELP platform is used by Landstuhl Regional Medical Center (LRMC) in Germany to fill clinical gaps in the Transportation Command (TRANSCOM) Regulating and Command & Control Evacuation System (TRAC2ES) program. Providers at the patient originating and distant sites typically do not have access to TRAC2ES due to knowledge, equipment, and connectivity gaps. Additionally, due to the rotational nature of their mission, deployed

Adult Medicine Specialties	Surgical Specialties	Pediatric Specialties
Allergy/Immunology (Adult & Pediatric)	Breast Surgeon	Adolescent Medicine
Audiology	Cardiothoracic Surgeon	Cardiology
Cardiology/ Interventional Cardiology	Colorectal Surgeon	Developmental Pediatrics
Clinical Pharmacy	Endo-Urologist	Endocrinology
Critical Care/ Intensivist	Foot and Ankle Surgeon	Gastroenterology
Concussion Clinic	Hand and Upper Extremity Surgeon	Genetics
Dermatology	Head and Neck Surgeon	Hematology Oncology
Endocrinology	Facial Plastic and Reconstructive Surgeon	Infectious Disease
Endocrinology/ Infertility	Metabolic and Advanced Laparoscopy/Bariatric Surgeon	Intensive Care Medicine
Flight Surgeon	Neuro-otologist	Neonatologist
Gastroenterology	Neurosurgeon	Nephrology
Gynecology	Ophthalmology (Adult & Pediatric)	Neurology
Gynecologic Oncology	Refractive Surgery	Pulmonology
Hematology Oncology	Oral & Maxillofacial Surgeon	Rheumatology
Internal Medicine	Orthopedics (Adult & Pediatric)	Speech Language Pathology
Infectious Disease	Orthopedics/Spine	Physical & Occupational Therapy
Nephrology	Plastic Surgeon	
Nutrition (Adult & Peds)	Sleep Surgery	Radiology Specialties
Pain Integrative Specialty	Sports Medicine	Pediatric Radiology
Pathology	Orthopedics	Interventional Radiology
PM&R Specialist	Surgical Oncology	Nuclear Medicine
Pulmonology	Trauma & Critical Care Surgeon	Radiation Oncology
Rheumatology	Urologist (Adult & Pediatric)	Musculoskeletal/ Radiologist
Sleep Medicine	Urology Oncologist	
Sports Medicine	Vascular Surgeon	Behavioral Health Specialties
Vaccine Healthcare		Child & Adolescent Psychiatry
		Inpatient Psychiatry
		Neuropsychology
		Psychology
		Chemical Addictions
		Pediatric Psychologist

Figure 31-1. Asynchronous specialties available for consultation. The Pacific Asynchronous TeleHealth System (PATH) and Health Experts OnLine Portal (HELP) platforms offer tremendous depth of remote specialty consultation. PM&R: physical medicine and rehabilitation

providers are often unfamiliar with the medical center specialists taking care of their service members and do not have a mechanism for routine clinical updates. Finally, TRAC2ES is CAC-enabled, making mobile device use impossible.

These TRAC2ES challenges led to HELP’s emergence as a medical communication platform across Eastern Europe. Originating site providers utilize the shared HELP platform to communicate directly with the LRMC’s specialists taking care of their service members. Additionally, deployed service member discharge information from LRMC is entered into HELP for the originating site provider to review in order to improve continuity of care.

Synchronous Tele-Consultation

The Advanced Virtual Support for Operational Forces (ADVISOR) program provides contingency support via telephone at any time across eleven specialties (Figure 31-2). Specialty care providers are available for immediate operational support through a single, United States-based toll free phone number (+1 833-238-7756).

As do the HELP/PATH systems, ADVISOR offers a training module for originating site providers to familiarize themselves with receiving telephone-based consultation. Training and use of an ADVISOR call script is highly recommended.⁴ The script provides an easy-to-follow format for providers to rapidly present information to the consultant. Consultants, in turn, are trained in the use of the script to ensure easy and error-free capture of the call details.

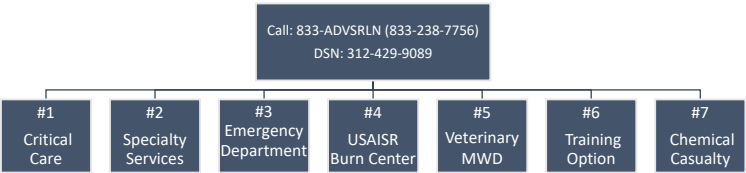


Figure 31-2. The Advanced Virtual Support for Operational Forces (ADVISOR) program line is constantly adding on-demand specialties for support of the warfighter at the point of need.

MWD: military working dog; USAISR: US Army Institute of Surgical Research

As with all communications tools, users should perform routine and deliberate verification that systems are functional. All downrange personnel should routinely confirm communications with their Theater Patient Movement Requests Center and ADVISOR to ensure clear communication prior to emergencies. This training also provides an opportunity for less seasoned providers to rehearse call scripts and ensure ease of access.⁴ Testing on multiple communications platforms including Defense Switched Network (DSN), commercial dial, and satellite phone will ensure robust contingency plans.

Case Study 31-1. An active duty service member in rural Africa received an injury to his distal phalanx from use of a band saw. Medical providers utilized ADVISOR to initiate consultation with the on-call orthopedic surgeon. ADVISOR consultation progressed to use of a secure, civilian private messaging service to send images that were used to guide treatment, demonstrating that multiple modes of VH delivery are often needed.

Synchronous Video for Direct Patient Care

Military providers have leveraged existing video conferencing systems, such as Global Video Services and Cisco Jabber, for direct-to-patient care. Like traditional in-person health care, video conferencing requires patients to be scheduled when providers are available; both allow for patient privacy; and providers must be comfortable with delivering health care in both manners. Synchronous video delivery has the additional requirements of connectivity, patient presenter training, and familiarity with the technology.

The Virtual Medical Center–Europe (VMC-E) has pioneered a system called Virtual Healthcare for the Warfighter (VIEW) to address challenges of specialty health care delivery across Eastern Europe. The program enables direct-to-patient care across more than 40 specialties, building on a successful garrison-based program.⁵ Technical requirements include access to the internet and a web-cam at the originating site (Figure 31-3). In contrast to commercial video platforms including Facebook and FaceTime, no software is required for download, and originating site users simply access an LRMC-hosted webpage for care delivery.

Specialty consults begin with a HELP message that initiates the care spectrum at LRMC, enables determination of whether direct-to-patient care is required, and enrolls the patient into LRMC’s medical systems

**Virtual Health Support for Operational Forces:
A Guide for Tri-Service Role 1 to Role 3 providers in
EUCOM, AFRICOM, CENTCOM, and SOCOM**

→ *Specialty consultative care is available via phone, email, and real-time VTC for Deployed ADSMs.*

Allergy / Immunology	Gastroenterology	Nutrition	Rheumatology
Army Body Comp. Prgm	General Surgery	Nutrition / ABCP	Sleep Medicine
Audiology	Gynecology	Orthopedics	SUDCC
Behavioral Health	Hematology / Oncology	Pain Management	Speech Pathology
Cardiology	Infectious Disease	Plastic Surgery	TBI
ENT	Internal Medicine	Podiatry	Urology
Endocrinology	Neurosurgery	Pulmonology	Dermatology

How to reach a Landstuhl RMC / MEDDAC-Bavaria Medical Provider:

1. Emergency Telephonic consultation (24/7/365)
 - **PRIMARY:** ADVISOR Line: Emergency Critical Care Consultation—ICU, Medicine, Surgery Providers: +1
Note there is frequently a pause while the computer routes your call—do not hang up.
 - **ALTERNATE:** LRMC Emergency Room: DSN [redacted] Comm: +49 (0)
2. Non-Emergency Care via Email or Real-Time VTC
 - If able, begin with secure email consultation
 - Health Experts on-Line Portal (HELP): Supported by LRMC and Navy Med East specialists
 - Register at: [redacted] CAC not required & registration is simple
 - HELP will 'mini-register' the ADSM, and messages are returned within 24 hours
 - "Real-time" VTC for routine specialty consultation (M-F, 0730-1600, GMT + 1)
 - Recommend starting with a HELP consult to specialties above to determine if VTC is appropriate
 - The specialties above support real-time, synchronous VTC
 - Your site may / may not have VTC capabilities. Contact the RHCE Virtual Health Office at DSN [redacted] or comm. +49 [redacted] to assist with scheduling your ADSM's Virtual Health appointment or establishing your site as a Virtual Health site.

Figure 31-3. Virtual health information provided to operational force providers.

to allow for patient documentation. Patient presenters ranging from specifically trained medics (military occupational specialty 68W) to unit PAs perform examinations at the direction of the distant site provider. The distant site provider documents visits in the Armed Forces Health Longitudinal Application (AHLTA), the current electronic health record, or the future Military Health System Genesis program, when available. More than 70 operational sites across EUCOM, AFRICOM, and CENTCOM are actively performing synchronous VH, receiving consultation both from LRMC and within their own units.

The VMC-E also pioneered the use of "Telehealth in a Bag" (THIAB). THIAB is a set of off-the-shelf universal serial bus (USB) devices that attach to a computer, require no native software, and leverage capabilities of Windows and Macintosh OS systems. The system enhances the capabilities of the originating site to provide greater information to distant site providers. Currently, the THIAB set includes a stethoscope and a high-definition camera for viewing the

patient, including attachments for otoscopic and oronasopharyngeal examinations. The system interfaces with remote specialists and consultants using Web real-time communication.⁶ PAs should contact VMC-E for guidance on obtaining a THIAB.

Case Study 31-2. The imaging capabilities of a THIAB were utilized by a unit PA to prevent medical evacuation (medevac) to LRMC. A soldier injured with a fire extinguisher during a training accident was directed to a local host nation facility for treatment, in alignment with the unit's medical concept of support. The wound was stapled closed, and over the following days developed purulence and surrounding erythema. Rather than medevac the soldier to LRMC for follow-on care, with the loss of both the soldier and an escort for an extended period, the medic (68W) utilized a THIAB and the VIEW system to demonstrate the infected wound to the unit's organic PA. The PA directed movement of the soldier to the nearby aid station in Romania, opened and packed the wound, and returned the soldier to duty, utilizing the THIAB/VIEW system for follow-on care. The use of VH maintained a vital warfighter at her place of duty for 14 days rather than having her recover at LRMC.

Synchronicity in Multiple Modalities

A recent study demonstrated the impact of the spectrum of VH modalities during a Stryker Regiment's deployment to rural Poland.⁷ The availability of VH modalities for care delivery enabled individual service members to receive centralized waivers to deploy, and reduced mission days lost for health care during the unit's deployment by 213 days. Unit providers leveraged organic behavioral health assets that remained in the home station, relied on LRMC for specialty care delivery, and utilized both the HELP and VIEW platforms.

Conclusion

The VH tools described here are designed for ease of use by the end user. As in any health care procedure, frequency of use and familiarity with the modality will determine ultimate success at the time of need. Providers are encouraged to train themselves—and their care teams, including medics—on the available VH modalities prior to deployment. For example, use of the HELP/PATH platforms in garrison for teleconsultation rather than referring a service member for off-post care will develop the fluency required for use in the deployed environment.

Training for medics can incorporate use of the ADVISOR line for real-time trauma support during a prolonged field care exercise.

A spectrum of VH modalities will be a critical requirement on the future battlefield, where communication is more likely to be analogous to that on a submarine—limited, infrequent, and both synchronous and asynchronous as permitted. The benefits of virtual tele-consultation, tele-mentorship, improved medical regulating (patient movement), and direct-to-patient VH care are clear.

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