UNDER SECRETARY OF DEFENSE
4000 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-4000

PERSONNEL AND READINESS

OCT 2 1 2022

The Honorable Adam Smith
Chairman
Committee on Armed Services
U.S. House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

The Department's response to section 756 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (Public Law 116–283), is enclosed. Section 756 requires a study and report that reviews, identifies, and evaluates the technology approaches, policies, and concepts of operations of telehealth programs across all the Military Departments.

The report provides required information on the vulnerabilities and limitations of telehealth, the essential supporting technologies, a technology roadmap for operational telehealth usage, and an analysis of telehealth capabilities that support medical readiness. The first study in the report features an analysis of telehealth capabilities in the Military Health System (MHS), including essential supporting technologies and limitations or vulnerabilities for each. The second study in the report outlines the technology roadmap, which breaks capabilities down into use cases, process flow, and operational technology requirements. This report also provides an analysis of telehealth policies, programs, and the concept of operations, strategic plans, policy limitations and challenges such as funding and ethics. The MHS will further expand and support the use of virtual health capabilities, fully integrated into the overall healthcare delivery model, in support of MHS goals and priorities.

Thank you for your continued strong support for the health and well-being of our Service members, veterans, and their families. I am sending a similar letter to the Senate Armed Services Committee.

Sincerely,

Gilbert R. Cisneros, Jr.

Enclosure:
As Stated

cc:
The Honorable Mike D. Rogers
Ranking Member

UNDER SECRETARY OF DEFENSE
4000 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-4000

PERSONNEL AND
READINESS

OCT 2 1 2022

The Honorable Jack Reed
Chairman
Committee on Armed Services
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

The Department's response to section 756 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (Public Law 116–283), is enclosed. Section 756 requires a study and report that reviews, identifies, and evaluates the technology approaches, policies, and concepts of operations of telehealth programs across all the Military Departments.

The report provides required information on the vulnerabilities and limitations of telehealth, the essential supporting technologies, a technology roadmap for operational telehealth usage, and an analysis of telehealth capabilities that support medical readiness. The first study in the report features an analysis of telehealth capabilities in the Military Health System (MHS), including essential supporting technologies and limitations or vulnerabilities for each. The second study in the report outlines the technology roadmap, which breaks capabilities down into use cases, process flow, and operational technology requirements. This report also provides an analysis of telehealth policies, programs, and the concept of operations, strategic plans, policy limitations and challenges such as funding and ethics. The MHS will further expand and support the use of virtual health capabilities, fully integrated into the overall healthcare delivery model, in support of MHS goals and priorities.

Thank you for your continued strong support for the health and well-being of our Service members, veterans, and their families. I am sending a similar letter to the House Armed Services Committee.

Sincerely,

Gilbert R. Cisneros, Jr.

Enclosure:
As stated

cc:
The Honorable James M. Inhofe
Ranking Member

Report to Congressional Armed Services Committees

In Response to: Section 756 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (Public Law 116–283), "Study and Report on Increasing Telehealth Services across Armed Forces"

October 2022

The estimated cost of this report or study for the Department of Defense is approximately $17,700.00. This includes $ 5,700.00 in expenses and $12,000.00 in DoD labor.

Generated on 11/15/21 RefID: D-A8D10B6

Table of Contents

EXECUTIVE SUMMARY

This report is in response to section 756 of the William M. (Mac) Thornberry National Defense Authorization Act (NDAA) for Fiscal Year (FY) 2021 (Public Law 116–283), which requires that the Department of Defense (DoD) conduct a study to review and evaluate technology approaches, policies, and concepts of operation of telehealth and telemedicine programs across all Military Medical Departments.

The Military Health System (MHS) leverages telehealth, or virtual health (VH) locally, regionally, and globally with a robust portfolio of capabilities to serve beneficiaries both in garrison and operational settings. The MHS organizes capabilities into three types from least to most complex: patient-to-provider; provider-to-provider; and complex real-time monitoring technologies. In FY 2021, the Defense Health Agency (DHA) conducted an evaluation of all VH capabilities to meet section 756 requirements. Based on the results, DHA began integrating VH capabilities into the overall health care delivery model to better leverage the benefits provided by technology. To develop plans for rightsizing and possible expansion, DHA continues to evaluate each technology and the current and potential future use cases to meet demand for care. DHA uses the following criteria to identify and prioritize VH technology: operational need; support of high-volume, high-risk, or high-cost care; reduction in Private Sector Care (PSC) costs; and reduction in unnecessary health care utilization. The FY 2018 MHS VH Strategic Plan was the initial effort to combine Military Department (MILDEP) and DHA VH efforts into a coordinated global MHS VH strategy. With transition of all military medical treatment facilities (MTFs) and Markets in the DoD to DHA's authority, direction, and control, DHA's oversight of, and responsibility for, all VH capabilities and the Virtual Medical Center (VMC) construct is accelerating planning and progress to extend technologies to all MILDEPs. To support integration of VH capabilities into the health care delivery model, DHA is developing guidance and standardized workflows, training and procedural manuals for critical platforms including Tele-Critical Care (TCC). In support of MHS strategy, the DHA is focusing on standardized integration and use of all VH capabilities and is prioritizing implementation of MHS Video Connect, TCC, tele-radiology, and tele-behavioral health (TBH). Finally, DHA developed a technology maturation roadmap and funding strategy to support technology acquisition and implementation.

SECTION A: INTRODUCTION

Definition of Telehealth: The FY 2018 MHS VH Strategic Plan defined telehealth as "the use of telecommunications and information technologies to provide health assessment, treatment, diagnosis, intervention, consultation, supervision, education, and information across distances." While telehealth is part of the military vernacular, it is more common to use the term VH. This report uses VH to be synonymous with telehealth.

Background: Section 756 of the NDAA for FY 2021 requires the Department to conduct a study on "Increasing Telehealth Services across Armed Forces," which reviews, identifies, and evaluates the technology approaches, policies, concepts of operation of telehealth and telemedicine programs across all MILDEPs. This study includes: (1) the identification and evaluation of limitations and vulnerabilities of health care and medicine capabilities with respect to telemedicine; (2) the identification and evaluation of essential technologies needed to achieve documented goals and capabilities of telehealth and associated technologies required to support sustainability; (3) the development of a technology maturation roadmap, including an estimated funding profile over time, needed to achieve an effective operational telehealth usage that describes both the critical associated supporting technologies, systems integration, prototyping and experimentation, and test and evaluation; and (4) an analysis of telehealth programs, such as remote diagnostic testing and evaluation tools that contribute to the medical readiness of military medical providers.

The MHS developed this report collaboratively with DHA subject matter experts (SMEs) including the Healthcare Optimization Division (HOD), Healthcare Informatics (HI), Connected Health Branch, Information Operations (J-6), Program Evaluation Office Defense Health Management System (PEO-DMHS), Telemedicine and Advance Technology Research Center, as well as with the MILDEPs.

Overview of MHS VH: The MHS has the potential to leverage VH technologies optimally to meet demand for care locally, regionally, and globally. In support of this goal, the MHS currently is integrating VH capabilities into the health care delivery model to meet readiness requirements, address gaps in TRICARE network capabilities, capture additional case mix to support health care teams' clinical currency and reduce PSC costs. The MHS' technology approaches, policies and concepts of operation are more complex than in the civilian sector and the Department of Veterans Affairs (VA) health system because, in addition to care in garrison, the MHS' VH capabilities must address multi-domain operations, casualty care in contested environments, and complex mass patient movement in theater. Additionally, DoD cyber requirements present further limitations on which commercial technologies can be utilized to transmit personal health information in the MHS. These limitations cannot be mitigated without the significant investment of time and resources to align solutions with DoD cyber requirements.

The MHS' use of VH capabilities during the coronavirus disease 2019 (COVID-19) pandemic demonstrated effective and rapid integration of technology to enable MTFs and Markets to provide medically necessary care, which could not be delayed. At the height of the pandemic in spring FY 2020, MTFs and Markets used the telephone or video visit technology to deliver almost 60 percent of total Direct Care (DC) System visits and 86 percent of TRICARE Prime

and Plus beneficiaries enrolled to a MTF had a teleconsultation or a virtual visit at least once. The MHS is leveraging Lessons Learned during the pandemic to expand VH programs, acquire effective technology and develop standard workflows to resolve challenges, and increase adoption by beneficiaries and staff. Due to the pandemic and TRICARE policy waivers, PSC network clinical video care increased by nearly 800 percent in FY 2020 during the COVID-19 pandemic.

The MHS VH capabilities also support readiness and operational units by providing VH-enabled readiness exams, on-site in military units and VH-enabled provider-to-provide consultative services. These activities avoided active duty Service member (ADSM) lost duty days and costly aeromedical evacuation. Finally, VH complex real-time capabilities, including TCC, avoid unnecessary health care costs, improved- clinical outcomes and, by keeping complex care in MTFs, contribute to team-based readiness currency.

SECTION B: VH STUDIES

In FY 2021, the MHS initiated two studies to meet the section 756 requirement in the NDAA for FY 2021. First, the MHS initiated a study of current VH capabilities within the MHS, reviewing each capability's uses, limitations, vulnerabilities and plans to leverage the technology. This report outlines the first study's findings in the "Review and Evaluation of Essential Technologies/Capabilities" section. A second study concluded in March 2021 and identified high priority VH capabilities to inform allocation of resources and technology development. This report includes the second study's findings in the "Technology Maturation Roadmap" section. Finally, this report outlines the MHS' approaches to policy, concepts of operation, standard workflows, and support utilization.

Study 1 - Review and Evaluation of Essential Technologies/Capabilities

The MHS classifies VH technologies or capabilities into three main categories: patient-to-provider, provider-to-provider, and complex, real-time monitoring. This report outlines the main programs in the MHS' VH portfolio, most of which are available in garrison, and which are available to the MILDEPs as necessary to meet mission requirements. This report outlines MHS VH technologies' capabilities, limitations, essential supporting technology, and future plans.

- **Patient-to-Provider:** Patient-to-provider capabilities include both synchronous and asynchronous platforms. Synchronous capabilities include telephone visits, video visits, the Virtually Integrated Patient Readiness and Remote Care Clinic (VIPRR) and the TBH hubs. The MHS is supporting adoption of VH by standardizing workflows and providing guidance on what health conditions are clinically amenable to the use of VH, by specialty. Asynchronous capabilities include secure messaging (SM) in the TRICARE On-Line Patient Portal (TOLPP) and the MHS GENESIS Patient Portal (MHSGPP). Finally, the Global Nurse Advice Line (NAL) provides beneficiaries with real-time access to advice from Registered Nurses (RNs); the NAL sends a disposition report on each caller empaneled to an MTF to the caller's Primary Care Manager (PCM).

- **Telephone Visits:** Telephone visits continue to be the most frequently used VH capability, which is consistent with VH telephone usage in the United States health care industry. From a technology standpoint, the telephone's benefits include wide availability of the technology to most beneficiary categories and ease of use in contrast to other platforms, which require a degree of digital literacy and technology availability. During the COVID-19 pandemic, MHS beneficiaries and providers used the telephone for over 95 percent of all VH visits, despite the availability of several video visit options.

  - **Limitations & Vulnerabilities:** Effective, clinically appropriate health care often requires visual observation, which limits the utility of telephone visits for some conditions. In contrast, video visit capabilities allow virtual visual observation by adding specialized peripheral cameras and sensors, which allow for a broader range of services.

- **Essential Supporting Technologies:** Telephone visits are dependent on strong local telephone networks and DoD networks. Personnel in deployed locations where networks are limited or non-existent use satellite phone technology.

- **Plans to Achieve Effective Operational Usage:** The MHS will continue to encourage the use of telephones to conduct virtual visits, as clinically appropriate; however, DHA expects that video clinical visits will increase with the implementation MHS Video Connect, which is discussed below.

- **MHS Video Connect:** MHS Video Connect is the new enterprise Virtual Video Visit (V3) capability. MHS SMEs identified health care provider, information technology and security requirements from key stakeholders. Subsequently, DHA HI identified a single, enterprise V3 solution, MHS Video Connect, and developed workflows to integrate the V3 capability into MHS GENESIS. MHS Video Connect is a commercial platform and uses agile industry development processes to iteratively identify, develop, test and field updates to meet evolving user requirements, environmental changes, and industry/technology advances. The MHS completed implementation of MHS Video Connect at all MTFs in the United States by December 2021 and overseas MTFs by June 2022. Based on DHA guidance, MTFs may use any authorized available capability until the MTF has access to the MHS Video Connect capability.

  - **Limitations & Vulnerabilities:** The MHS currently is addressing some connectivity challenges identified during overseas MHS Video Connect pilots. The MHS established an IT Tiger Team, which consists of MILDEP, DHA, and United States Army Signal Corps SMEs. The SMEs are identifying connectivity issues between Regional Health Command Europe and the deployed environments, to include several Combatant Commands (CCMDs). The MHS will leverage Lessons Learned from this study to inform fielding of future VH capabilities.

  - **Essential Supporting Technologies:** MHS Video Connect integrates several key technologies using cloud-based computing in the U.S. Government "GovCloud", which adds scalability, resiliency, strong identity management and security. A major benefit of a cloud-based system is that the MHS can bring systems online rapidly to handle transient demand and remove them later for cost savings when demand decreases. MHS Video Connect uses Web Real-Time Communication (WebRTC)[1] for the audio and visual components of the visit. WebRTC allows for flexibility and integration of features to which our beneficiaries are accustomed (e.g., on-screen controls, presentation, and screen sharing) while being integrated into the web browsers without extension or application.

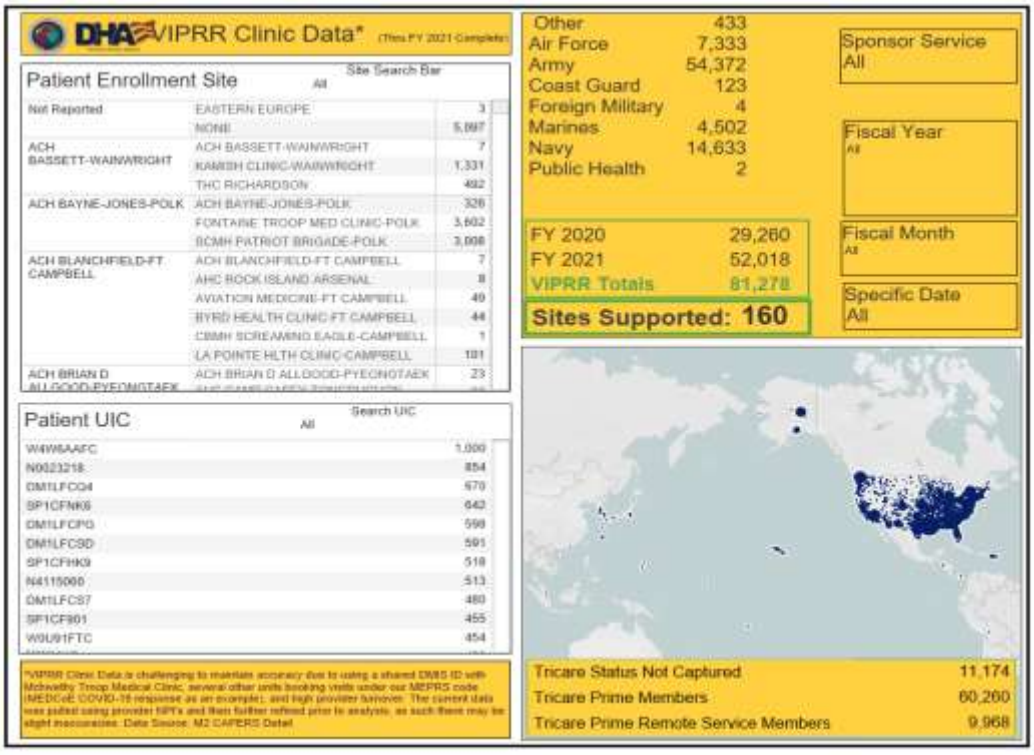
  - **Plans to Achieve Effective Operational Usage:** The MHS Video Connect roll-out to the DoD MTFs was completed on June 16, 2022 (to include overseas sites). Work continues refinement of this capability and extension to operational and deployed forces. For example, recent testing of the video platform was successfully conducted on the United States Naval Ship Mercy in San Diego. The MHS solicits input from numerous clinical and other stakeholders to identify and prioritize improvements to meet evolving

[1] References to non-Federal entities are not intended as endorsements, but only are statements of fact.

needs. For example, the MHS is increasing group appointment capacity in MHS Video Connect from 15 to 25 patients. The MHS is developing plans to expand MHS Video Connect capability to forward-operating locations to enhance VH capabilities in operational environments.

- **VIPRR Clinic:** The VIPRR Clinic is a synchronous VH capability implemented by the Army in 2016 to enhance readiness for Soldiers located remotely without organic Army medical support in Europe, the Middle East, and Africa. Currently, VIPRR provides synchronous Personal Health Assessments (PHAs), Pre- and Post-Deployment Health Assessments, Post-Deployment Health Reassessments, and other readiness health services for ADSMs for all Uniformed Military Services. The VIPRR clinic fills a critical gap by providing the exams virtually, thus VIPRR saves remote Service members hours of travel time and costs associated with avoiding travel to the nearest MTF. Figure 1 depicts the DHA VIPRR clinic support dashboard. The VIPRR clinic is the most productive PHA clinic in the DC System, completing over 29,000 PHAs and other readiness exams in FY 2020, nearly doubling its inaugural year of FY 2019. In FY 2021, VIPRR completed 52,000 visits. In FY 2020, VIPRR began integrating with MTF appointing centers and the NAL to provide additional acute primary care capacity. In FY 2021, the DHA expanded the VIPPR program from 9 to 20 providers. In FY 2022 the DHA will integrate VIPRR capabilities into regional appointing centers to increase available capacity in geographical areas where the network is not as robust.

Figure 1. VIPRR Support Dashboard



- **Limitations & Vulnerabilities:** Tri-MILDEP readiness definitions and Service-specific requirements create workflow limitations for the DHA VIPRR clinic, due to variance in processes and requirements. The VIPRR's greatest vulnerability is staffing retention

amid the explosively growing VH career field. Strong demand from industry leaders such as CVS, Walgreens, Amazon, Walmart, and other telehealth start-ups create a revolving door scenario where the VMC trains physician extenders, who frequently leave within 6 months.

- **Essential Supporting Technologies:** VIPRR providers conduct most appointments over the telephone since video is not clinically necessary to complete readiness examinations; as a result, patient connectivity does not present challenges. VIPRR relies on appointing services offered by the VMC's Virtual Appointment Management Office, which enables VIPRR to coordinate appointments and account for different time zones for global operations. The VIPRR lacks a DHA-approved Voice Over Internet Protocol (VoIP) solution to facilitate provider-patient dialogue when V3 is not required or appropriate; the DHA is working to identify and acquire a VoIP solution.

- **Plans to Achieve Effective Operational Usage:** The DHA VIPRR clinic will expand its mission to deliver a centrally managed, lean, and adaptive medical capability virtually to meet surge capacity for readiness-related appointments and on-demand primary care across the DC System. The clinic will continue to grow and serve all title 10 Service members who cannot access the DC system due to geographical location or operational deployments without local organic medical support.

- **TBH Hubs:** TBH hubs consist of DC System behavioral health (BH) providers who conduct remote virtual BH visits with ADSM beneficiaries located worldwide. The MHS developed TBH hub capabilities to increase access to BH care to support MTFs with insufficient supply to meet demand for care.

  - **Limitations & Vulnerabilities:** TBH assets currently are located at three Army MTFs, which limits the MHS' ability to apply supply to meet demand across the DC System. A patient's home connectivity may limit use of V3 services for BH care; however, care may still be provided over the telephone.

  - **Essential Supporting Technologies:** The MHS will use the MHS Video Connect V3 to support TBH and connect to the patient's home, in accordance with the Health Affairs Policy "Provision of Telemedicine at a Patient's Location." The DHA published "Interim Guidance on Virtual Video Visit (V3) Approved Communication" to clearly identify V3 platforms available for the MHS and the level of Personally Identifiable Information that can be shared over these platforms.

  - **Plans to Achieve Effective Operational Usage:** The MHS currently is developing plans to align TBHs centrally at the VMC, which will enhance the MHS' ability to apply virtual BH appointment supply regionally and globally to meet demand. Once consolidated, the VMC will serve as a center of excellence for psychological health in support of operational and garrison forces 24 hours a day, seven days a week. The MHS also is studying provider current and future productivity to optimize supply and inform future resourcing decisions. To support TBH use, the MHS is developing standard care coordination processes, documentation requirements, use cases and training to eliminate variance and optimize resource utilization. Finally, the MHS is exploring expansion of

TBH capabilities also to provide care to active duty family members on a space available basis.

- **TRICARE Online Patient Portal/Secure Messaging (TOLPPSM):** The TOLPP allows beneficiaries to view their health information, make appointments, download referral authorizations, set text, and email appointment reminders, refill prescriptions and includes engagement tools such as a large patient education library. SM is a component of the TOLPP. TOLPPSM supports asynchronous SM between patients and health care teams for non-emergency questions, care coordination, prescription renewals and MTF/clinic updates and alerts. TOLPP is accessible from any desktop or mobile device. The MHS effectively utilized TOLPPSM to share updates during the annual flu campaigns, COVID-19 pandemic and MHS GENESIS transitions. TOLPPSM is available at Composite Health Care System (CHCS) legacy sites, only.

  - **Limitations & Vulnerabilities:** The SM component of the TOLPPSM system is a commercial product, which is not integrated into the Electronic Health Record (EHR). Consequently, any message sent by the patient only becomes part of the EHR with manual intervention by health care teams. In addition, TOLPPSM requires a DoD Self-Service (DS) Logon account, which is only available to beneficiaries, who are at least 18 years old. This requirement, along with legal restrictions on health care privacy for minors for certain health care issues, prevent parents from viewing the records of their children from ages 12 to 17. Because TOLPPSM requires a DS Logon, legal surrogates or caregivers also are not able to use the capability to make appointments, arrange referrals or other services for beneficiaries in their care. DS Logon is not yet compliant with current National Institute of Standards and Technology (NIST) standards, so password and remote identity proofing requirements are extensive, preventing some customers from obtaining a DS Logon account. Issues not resolved by the Defense Manpower Data Center (DMDC) Support Office sometimes require a customer to contact a Real-Time Automated Personnel Identification System (RAPIDS) ID card office or VA Service Center to make updates to the Defense Enrollment Eligibility Reporting System (DEERS) or other databases.

  - **Essential Supporting Technologies:** DMDC administers the DS Logon and provides authentication services as a secure means of entry into the TOLPP. To access the TOLPP, DoD beneficiaries need either a Common Access Card, Defense Finance and Accounting Service myPay login credentials, or a DS Logon account.

  - **Plans to Achieve Effective Operational Usage:** The MHS will phase out TOLPP and TOLPPSM capabilities upon completion of MHS GENESIS fielding in January 2024. In the interim, the TOLPPSM team will aid with the MHS GENESIS transition and continue to increase enrollment/utilization of SM for the legacy sites. TOLPPSM also continues to utilize broadcast messaging to inform patient populations of COVID-19/Flu vaccination campaigns and MHS GENESIS deployment updates. Figure 2 shows the current home page of TOLPPSM, where patients may access this information.

Figure 2. Home Page on TOLPPSM

- **MHSGPP:** Once an MTF implements MHS GENESIS, the MTF and its patients will use the MHSGPP messaging system, which provides similar functionality to TOLPPSM. MHSGPP is a secure website available 24 hours a day, 7 days a week, which provides patients with access to their health information, appointment scheduling, secure communication with providers, prescription requests/renewals, notes review from clinical visits and lab/test results. In contrast to the TOLPPSM system, messages sent in the MHSGPP automatically are part of the patient's EHR, reducing workload on the health care teams. Messages sent to a specific provider are routed to a clinic to ensure a health care team member receives the message and responds appropriately in a timely manner. Beneficiaries can include attachments up to 25 megabytes in data size, including clinical notes and test results from PSC providers.

  - **Limitations & Vulnerabilities:** DS Logon is not yet compliant with current NIST standards, so password and remote identity proofing requirements are extensive, preventing some customers from obtaining a DS Logon account. Issues not resolved by the DMDC Support Office sometimes require a customer to contact a RAPIDS ID card office or VA Service Center to make updates to the DEERS or other Databases. The same legal constraints with health information associated with TOLPPSM apply to MHSGPP.

  - **Essential Supporting Technologies:** DMDC administers the DS Logon and provides authentication services as a secure means of entry into the MHSGPP. To access the

MHSGPP, DoD beneficiaries will need either a Common Access Card, Defense Finance and Accounting Service myPay login credentials, or DS Logon, which creates similar limitations to the TOLPPSM and MHSGPP.

- **Plans to Achieve Effective Operational Usage:** MHSGPP utilization will continue to increase as more locations transition from legacy EHR systems to MHS GENESIS. Planned improvements to the portal's messaging, scheduling, and patient education capabilities will ensure continued platform adoption by DoD beneficiaries.

- **Global NAL:** The Global NAL provides virtual access to triage and advice from RNs 24 hours a day, 7 days a week. RNs provide advice based on evidence-based guidelines, algorithms, and protocols to direct patients to the most clinically appropriate level of care including self-care, urgent care, and emergent care. Other services provided include: MTF primary care appointing services for urgent reasons, customized MTF transfers based on the MTFs' capabilities, civilian TRICARE authorized urgent care referral services, civilian network provider and MTF locator support services and customer service. NAL care coordinators, who support the RNs, can schedule appointments in both the legacy EHR and MHS GENESIS. All eligible MHS beneficiaries (excluding U.S. Family Health Plan users) may use the NAL, which provides toll-free service in the United States and in any country with an MTF.

  - **Limitations & Vulnerabilities:** The NAL contractor uploads encounter documentation into its own system. MTF health care teams extract encounter information and enter it into the DoD's EHR for PCM review. Demand for the Global NAL services fluctuates seasonally; however, the COVID-19 pandemic created surges in call volumes above contracted limits, which required increased funding to support the additional demand. Finally, the NAL is dependent on access to DEERS. If DEERS is temporarily unavailable, the NAL care coordinators require additional time to verify beneficiary eligibility and empanelment.

  - **Essential Supporting Technologies:** The Global NAL is a contracted service and provides cyber-secure supporting technology, including call management, database administration and reporting applications.

  - **Plans to Achieve Effective Operational Usage:** The MHS is developing plans to integrate NAL services into the Integrated Referral Management and Appointing Center regional nodes. RNs will be able to assess if the beneficiary's care need is amenable to virtual care or when an in-person provider visit is recommended. RNs also will have more flexibility in their disposition options to optimize access to the DC System and will increase opportunities for beneficiaries to choose their preference between virtual and face-to-face appointments.

- **Global Clinical Access Stations (CAS):** CASs are also known as VH carts. CASs use desktop and web-based synchronous video with peripheral tools to enable remote physical examinations. The MHS has placed approximately 120 multi-function CASs, like the one seen in Figure 3, across the DC System. The CASs are intended for MTFs with few specialty

providers to improve VH access to specialty care, avoid lost ADSM duty time for travel and minimize PSC costs. Training is available and recommended for all MTF clinical support staff to support utilization.

Figure 3: Example of a CAS

- **Limitations & Vulnerabilities:** DHA uses a single set of servers for operation of its CASs, creating a single point of failure risk. In FY 2022, DHA plans to move the supporting servers to an enterprise data center system, which includes redundancy, failover, and backup capability. The DHA's CAS system includes a platform for video-teleconferencing which requires separate registration and setup for video-teleconferencing capability. DHA is initiating a life cycle replacement with Windows-based video cameras to eliminate this dependency. In many cases, the use is limited due to a lack of a connectivity strategy to specialty providers and decentralized procurement.

- **Essential Supporting Technologies:** The VH systems include the CAS, Transportable Exam Station (TES) or telehealth in a box, and Telehealth in a Backpack (THIAB). The computer systems for TES and THIAB use standard Windows operating systems as do the supporting servers. They are not dependent on other third-party software.

- **Plans to Achieve Effective Operational Usage:** DHA is exploring future utilization of the CAS by MTFs and Markets. DHA is conducting a Business Case Analysis to explore a possible upgrade of hardware and software on existing systems for full compatibility and integration with the new EHR and patient to provider synchronous video teleconferencing solution. The MHS also is considering adding peripheral devices to supplement the MHS Video Connect V3 system, which may present the same clinical benefits at lower cost. Finally, the MHS is expanding training and developing workflows

to support TES capabilities in operational and other remote settings, as feasible. Figure 4 depicts a TES.

Figure 4: Example of a TES

***Provider-to-Provider*:** Provider-to-Provider capabilities allow providers to coordinate care and receive advice asynchronously and synchronously on behalf of patients, which improves outcomes, reduces unnecessary specialty care referrals, and avoids aeromedical evacuations in some cases. Provider-to-provider capabilities include the Advanced Virtual Support for Operational Forces system (ADVISOR), Augmented Reality Surgical Assistance System (ARSAS), the Global Teleconsultation Portal (GTP), Mobile Medic/Connected Corpsmen (MM) and synchronous/asynchronous consultation services, such as tele-radiology.

- **ADVISOR:** ADVISOR provides operational forces with urgent/emergent on-demand and real-time VH access consultation with specialty providers. Operational providers access ADVISOR by a toll-free VMC telephone number. The VMC ADVISOR operators connect the operational providers to specialists in critical care, general and trauma surgery, hematology-oncology, toxicology, infectious disease, emergency medicine, OB/GYN, burns and chemical wounds and veterinary medicine. Although primarily used by operational forces, the DHA expanded ADVISOR to support MTFs with Critical Care, Infectious Disease, Pediatric Critical Care and Infectious Disease and Adult Palliative Care advice in response to the COVID-19 pandemic. In FY 2020, ADVISOR addressed 152 cases and avoided $1.9 million in aeromedical evaluation costs. More recently, the MHS leveraged ADVISOR services to support the OB/GYN clinical needs of Afghanistan refugees during evacuation operations.

  - **Limitations & Vulnerabilities:** The MHS staffs ADVISOR with an all-volunteer network of MTF specialty providers, limiting the type of advice offered and the overall volume of calls the system can handle. In addition, variance in Tri-MILDEP coordination processes exist, which complicates ADVISOR use in operational

environments. Finally, ADVISOR currently requires a redundant capability to receive voice calls from multiple telephone modalities.

- **Essential Supporting Technologies:** ADVISOR relies on all forms of DoD telephony platforms and technology. Currently, voice calls (Analog Phone, Cellular, VOIP and satellite phone) are the only means to request consultation support. This technology limits the operational use case for ADVISOR.

- **Plans to Achieve Effective Operational Usage:** The MHS plans to integrate the ADVISOR program into the overall health care delivery system and will transform the service from being reliant on volunteers, to one which leverages a standard, reliable source of dedicated MTF-based manpower. In addition, the MHS plans to expand ADVISOR services to provide on demand, urgent/emergent consultation support for all medical specialties, which will be scalable and integrated to all MILDEP VH solutions. The multi-modality capability will connect far-forward personnel in disconnected/intermittent/low bandwidth connected environments with a resource manager at the VMC, who will pair them with a local provider for provider-to-provider teleconsultation via email, text, voice, and video. Finally, ADVISOR requires an agile mobile technology application to allow supporting volunteer providers to receive consult requests in a fast, efficient manner, regardless of the location of the provider, on or off government networks.

- **ARSAS:** The ARSAS, formerly known as Augmented Reality Technology Enabled Remote Integrated Surgery, uses video/audio feedback to allow real-time mentoring to remote surgeons performing procedures. Further development of the system will include Naval Hospital Camp Pendleton as a proof of concept to reach out to other MTFs. The MHS is refining the technology to increase the accuracy of the annotations used by the novice surgeon. ARSAS also includes a library of videos to demonstrate a procedure in advance, with multiple users in the same virtual room so that multiple surgeons can attend multiple virtual rooms allowing treatment of multiple patients simultaneously and three dimensional (3D) anatomical models to demonstrate anatomy and placement of medical devices. ARSAS activities require multiple sessions with surgeons giving feedback to computer engineers, coordination of multiple departments and integration of the Institution Review Board process.

  - **Limitations & Vulnerabilities:** Current limitations include bandwidth, lighting and camera angles blocking provider mobility, unfamiliarity with the program and a lack of tactile feedback. The amount of 3D imaging data required for high resolution and spatial accuracy is too large to be run on the headsets. As a result, headsets are tethered to a computer to utilize its Central Processing Unit processing power. Running features at the same time may conflict with one another, while hardware and software limitations may affect accuracy. Finally, vendors may cease technical support for various features at any time.

  - **Essential Supporting Technologies:** The ARSAS utilizes two different state-of-the-art headsets, which provide features such as hand-tracking, spatial rendering, and voice

communications. Dependencies include a multi-media software library, a computer for visual components, a platform for multi-user collaboration, software for calibration of physical environments to virtual ones, and multi-dimensional cameras.

- **Plans to Achieve Effective Operational Usage:** While the ARSAS currently is a piloted educational platform, it will become an operational platform in the future once proof of concept, value and trust in the technology are established in-garrison. As the system improves, providers will use a cadaver model before real-time surgical procedures can be performed, with the goal of creating a headset-to-headset communication capability. The timeframe to field operation is projected to be approximately 5 years.

- **GTP:** The GTP is an in-transition consolidation of two related asynchronous consultation platforms. By providing accessible, GTP-based specialty consultations, PCMs can manage their patient's care on site to the maximum extent of their license, thus reducing specialty referrals and patient transfers, increasing efficiency by recapturing specialty care, and reducing PSC costs. In addition to use in MTFs, the GTP also will continue to be essential to providing specialty consultation and patient movement support to the operational environment. GTP has proven to be a highly adaptable platform, most recently providing the Navy's solution for COVID-19 Vaccination Waiver consultations.

  - **Limitations & Vulnerabilities:** GTP's primary limitation is the lack of connectivity to other MHS systems; however, the underlying technologies are sufficient for interoperability with appropriate support from other system stakeholders. Vulnerabilities are identical to those faced by all external-facing DoD websites; however, the MHS mitigates risks by ensuring the GTP is secure, scanned for risks regularly and addressing vulnerabilities regularly. Finally, because the GTP currently is a standalone capability, clinicians cannot automatically escalate to request synchronous support from ADVISOR.

  - **Essential Supporting Technologies:** GTP is a highly scalable server-side enterprise web application, which currently runs on a Glassfish application server and utilizes a Microsoft Structured Query Language server for data storage. GTP operates across three Microsoft Windows Servers, hosted at Tripler Army Medical Center. Because of the server-side design on the system, GTP users only need a web browser with an internet connection.

  - **Plans to Achieve Effective Operational Usage:** The lightweight nature of GTP uniquely allows it to be utilized at every treatment level, including Joint Doctrine Role One First Responder care in operational environments. The MHS currently is developing plans to expand support to MTFs in the United States to enhance the readiness of providers, reduce PSC costs and avoid unnecessary specialty referrals. Finally, the MHS is developing workflows to fully integrate GTP capabilities into MHS GENESIS.

- **MM:** The MM program provides medical technicians with specialized training and advanced equipment including TES and THIAB. MMs serve as provider extenders, taking "sick call" in units and far-forward environments. The MM program enhances the readiness

skills of medics, reduces lost duty time for the ADSMs receiving care and decreases costs of patient transport to higher levels of care.

- **Limitations & Vulnerabilities:** Medical technician staffing at MM locations has fluctuated due to deployments and other assignments, including to COVID-19 vaccine teams. MM's success also depends upon the proper support of providers who train and support medical technicians. Connecting technologies limit the scope/scale of patients cared for through the MM program.

- **Essential Supporting Technologies:** MM requires bi-directional connectivity via telephone, satellite, Wi-Fi, or radio. To maximize the range of conditions MMs can treat as physician extenders, high-definition medical cameras are required, and connectivity rates of at least 1024 kilobytes per second with latency of less than 100ms are ideal.

- **Plans to Achieve Effective Operational Usage:** The MHS is incorporating MM training into Tri-MILDEP enlisted training and doctrine to develop skills for medics, corpsmen, and medical technicians and extend provider capabilities. Focusing on skillset, rather than solely technology, will enhance primary care delivery both in garrison and in operational environments.

- **Tele-Radiology:** The United States Air Force (USAF) created a "virtual" radiology department to dynamically shift workload from remote sites with no radiologist to MTFs where clinical expertise is available. FY 2020 was the fifth full year of operations for the web-based Dynamic Workload Allocation system of transmitted digital images, reading "any image anywhere at any time" across 74 MTFs. Presently, 140,000 studies per year, or 15 percent of the enterprise workload, are performed remotely. Six major USAF hub sites accomplish most film reading: Travis, United States Air Force Academy, MacDill, Lackland, Scott, and Langley. The MHS linked the USAF radiology archive of images and completed reports to the new Enterprise Clinical Image Archive (ECIA) and made them available for query, retrieval and viewing via the new NilViewer desktop web link. The USAF formally transferred sustainment funding, management, and Information Assurance compliance for the archival array from the USAF Picture Archiving and Communications System (PACS) office of Clinical Engineering at Ft. Detrick to the DHA's Medical Image Management Service Office. The Army does not participate in the tele-radiology program and individualizes support to each MTF. The Navy program involves 37 large deck ships, which send radiographic images to Walter Reed National Military Medical Center via a MedWeb platform.

  - **Limitations & Vulnerabilities:** Tele-radiology is limited by the lack of an enterprise-wide credentialing and privileging solution, standardized Memorandum of Agreement and Memorandum of Understanding policy, limitations on DoD/VA sharing of radiology images and the lack of a singular DoD PACS system to move workload and facilitate collaboration across facilities. The line of effort needed to maintain cybersecurity compliance also continues to be a significant burden and could lead to vulnerabilities.

- **Essential Supporting Technologies:** The full deployment of MHS GENESIS will provide a single federated radiology information system across all DoD MTFs, which will facilitate interfaces between disparate radiology PACS systems. Legacy tele-rad system Enterprise Productivity Suite was interfaced to the new EHR MHS GENESIS and new IT network, which makes it much easier to do wide area network load balancing and increase bandwidth where it is needed. In addition, voice recognition software for automated voice reporting eliminates the need for transcriptionists and allows completed exams to automatically be sent to the MTF where the radiology exams were taken. The continued use of communication standards to include Digital Imaging and Communications in Medicine, Health Level 7, and integrating the health care enterprise are the backbone for how radiology exams are managed and communicated across the DC System. Artificial Intelligence also continues to be a primary and new essential supporting technology for this platform.

- **Plans to Achieve Effective Operational Usage:** The MHS is expanding and standardizing an enterprise tele-radiology approach. The MHS' approach will build from the foundation that the USAF and other Services have established in the development of an Enterprise Imaging home within DHA Healthcare IT, which will be integrated into MHS GENESIS.

***Complex Real-Time Monitoring*:** Complex real-time monitoring capabilities are the most resource-intensive VH capabilities; however, they provide strong value on investment in terms of increasing readiness for medical personnel, improving outcomes, increasing MTF capacity and avoiding unnecessary health care costs. The MHS leverages these capabilities, which involve health care teams using technology to monitor patients remotely.

- **TCC Analysis:** The MHS uses TCC capabilities to extend critical care intensivist expertise 24 hours a day, 7 days a week remotely to MTF Intensive Care Units (ICUs), which lack full-time critical care staff. TCC capabilities result in MTFs being able to provide care to more complex patients, which increases case mix and enhances readiness skills of the entire MTF health care team. The MHS' use of TCC capabilities also avoids unnecessary network admissions and saves PSC costs. The TCC primary hub is located at the Naval Medical Center San Diego (NMCSD). The main NMCSD TCC hub coordinates and arranges TCC connectivity for MTFs from one of three nodes providing care. In addition to NMCSD, TCC supporting nodes are located in the San Antonio and National Capital Region (NCR) Markets. Each node is interconnected to ensure no single point of failure for MTFs reliant on TCC access. TCC operations involve remote monitoring staff, who interact with on-site patients and staff using high-definition video teleconference technology. TCC staff review real-time bedside monitors, clinical data, and online clinical decision support tools to support clinical decision-making. TCC has demonstrated its ability to reduce ICU length of stay and mortality by 40 percent and reduce overall hospital mortality by 30 percent, as documented in civilian literature. Because of the recognized benefits, having full-time intensivist support is now the standard of care in the United States and is recommended by the Leapfrog Group, the American Academy of Critical Care Medicine and the Society of Critical Care Medicine. In the MHS, TCC also increases patient complexity and hospital volume, thus having a

positive impact on the medical readiness of military medical providers and clinical support staff.

- **Limitations & Vulnerabilities:** TCC enhances the capabilities of but cannot replace bedside patient management; therefore, effective TCC implementation is reliant on health care personnel at the receiving MTF. Other limiting factors include the integrity of the network to meet standards of 98 percent up-time, access to the EHR and imaging, the extent of care TCC staff are trained to provide and the availability of critical care resources. In addition, the MHS must develop a staffing model to support ICU care and include an optimal range of the distribution of staff among ADSMs, Government employee and contractor staff to ensure coverage during deployments.

- **Essential Supporting Technologies:** The current TCC solution requires several separate systems to provide a platform for synchronous critical care consultation throughout the MHS. The MHS currently accomplishes remote EHR access, including legacy CHCS and Essentris, via the DHA's application virtualization hosting environment. For supported sites that have already transitioned to the new EHR, access occurs through MHS GENESIS. TCC staff obtain medical imaging access via direct PACS to PACS connectivity with originating sites, or through an intermediary service such as ECIA or other full diagnostic viewers. The TCC program provides audiovisual connectivity between the originating and distance site occurs through MHS Video Connect. A network bridge aggregates, standardizes, and contextualizes data in a standard graphical interface, which provides real-time patient bio-physiologic data from patient bedside monitoring and therapy devices. Current TCC support to MTFs is limited to locations, which have installed expensive hardware locally (e.g., high-definition pan-tilt-zoom cameras, monitors, and device data transmission interfaces. etc.). Other, more flexible options, such as the National Emergency Tele-Critical Care Network (NETCCN) analysis, could be less expensive and more flexibly available for smaller MTFs that have fewer ICU patients, but which will need critical care expertise if the MTF admits complex patients.

- **Plans to Achieve Effective Operational Usage:** TCC has the potential to improve capabilities at different echelons of care to meet needs in future distributed mission operations. The MHS plans to integrate operational requirements to enable would enable reach-back MTF support via multiple platforms. The MHS plans to expand TCC capabilities to operational environments to provide expertise at the point of injury, during enroute care, and higher care echelons via synchronous audio video communications, advanced monitoring, decision support tools and care coordination throughout the continuum of care. The MHS also is acquiring a consolidated, single user interface solution for clinical decision support, which enables audiovisual connectivity, integration of patient bio-physiologic data with the EHR, predictive analytics like multi-parameter alerting, and quality data management. To standardize processes and optimize TCC capabilities, the MHS is coordinating a DHA Procedures Manual for all MTFs and Markets. The MHS also is expanding TCC staffing to support more MTF ICUs across the DC System.

- **Remote Patient Monitoring (RPM) Analysis:** The MHS uses the term RPM to refer to Remote Health Monitoring (RHM). RPM augments care coordination for patients with chronic conditions (e.g., poorly controlled Type 2 diabetes mellitus (DM), congestive heart failure, etc.) and has an established use cases showing effectiveness in reducing diagnosis-related Emergency Room visits, inpatient admissions, and inpatient lengths of stay, as well as reductions in diagnosis-related predictors of morbidity and mortality. The VA has invested in this technology due to the need to manage closely its larger patient population, which proportionally suffer more chronic and serious illnesses. In response to the RHM requirement contained within section 718 of the NDAA for FY 2017, the FY 2018 MHS Virtual Health Strategic Plan included a provision for exploratory pilot implementation of RHM for Type 2 DM. The MHS identified the NCR and San Antonio Markets as pilot sites for the Diabetes Remote Electronic Assisted Monitoring initiative. During the COVID-19 pandemic emergency, the MHS initiated a second RPM pilot, a Continuous Remote Patient Monitoring (CRPM) initiative, which monitors confirmed or presumptive COVID-19 patients who are asymptomatic or symptomatic. The CRPM pilot resulted in fewer admission days and lower costs, while maintaining access and increasing patient comfort. CRPM prevented readmission for 61 patients and reduced bed days by 359 for 112 patients, resulting in net savings of $535,000 between December 7, 2020 and February 21, 2021.

  - **Limitations & Vulnerabilities:** The MHS' greatest RPM risk is staffing. First, the MHS, like the overall United States health care sector, lacks an industry-recognized staffing model to support RPM. In addition, inadequate staffing overall creates an opportunity for adverse patient safety events; however, strong demand from the contract nursing industry has led to high staff turnover, leaving the programs exposed to risk. The greatest vulnerability to the clinical programs is the current lack of seamless integration within existing clinical workflows, including connectivity to MHS GENESIS.
  - **Essential Supporting Technologies:** RPM technology requires the patient to have reliable and stable internet connectivity. The MHS introduces patients enrolled in RPM programs to blue tooth peripherals tailored to their specific medical circumstances. These include, but are not limited to, tablet-like educational devices, blood glucose monitors, heart rate and respiratory monitors, oxygen saturation sensors, mobility monitors, temperature sensors, six-lead heart rhythm monitors, and digital scales. Upon receipt of these devices, clinical team members guide patients through equipment setup. These technologies are rapidly evolving and expanding within the industry.

  - **Plans to Achieve Effective Operational Usage:** The MHS plans to expand RPM capabilities in the future. In support of expansion, the MHS is conducting a study and business case for CRPM to replicate use of the established clinical pathway for other conditions. Potential use cases include: obstructive lung disease (asthma, chronic obstructive pulmonary disease, and cystic fibrosis), heart failure, post-operative recovery for selected Ear, Nose and Throat surgery; oral and maxillofacial surgery, orthopedic and bariatric surgeries, and recovery from high-risk outpatient procedures. Finally, the MHS plans to test, pilot, and then expand Intermittent RPM across the enterprise for several use cases, with the current focus on DM, gestational hypertension, and congestive heart failure.

- **Technology to Support All Domain and Large-Scale Combat/Contingency Operations:** A final group of diverse VH capabilities potentially can be utilized across the continuum of care in both garrison and operational environments. For example, the Technology in Disaster Environments and NETCCN project was a CARES Act-funded acceleration of commercial and military Research, Development, Test, and Evaluation technologies for use during the COVID-19 pandemic to provide increased capability to hospitals overwhelmed by pandemic surges. The technologies include: cellular connected mobile device telemedicine applications that are cyber secure and use limited network resources to connect local caregivers with limited or no critical care expertise to remote critical care experts; interoperable, remote controlled mechanical ventilators and IV Pumps; and data collection and analysis solutions that enable better understanding of care needs and care delivery to optimize resources from one disaster to the next. To date, NETCCN has delivered VH support for over 3,500 patient days to 24 hospitals in 12 States or United States Territories without deployment of any personnel or hardware to the pandemic stricken locations. Many of these engagements have been with rural or critical access hospitals only manage critically ill patients for a few hours before transferring them to a higher level of care. The average number of patients managed per location per day is five. Assuming that this volume could be replicated during other national disasters, this volume times the number of critical access hospitals in the United States would equal an approximately 10 percent increase in national ICU bed capacity. A pilot study using NETCCN applications for RHM found similar findings to the CRPM study above. This pilot of 30 RHM patients resulted in a 50 percent reduction in hospital admissions and a reduction of one hospital day due to early discharge. Together these findings suggest that managing patients at home or in small hospitals unaccustomed to managing critically ill patients is feasible and can optimize precious hospital resources by matching patient severity of illness to resource availability.

  - **Limitations & Vulnerabilities:** Current technology vendors across the United States prioritize development of VH capabilities for use during standard operations. These solutions prioritize diverse, customizable functions and data capture for billing; however, they are not suitable for emergency or resource-limited patient care environments, which necessitate efficiency and simplicity.

  - **Essential Supporting Technologies:** Technology to support all domain and large-scale combat/contingency operations does not require billing and coding capabilities, like modern electronic medical records. Instead, essential supporting technology must account for clinician time and clinical activities, and support store and forward. Technology solutions require either an Android or iOS mobile device with access to the internet/cloud though network resources.

  - **Plans to Achieve Effective Operational Usage:** The MHS must balance acquisition of VH solutions, which support normal MTF-based operations and operational requirements, to allow military clinicians to "train as they fight," using the same solutions in garrison settings as they would during deployments. The MHS potentially can use technology to support all domain and large-scale contingency operations potentially across the continuum of care, including during prolonged casualty care operations. These use cases include: continuous monitoring of warfighters before injury, during injury, and then throughout the evacuation continuum; asynchronous and synchronous communication solutions between local caregivers, remote experts, and others in the care team or care continuum; integrated, remote-controlled, standards-compliant medical

devices that enable delivery of complex medical care to locations where there are limited or no trained individuals (e.g., during transport or with large casualty numbers, etc.); and data collection to create visualizations for situational awareness across the system of care. The MHS is planning studies to better define application of this type of technology, including the addition of remote-controlled ventilators and IV pumps, during National Disaster Medical System support for Large Scale Combat Operations missions.

Study 2 - Technology Maturation Roadmap

The MHS studied current processes and subsequently developed and is implementing a unified technology maturation roadmap to support strategy and realignment of VH to support integration into the overall health care delivery strategy. The process of achieving a unified technology maturation roadmap is underway. Rather than aimlessly pursue every new technology, the MHS starts with strategy and seeks requirements from the clinical community that align with that strategy. From a cost perspective, most expenses for VH in both the MHS and the civilian sector are for providers who deliver care remotely, rather than the technologies or materiel solutions they utilize.

- **Use Cases:** Currently, the MHS is pursuing new VH capabilities in four priority use cases: MHS Video Connect, TCC, tele-radiology, and TBH. The MHS plans to build on those initial tools with additional VH capabilities. Figure 5 depicts the work stream activities for these four priorities. The MHS estimates $110,514,000 in funding is required to support the four priorities for the period FY 2021 to FY 2028. Figure 6 shows the collective estimated funding profile over time of these initiatives.

Figure 5: Workstream Activity for Use Cases

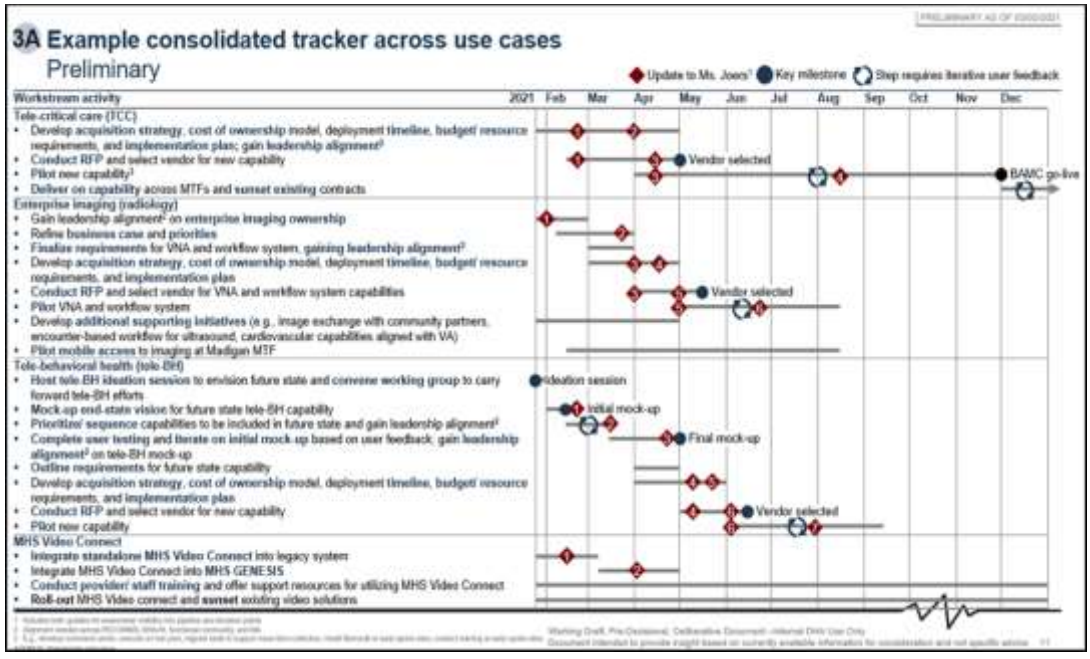


Figure 6: Longitudinal Funding Profile of Top VH Priority Initiatives

TY($K)	2021	2022	2023	2024	2025	2026	2027	2028	Total
RDT&E (FY20)	$ 1,427	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,427
PROC (FY20 COVID)	$ 9,926	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,926
O&M	$ 15,000	$ 12,848	$ 13,104	$ 13,367	$ 13,634	$ 13,907	$ 14,185	$ 14,469	$ 110,514

- **Process Flow:** The MHS codified the overall process flow for acquiring a new VH capability in DHA's "Virtual Health Execution Guide Book." The guidebook outlines roles and responsibilities across PEO-DMHS, DHA HI and the HOD, which represents the functional community. The first step in this process is developing a Vision and Strategy for achieving future state of an MHS digital medical capability. This is evolving as technology changes and DHA leadership refines strategy. DHA HI meets on a quarterly basis to review technologies on the horizon that the MHS could potentially pursue in alignment with MHS strategy. Using patient and provider journeys as the context, the MHS explores possible VH solutions to enhance the health care delivery model. HI selects the solution based on functional requirements refined by HOD. The DHA assigns new capability requests subsequently to a Program Management Office (PMO) with coordinating team members. The PMO approaches the new requirement per the process outlined in Figures 7 and 8, which includes business case development, a gap assessment, a review of industry best practices for existing technology, etc. The approach also includes the design of a technology implementation/sustainment plan and a plan to sunset existing, previous technology meeting the same requirements.

Figure 7: DHA's Process Flow for Developing VH Technologies/Capabilities

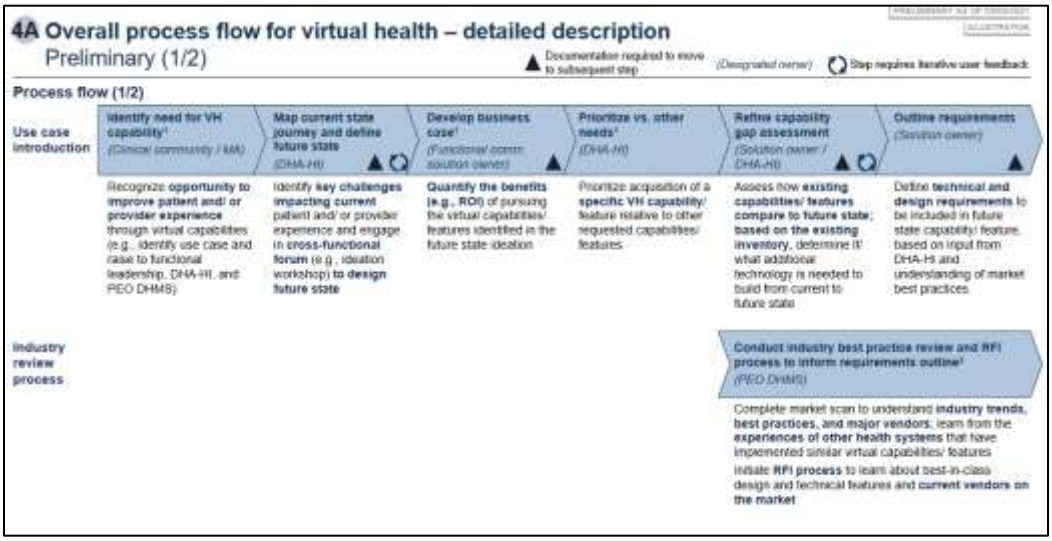
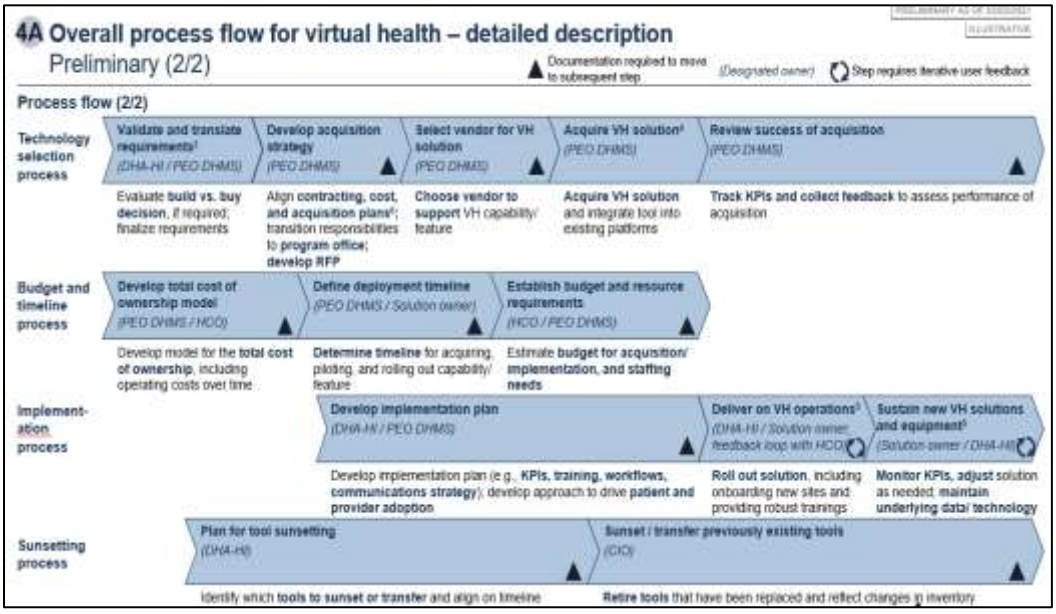


Figure 8: Continued DHA's Process Flow for Developing VH Technologies/Capabilities



- **Operational Technology Requirements:** The requirements and technology development process differ for operational technology requirements. VH supports the principals of joint health services and the overarching joint medical capabilities for joint health services, which can be utilized at all roles of care. The Joint Operational VH Workgroup established by the Joint Surgeon developed a Capabilities Based Assessment (operational VH gaps and recommendations) and a Change Recommendation Document (CRD). The Joint Operational VH Work group will submit the assessment and CRD to the Joint Capabilities Integration and Development System process so that the Services can have recognized/resourced operational VH requirements.

SECTION C: ANALYSIS OF VH POLICIES, PROGRAMS, AND CONCEPT OF OPERATIONS

Overview

The MHS' consolidation of VH under the DHA has resulted in program expansion, standardized processes, integration into the overall health care delivery model and enhanced support readiness. During the transition period, plans and program alignment has changed to better support DHA strategy. This report outlines previous DHA VH plans, VH's integration into the FY 2021-2026 DHA Campaign Plan and identifies current VH policy limitations and vulnerabilities.

- **FY 2018 MHS Virtual Health Strategic Plan:** The FY 2018 MHS VH Strategic Plan was the first effort to combine MILDEP and DHA VH efforts into a coordinated global MHS VH approach to care. The plan tied VH expansion to the MHS Quadruple Aim and MHS Strategic Goals. In support of its strategic goals, the FY 2018 VH Strategic Plan contained a series of tactical initiatives primarily aimed at implementation of different parts of section 718 of the NDAA for FY 2017, as well as various MILDEP-based priorities. These initiatives included expansion of synchronous (i.e., "real time") VH, asynchronous (i.e., "store-and-forward" care and consultation) VH and RHM for chronic conditions. Specifically targeted initiatives included expansion of a hub and spoke or internodal TCC system, expansion of Remote Medical Imaging and development of the VMC concept. The MILDEPs combined their separate VH budgets with VH funding in the DHA Program Objective Memorandum (POM) to facilitate coordinated action in pursuit of the VH plan's goals and initiatives. The strategic plan envisioned a planning initiative to enhance support of MTF-based VH care for individual ADSM medical readiness, deployment readiness of health care providers and VH "reach back" capability from deployed settings.

- **Implementation Plan - VH Functional Capability (FC) 39 and Way Ahead:** The DHA Implementation Plan established guidance for MHS reform based on requirements in section 702 of the NDAA for FY 2017. The associated DHA Implementation Plan includes several "Functional Capabilities" (FCs). FC 39 describes a Market-based, enterprise-supported VH system that will provide clinically appropriate VH care to ADSMs and other beneficiaries in MTFs or in operational environments, while enhancing readiness, improving quality of care, increasing access to care, and reducing PSC costs. FC 39 capabilities included the VMC and VH Headquarters Governance. Currently, DHA is integrating FC 39 into the overall health care delivery model (FC 17) and HI (FC 21) to enhance standardized and optimized implementation of VH capabilities.

- **VMC:** Transition of the VMC from an Army VH coordinating asset into a single DHA VH execution and execution support arm for both Market-based VH and the operational VH needs of the CCMDs is critical to the success of enterprise VH expansion. The VMC will integrate with the general DC health care delivery model to integrate geographically dispersed, enterprise supporting VH components support for optimized, standardized VH provision across the enterprise. The VMC will serve as the primary enterprise VH execution support for the DC System to effectively leverage clinical resources to meet demand locally,

regionally, and globally. Currently, the VMC coordinates both regionally based and clinically based care including Critical Care, Behavioral Health and Multi-Disciplinary Consultation. The VMC also will provide a single point of MHS VH coordination for support of operational health care, enabling providers and war fighters in the field to receive appropriate and timely care and consultation, regardless of location or circumstance. The VMC currently plays an essential role in requirements gathering and coordination in accurately reflecting the needs of providers and beneficiaries. Formal transition of the VMC from Army to DHA alignment is in progress; however, the VMC has already begun to execute an MHS enterprise-wide support mission in partnership with DHA in anticipation of its transition.

- **VH Headquarters Governance:** VH governance begins with the VH Coordinating Group (VHCG). SMEs include Medical Affairs (MA) for guidance, quality management, competency standards, requirements validation; Health Care Operations (HCO) for execution and integration with the TRICARE network; Information Operations for network support and cybersecurity; HI for platform integration, workflow, and digital engagement; and Management/Component Acquisition Executive for acquisition and life-cycle sustainment. The VHCG reports to the Patient Centered Care Operations Board (PCCOB), run jointly by MA and HCO, which has oversight over the overall health care delivery model, and which monitors VH execution, performance and informs the Way Ahead. The PCCOB reports to flag-level MHS governance and is jointly led by MA and HCO.

FY 2021 – FY 2026 MHS Campaign Plan

As the transition of all MTFs to DHA is completed, and due to success and maturation of the VH program, DHA is integrating VH capabilities into the overall health care delivery model. DHA identifies all VH capabilities in its FY 2021-2026 Campaign Plan as key projects to support both readiness and health care delivery. VH lines of effort, goals and objectives are aligned with overall DHA goals, the health care delivery model and digital patient engagement strategy to include detailed and robust lines of effort, goals, and objectives. VH capabilities support DHA priorities:

- **Great Outcomes:** Improve availability and quality of health care for all beneficiaries across time and geography.

- **Ready Medical Force:** Leverage VH capabilities to expand and sustain operation medical proficiencies.

- **Satisfied Beneficiaries:** Leverage VH capabilities to safely maximize patient engagement and convenience.

- **Fulfilled Staff:** Enhance VH capabilities that efficiently utilize resources, integrate systems, and support future VH requirement development.

VH Policy Limitations and Vulnerabilities

The MHS' plans to integrate VH into the overall health care delivery model, develop a technology roadmap and acquisition of technology to support care in both MTFs and operational environments address key concerns identified in an article from the August 2019 publication of the *Health Affairs* Journal, titled "Military Telehealth: A Model for Delivering Expertise to the Point of Need In Austere And Operational Environments." An excerpt from the article on page 1390 summarized the greatest obstacles for the future of VH in the DoD:

> The most pressing and difficult challenge to integrating telehealth into the austere and operating environment remains the separation of the operational environment from the garrison one in terms of available funding and network limitations. Funding designated for combatant commands and operational missions cannot be used for equipment, software, or personnel in the garrison. MHS and Defense Health Program funds cannot be used for supporting combatant commands and operational missions. Because telemedicine bridges the physical divide between these environments, these funding restrictions present many challenges to how the military can implement a unified system of telehealth, especially as it relates to enterprise-wide technology standardization. Similarly, austere and operational environment network resources do not directly connect to garrison network resources, especially in prehospital settings, where tactical networks are secret. This challenge is made more difficult by cybersecurity threats. Necessary to bridge this divide are enterprise-level partnerships between telemedicine and tactical network experts that do not currently exist. In the near term, doctrinal changes and requirements that enable dynamic network quality of services or dedicated network resources for medicine are needed to fully leverage telehealth solutions.

Other Challenges and Risks

Other challenges and risks include ethical issues related to digital health, policy challenges with centralized privileging and credentialing, research funding, VH funding, policies on resource sharing and virtual versus in-person deployments and need to include VH in Joint Doctrine.

- **Ethical Challenges:** The civilian health care industry is rapidly starting to utilize data from digital health sensors – wearables, devices connected to the internet like scales, toothbrushes, and exercise equipment – to aid in medical decision-making (not diagnosis). Warfighters and beneficiaries are making this data available to commercial entities to use as they see fit. An example of this was the use of exercise data from wearable fitness devices, which allowed the software to make maps of sensitive military areas. In addition, this type of data is also used by professional athletic organizations to monitor athlete activity to optimize performance through personalized training, rest cycles, diet, sleep, etc. Specific to the MHS, an ethical challenge is to address to what limit does a commander, and therefore the MHS, have a right to know about a warfighter's health *outside* of medical encounters. The MHS recognizes the DoD and DHA need to identify what information is appropriate for commanders to use in partnership with the MHS to help optimize warfighter performance,

safety, and wellbeing while maintaining an appropriate level of privacy and codify the recommendations in DoD policy. These digital health challenges should be considered extensions of VH because the MHS should proactively engage warfighters or beneficiaries who demonstrate patterns of activity and physiology that suggest possible physical or mental illness. Offering incentives for digital health engagement to warfighter and beneficiaries could be one method to enhance participation and utility of these tools; however, the ethical boundaries remain concerning the invasiveness of these sensors in our lives.

- **Research Funding:** VH concepts, technology and policies are rapidly changing with users often adapting the latest trends rather than using evidence-based medicine. Evidence-based articles are limited in VH. Increased funding for VH research or leveraging existing research will help the MHS identify best practices, which then can be deployed to the DC system.

- **VH Funding:** The MHS should prioritize requirements based on the needs of its own patient population rather than comparing itself with the VA or the civilian health care industry. As appropriate to its strategy, the MHS will program for VH funding in the POM, as needed. The MHS also may pursue additional funding, if appropriate, through the DoD/VA Joint Incentive Fund projects, as it did with the FY 2021 Enterprise TCC Patient Management Initiative.

- **Policy for Deploying VH over Physical Medical Forces:** Military providers are routinely tasked for Global Health Engagement efforts, which require physical deployment. With the advances of VH, many times physical deployments could be avoided using VH. Allowing providers to support operational environments remotely would ensure deployed forces have access to needed care while avoiding unnecessary PSC costs associated with loss of providers to physical deployments. Policy considerations include making VH support to military operational medicine a primary plan and not an alternate or contingency option. For example, instead of deploying a critical care physician on every flight, the DoD could use VH connectivity to TCC to support USAF Critical Care Air Transport Team (CCATT) missions. In addition, use of VH TCC would allow the critical care specialist to monitor multiple CCATT missions from one location.

- **VH Doctrine:** The MHS is inserting VH capabilities into the medical footprints of organizations that fall under Joint and non-Joint medical formations and should be included in formal doctrine. The MHS supports the principals of joint health services and joint medical capabilities for use at all roles of care. The MHS plans to establish standard processes between the Joint Operational Medicine and non-medical operational units to ensure standard processes are included in the medical sections of the deploying operations plans.

SECTION D: SUMMARY

MHS views VH not as a separate entity, but as a suite of technological capabilities to support health care delivery in garrison and operational environments and facilitate connections between the patient and health care professionals. The MHS' realignment and integration of VH into the overall health care delivery model are positive steps to leverage fully VH capabilities. The MHS has a robust portfolio of VH patient-to-provider, provider-to-provider, and real-time complex monitoring capabilities. DHA is identifying all stakeholder requirements, including those of the MILDEPs, and developing VH capabilities to be scalable to support local, regional, and global peacetime health care and operational environments. In support of appropriate technology acquisition and resource utilization, the MHS developed a technology maturation roadmap. Currently, the MHS is acquiring new VH technologies in four priority use cases: MHS Video Connect, TCC, radiology, and TBH. To facilitate VH implementation, the MHS also is standardizing workflows, integrating capabilities into the EHR as feasible and is addressing policy gaps to eliminate obstacles and make the right way, the easy way. While VH will never replace face-to-face health care, MHS VH implementation plans will optimize the readiness profile of the MHS, support the medical readiness of the force, improve health outcomes, enhance access to care and reduce unnecessary health care costs.