Deployment Health Centers Review, 2016-2017

A Report by the Defense Health Board

August 21, 2017

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OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
HEALTH AFFAIRS
7700 ARLINGTON BOULEVARD, SUITE 5101
FALLS CHURCH, VA 22042-5101

August 21, 2017

MEMORANDUM FOR PERFORMING THE DUTIES OF THE ASSISTANT SECRETARY
OF DEFENSE FOR HEALTH AFFAIRS

SUBJECT: Deployment Health Centers Review, 2016-2017

The Defense Health Board (DHB) is pleased to submit its report summarizing the findings and recommendations from its independent review of the Deployment Health Centers (DHCs).

On September 17, 2002, the Assistant Secretary of Defense for Health Affairs tasked the Armed Forces Epidemiological Board (AFEB) to serve as a public health advisory body and provide a program review of ongoing research and clinical efforts of the Department of Defense Centers for Deployment Health. The AFEB, later renamed the DHB, conducted a series of reviews between 2003 and 2005, and the DHB conducted a review of the Naval Health Research Center (NHRC) in 2010. In 2012, the DHB reviewed the DHCs: NHRC, Armed Forces Health Surveillance Center (now Armed Forces Health Surveillance Branch), and Deployment Health Clinical Center (DHCC). In January 2013, the Acting Under Secretary of Defense for Personnel and Readiness asked the DHB to conduct a follow-up review of DHCC in 2013 and continue reviews of all three DHCs every three years for six years. In response, in July 2016, the DHB assigned a subset of the Board to conduct a review of the DHCs.

The subset conducted an in-depth literature review, received briefings from subject matter experts, and conducted site visits of the three DHCs. Following public deliberation of the findings and recommendations, the attached report was finalized.

On behalf of the DHB, I appreciate the opportunity to provide the Department with this independent review and hope that it assists the Centers in identifying, treating, and minimizing or eliminating the short and long-term adverse effects of military service on the physical and mental health of veterans. We recommend that the DHB continue to serve the function of an external advisory board for the DHCs, including periodic reviews.

Nancy W. Dickey, MD, FAAFP
President, Defense Health Board

Attachment:
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DEFENSE HEALTH BOARD MEMBERS

DEPLOYMENT HEALTH CENTERS REVIEW SUBSET MEMBERS

Maj Gen (Ret.) George K. Anderson, MD,
MPH
DHB Second Vice President

Eve J. Higginbotham, SM, MD
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Defense Health Board Member

Lenworth Jacobs, Jr., MD, MPH
Defense Health Board Member

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DEPLOYMENT HEALTH CENTERS REVIEW, 2016-2017

1.1 HISTORY OF THE TASKING AND REQUEST TO THE BOARD

The Defense Health Board (DHB), previously known as the Armed Forces Epidemiological Board, was operationalized to "serve as a public health advisory body for the DoD [Department of Defense] Research and Clinical Centers for Deployment Health."[1] The DHB has completed several reviews of the Deployment Health Centers (DHCs), commencing with an initial review directed by the Assistant Secretary of Defense for Health Affairs (ASD(HA)) in September 2002. The DHCs were created in accordance with the Fiscal Year (FY) 1999 National Defense Authorization Act and were established with the following recommendations:

- Creating a research center at **Naval Health Research Center (NHRC)** (Section 1.3 and Appendix A), which was later designated as DoD's Deployment Health Research Center.
- Continuing medical surveillance through the Defense Medical Surveillance System (DMSS). Of note, DMSS was absorbed into the Armed Forces Health Surveillance Center (AFHSC) in 2008, which was renamed **Armed Forces Health Surveillance Branch (AFHSB)** (Section 1.4 and Appendix B) in 2015.
- Converting a clinical center, the Gulf War Health Center, at Walter Reed Army Medical Center, which was later named **Deployment Health Clinical Center (DHCC)** (Section 1.5 and Appendix C).[2]

The Armed Forces Epidemiological Board reviewed the DHCs annually between 2003 and 2005 and issued recommendations to the Department.[3-5] In August 2010, the DHB completed its next review of NHRC.[6] In March 2012, the Board reviewed the three DHCs: NHRC, AFHSC, and DHCC.[7] In January 2013, the Under Secretary of Defense for Personnel and Readiness (USD(P&R)) requested the Board to conduct a follow-up review of DHCC[8] and then continue reviews of the three DHCs every three years, for the next six years.[9] Accordingly, the DHB initiated its latest program review of the DHCs[*] in 2016; this report is the outcome of the review.

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[*] The DHB uses "the DHCs" throughout the report to refer to NHRC, AFHSB, and DHCC combined. Although the current functions of the Centers may not coincide with the DHC designation, the DHB recognizes the importance of these functions for medical readiness.

The DHB essentially noted that each DHC's unique capabilities contribute to the Military Health System's (MHS's) Quadruple Aim goals of increased readiness, better health, better care, and lower cost.

Figure 1. The MHS Strategic Plan - Quadruple Aim[10]

From DHCC, November 2016.

THE FIVE DRIVER SYSTEM™

Since 2012, the DHB has utilized a model based on the Focus 3 Five Driver System™ during its program reviews of the DHCs. This model identifies the "fundamental drivers that shape the effectiveness of a business,"[11] including:

- **Strategy** "is where and how a company chooses to compete in the market" and includes target markets, vision, products and services, sales and marketing, and customer service.
- **Process** "is how the business is operationalized," as "performance and quality can only be improved to the extent that processes allow."
- **Structure** "is how the business is organized;" "the way an organization is organized and staffed will either enhance and support its strategy and performance, or else hinder and impair performance. Structure is the way an organization fits people and processes together to get the work done."
- **Culture** "is the thoughts and beliefs that drive behavior and the experience people have with the organization."
- **People** "is how a company recruits, develops, and retains the people who do the work of the business."[11]

According to this model:

> The best results are produced when there is an organizational **culture** that engages and energizes people; a business **strategy** that delivers superior value and gives customers an exceptional experience; **processes** that produce efficient work flow and high quality outcomes; a **structure** that builds trust and teamwork and develops effective leaders; and a **people** strategy that recruits and develops employees who are fully committed to the culture and strategy of the business.[11]

The DHB thus reviewed the DHCs' performance as it relates to four drivers: Strategy, Process, People and Culture, and Structure and Programs.

The Subset adopted the following guiding principles as a foundation (Figure 2) as it reviewed the DHCs in 2016 and 2017.

Figure 2. Deployment Health Centers Review Subset Guiding Principles

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Overarching Principle: It is the duty of DoD to ensure that the DHCs continue to "improve the ability to identify, treat, and minimize or eliminate the short and long-term adverse effects of military service on the physical and mental health of veterans" by expanding on current clinical, surveillance, and research efforts.[2]

Guiding Principles: These principles require that the changes recommended by the Subset, when taken as a whole, must:

   i. apply the framework of key organizational drivers to assess and review the operational and technical areas of the DHCs;
  ii. acknowledge the organizational changes that have occurred since the previous visits, particularly pertaining to MHS governance;
 iii. align the intended missions of the DHC to their current missions and scope of work.
  iv. promote synergistic collaboration across DoD and with the Services on deployment health issues;
   v. address any gaps in and identify opportunities to strengthen the provision of clinical care services, medical research, and medical surveillance for military personnel during and after deployment;
  vi. consider current MHS initiatives and programs that align with functions in the DHCs.
 vii. promote the use of meaningful metrics, which will measure the results and impact of the DHCs; and
viii. give consideration to fiscal implications to include funding, constraints, and resources necessary to maintain clinical care services, medical research, and medical surveillance benefits to the maximum extent possible.

In this report, the DHB provides program reviews on each of the DHCs:
1) Findings and recommendations (Section 1.2);
2) NHRC (Section 1.3 and further described in Appendix A);
3) AFHSB (Section 1.4 and Appendix B); and
4) DHCC (Section 1.5 and Appendix C).

Each section in the summary report and the supporting appendix provides the DHC's background, followed by their progress since the DHB's previous reviews, successes and achievements, current challenges, and way forward.

1.2 FINDINGS AND RECOMMENDATIONS

The following are the Subset's findings and recommendations. The first six recommendations are considered "overarching" and affect all three Centers, and the remaining relate to each individual center: NHRC, AFHSB, and DHCC.

Overarching Findings and Recommendations

Finding 1: The Department of Defense has not provided sufficient strategic direction and oversight to effectively align with the needs of deployed military personnel and leverage the key resources of the three Deployment Health Centers.

> **Recommendation 1:** The Defense Health Agency should:
> a) provide strategic direction to the Deployment Health Centers and ensure that the key functions of the Deployment Health Centers are aligned appropriately in the Defense Health Agency so they can affect policies and programs to better meet the needs of the Combatant Commands.
> b) direct the Defense Health Board to continue conducting reviews of the Deployment Health Centers every three years.

Finding 2: The Centers have not established rigorous metrics. Further, there is no funding set aside for monitoring and evaluation of the Deployment Health Centers' programs.

> **Recommendation 2:** The Department of Defense should:
> a) establish strategic, centrally-aligned metrics to measure cost-effectiveness, return on investment, and outcomes of Deployment Health Center research contributions.
> b) ensure funding is programmed for monitoring and evaluation of the Deployment Health Centers' programs.

Finding 3: The lack of secure funding and the reliance on extramural funding threatens the stability of critical long-term research and health surveillance activities at the Deployment Health Centers (Table 1).

> **Recommendation 3:** The Department of Defense should:
> a) provide sufficient infrastructure support to conduct research and health surveillance activities to support key strategic functions at the Deployment Health Centers.
> b) provide sufficient funding for human capital to ensure the continuity of research and health surveillance activities at the Deployment Health Centers.
> c) provide long-term programmatic funding for research and health surveillance activities at the Deployment Health Centers.

Finding 4: There are multiple barriers to developing career paths in research, such as restricted conference attendance, limited infrastructure support, and the frequent rotation of military personnel.

Recommendation 4: The Department of Defense should:
- **a)** create viable, promotable career paths leading to opportunities that include appropriate professional development of Deployment Health Center leadership, such as acquisition training.
- **b)** recruit personnel with rigorous research backgrounds and build the capacity of junior and mid-level staff to conduct quality research.
- **c)** create dedicated research billets at the Deployment Health Centers for junior and mid-level researchers given the Deployment Health Centers' environment, research expertise, and collaborative partnerships.
- **d)** ensure senior leaders value scientific leadership and careers and provide adequate infrastructure support at the Deployment Health Centers (e.g., facility improvements or research support personnel) to provide continuity of research at the laboratories.
- **e)** instill mechanisms to facilitate the continuity of research throughout military rotations and deployments.
- **f)** re-evaluate and streamline conference attendance approval processes across the military.

Finding 5: The Deployment Health Centers have encountered challenges maintaining sufficient personnel to conduct research and health surveillance activities because of cumbersome hiring processes, Defense Health Agency staff cuts, and loss of Intergovernmental Personnel Act positions. As a result, the Deployment Health Centers have continued to rely heavily on contract personnel.

Recommendation 5: The Department of Defense should:
- **a)** provide additional government-authorized manpower at the Deployment Health Centers to provide sustained levels of focus on strategy and opportunities for career development and ensure relevance to the mission-critical objectives of the Deployment Health Centers.
- **b)** transition some of the contractor positions into government staff positions to build sustainability and institutional knowledge within the teams.
- **c)** assess processes for hiring of civilians in order to identify barriers and roadblocks to timely hiring of required staff.

Finding 6: Administrative burdens and decentralized review processes frequently lead to delayed implementation or lost opportunities and functionally discourage collaborative research or health surveillance activities.

Recommendation 6: The Department of Defense should:
- **a)** streamline, and when possible, standardize processes such as data sharing, survey approvals, contracting, funding, and public affairs.
- **b)** streamline, and when possible, standardize human subjects research processes and create a centralized Institutional Review Board.

Naval Health Research Center Findings and Recommendations

Finding 1: The Defense Health Board was impressed with the Naval Health Research Center's significant research accomplishments and quality of its leadership.

> **Recommendation 1:** The Navy should maintain and encourage the recruitment of experienced researchers as leaders at the Naval Health Research Center.

Finding 2: Naval Health Research Center's lack of core funding and resulting reliance on multiple sponsors for funding may drive strategic requirements for research activities and may threaten the stability of research activities, such as the 67-year Millennium Cohort Study.

> **Recommendation 2:** The Department of Defense should provide sufficient core funding through the Program Objective Memorandum to ensure stability for the Naval Health Research Center's research activities.

Finding 3: Moving Naval Health Research Center from an Echelon IV command to an Echelon V command within U.S. Navy Bureau of Medicine and Surgery's structure has made it difficult to initiate studies, hire appropriate personnel, and secure the necessary funding.

> **Recommendation 3**: Navy Medicine should delegate authorities down to the Naval Health Research Center to mitigate the impact of the additional layers of approval required for research.

Armed Forces Health Surveillance Branch Findings and Recommendations:

Finding 1: Although sections of the Armed Forces Health Surveillance Branch, such as Global Emerging Infections Surveillance, have developed their own strategy, there is no current overarching Armed Forces Health Surveillance Branch strategy.

> **Recommendation 1:** The Armed Forces Health Surveillance Branch should develop an overarching strategy in coordination with the Defense Health Agency.

Finding 2: Armed Forces Health Surveillance Branch's Global Emerging Infections Surveillance is not only integral to DoD surveillance activities, but also provides funding to many DoD laboratories globally.

> **Recommendation 2:** DoD should provide sufficient core funding through the Program Objective Memorandum to ensure the stability of Global Emerging Infections Surveillance.

Finding 3: Because of its transition to the Defense Health Agency, the Armed Forces Health Surveillance Branch requires additional layers of approval to vet manuscripts for publication in professional journals, such as the Armed Forces Health Surveillance Branch's *Medical Surveillance Monthly Report,* thereby impacting the timely usefulness of information.

Recommendation 3: DoD should reduce administrative burden and grant the editorial independence required to maintain the *Medical Surveillance Monthly Report.*

Deployment Health Clinical Center Findings and Recommendations:

Finding 1: The Deployment Health Clinical Center has been challenged with implementing certain programs and initiatives, such as Primary Care Behavioral Health, Psychological Health Research, and Psychological Health Clinical Care (see Appendix C.4).

> **Recommendation 1:** The Deployment Health Clinical Center, in collaboration with the Defense Health Agency and the Services, should:
> a) ensure consistent integration of psychological and behavioral health services with primary care.
> b) collaborate with other DoD psychological health stakeholders to create an aggregate system of relevant psychological health studies.
> c) standardize the Practice-Based Implementation Network methodology and approaches across the Services.

Finding 2: The Deployment Health Clinical Center has experienced frequent reorganizations since 2012, which has led to challenges related to creating a comprehensive strategy, receiving consistent strategic direction, and an inability to change its name to better align with its current mission consistent with the DHB's previous recommendations.

> **Recommendation 2:** The Deployment Health Clinical Center should be maintained under the Defense Health Agency and should change its name to better reflect its new designation and current mission.

1.3 NAVAL HEALTH RESEARCH CENTER[†]

BACKGROUND

Strategy

NHRC is the designated DoD Deployment Health Research Center, and its mission is to optimize "the operational health and readiness of our armed forces by conducting research and development to inform DoD policy and practice."[12] The Center has four core research focus areas: Operational Readiness and Health,[13] Medical Informatics,[14] Military Population Health,[15] and Operational Infectious Diseases.[16] NHRC's requirements-driven medical research, development, testing, and evaluation (RDT&E) supports the intent of the DoD Deployment Health Centers: to "improve the ability to identify, treat, and minimize the short- and long-term adverse effects of military service on the mental and physical health of veterans."[1,17]

[†] This section is a summary of Appendix A, and further information on the DHB's program review of NHRC can be found in this appendix.

NHRC's strategic location at Naval Base Point Loma in San Diego allows access to U.S. Navy and Marine Corps Service members,[12] world-class universities, and biotechnology and industry partners.[18] The convenient proximity also allows for collaboration with other local Navy institutions, such as Naval Medical Center San Diego or the Center's higher headquarters, Navy Medicine West.[19]

History

NHRC was established as the U.S. Navy Medical Neuropsychiatric Research Unit in 1959, beginning its first longitudinal research efforts in 1960.[12] In 1974, it was re-designated NHRC "to study medical and psychological aspects of performance."[12] In September 1999, the ASD(HA) was delegated authority to establish a center devoted to "longitudinal study to evaluate data on the health conditions of members of the Armed Forces upon their return from deployment,"[2] as required by legislation. As a result, NHRC was designated the DoD Deployment Health Research Center in 2001.[2]

Organizational Structure

Figure 3 illustrates the organizational structure of the Navy Bureau of Medicine and Surgery (BUMED). Navy Medicine West, an Echelon[‡] III command, is under the command and control of BUMED, and, in August 2015, it assumed cognizance over the U.S. Navy research and development enterprise headquartered by Naval Medical Research Center.[20] NHRC is one of seven subordinate laboratories that falls under Naval Medical Research Center in Silver Spring, Maryland, and is also a major research laboratory in its own right.[19] NHRC, as an Echelon V command, has additional layers of command and control that provide more complexity to its research processes and approvals.[18] The internal organizational structure of NHRC is demonstrated in Figure 9, Appendix A.1.

Figure 3. Basic BUMED Organizational Structure[21]
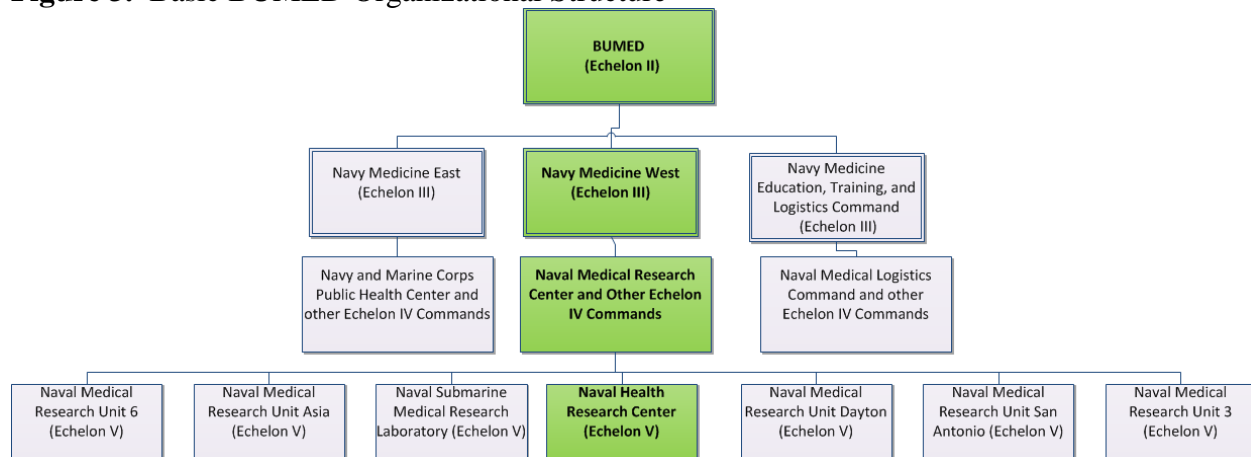
Adapted from Navy Medicine, 2017.

[‡] The U.S. Navy uses the term "Echelon" to describe command structure and relationships. For example, as shown in Figure 3, an Echelon II command is higher than an Echelon III command.

NHRC has a diverse and talented staff, comprised of active duty members, government staff, contractors, and temporary employees through the Intergovernmental Personnel Act (IPA) Mobility Program.[18] Within this staff, there is a broad range of subject matter experts with diverse educational backgrounds (Tables 2 and 3, Appendix A.1).[18]

PROGRESS SINCE LAST VISIT

Strategy

After the DHB's 2012 site visit to NHRC, it was reported that:

- **NHRC's budget has been managed well, but NHRC should continue to provide funding for research activities (e.g., the Millennium Cohort Study) to the greatest extent possible; and**
- **NHRC appeared to be functioning optimally within their current organizational structure, and it was recommended organizational stability should be maintained (Table 4, Appendix A.2).[7]§**

Since the DHB's 2012 report, there have been no significant changes in NHRC's budget;[18] however, the continued lack of core funding has created a reliance on external funding, which may drive the Center's strategic requirements for its research activities.[22] The lack of overall strategic vision across all operations and uncertainty in long-term funding makes it difficult to keep core projects in place. Further, there is no formal process to align the Department's medical research requirements and priorities with DoD's strategic mission, thereby making it difficult to compete for and obtain funding.[17] Additionally, NHRC has faced challenges in forming a comprehensive strategic plan, as it receives strategic direction from both Naval Medical Research Center and Navy Medicine West, which are not always aligned.

Although it is important that NHRC maintains the autonomy necessary to achieve its mission and vision, it would be beneficial to engage in more integrated strategic planning with similar organizations, such as the other DHCs.[23] It should be noted that NHRC's research portfolio and capabilities overlap with those of other DHCs, such as behavioral health and surveillance.[24] Thus, although there is no formal coordination between NHRC, AFHSB, and DHCC, there are informal coordination efforts.[24]

Process

In 2012, the DHB cited NHRC's central location as beneficial for partnerships with other academia, industry, and other military medical facilities, noting that these partnerships strengthen communication with key stakeholders.[7] Further, the DHB found:

- **Some departments at NHRC conducted tri-Service research, but all were strongly embedded in Navy and Marine Corps operations, thus communications should be expanded with Army and Air Force; and**

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§ These bullets summarize the DHB's 2012-2013 findings and recommendations, which can be found in table form in the appendices.

- **NHRC had developed many partnerships, but its website contained limited information about its current research and activities thereby limiting visibility ([Table 5](), Appendix A.2).[7]**

To improve its communication processes, NHRC leadership has recently hired a Public Affairs Officer, who provides directors with monthly growth statistics to track NHRC's communication tools and the benefit they provide to customers and stakeholders.[17] The team has also developed indicators and metrics to measure outputs and reach, such as the number of times NHRC is featured in published stories or news releases. It has also overhauled the NHRC website to include more information on current activities and accomplishments, thereby increasing stakeholder awareness of NHRC's research capabilities, expertise, and expanding the reach of important products to customers.[17]

As shown in [Table 5](), Appendix A.2, NHRC informed the DHB that the Center regularly partners with colleagues from other Services on studies, working groups, and collaborative projects that inform DoD policies.[18] Examples of such partnerships include the Joint Trauma Analysis and Prevention of Injury in Combat at the U.S. Army Medical Research and Materiel Command, AFHSB, and other federal agencies such as the Department of Veterans Affairs (VA) and the Centers for Disease Control and Prevention.[18] [Table 6](), Appendix A.2 also lists research partnerships held by NHRC. It is unclear whether these partnerships have expanded since the previous program review.[18]

People and Culture

In 2012, the DHB recognized the NHRC's staff as one of its strongest assets, noting that the **experience and credentials of research staff were broad and ensured research capabilities encompassed the conceptual framework put forth by the ASD(HA) ([Table 7](), Appendix A.2).[7]** Since the 2012 report, NHRC has maintained and improved upon its staff experience and diversity; as of November 2016, NHRC was composed of 18 active duty Service members, 85 civil service employees, and 275 contractors.[18] NHRC's staff also has diverse education and experience, ranging from personnel with backgrounds in epidemiology to biomechanical engineering ([Tables 2 and 3](), Appendix A.1).[18,14,15,25]

Regarding culture, the DHB was informed that NHRC's leadership has implemented initiatives to improve organizational climate, such as meetings with incoming staff to ensure integration and address ongoing issues at NHRC, as well as surveys to measure culture and satisfaction in the workplace.[24] Additionally, NHRC has demonstrated effective collaboration and interaction between staff with cross-pollination across its focus areas: Operational Readiness and Health,[13] Medical Informatics,[14] Military Population Health,[15] and Operational Infectious Diseases.[16] Building and maintaining a beneficial organizational culture at NHRC requires leadership qualities such as understanding and approaching the Center as a small business, given its challenges securing funding and changes to Navy Medicine's organizational structure; adhering to NHRC's core mission while remaining in alignment with larger strategies; and developing a research career path and understanding its significance.

Structure and Programs

The DHB provided a number of comments on NHRC's structure and programs in 2012, including:

- **NHRC's organizational structure within Navy Medicine should be maintained;**
- **NHRC's medical modeling and simulation funding should be maintained;**
- **NHRC's novel technological assets, such as the Computer Assisted Rehabilitation Environment, should be protected;**
- **NHRC's behavioral health studies are important, and NHRC's proposal to assess the use and impact of educational and health promotion products should be accepted; and**
- **The Millennium Cohort Study is a critical DoD asset, and funding should be extended for 60 years (Table 8, Appendix A.2).[7]**

As noted previously, since 2012, BUMED's organizational structure has changed, shifting NHRC from an Echelon IV command to an Echelon V command, thus adding extra layers to the review and approval processes, such as establishing cooperative research and development agreements.[17,18] Additionally, NHRC's medical modeling and simulation and Millennium Cohort Study have continued to be funded through multiple sponsors, instead of through core funding,[18] which threatens their stability as well as the execution of medical research activities. In 2014, the DHA established the Research and Development Directorate to help coordinate and enhance the related medical research and development programs of the Services and the Defense Advanced Research Projects Agency.[26] This Directorate manages and executes the Defense Health Program (DHP) RDT&E appropriation as directed by the Office of the ASD(HA);[26] however, despite the Directorate's establishment, the final impact of DHA's policy, oversight, and process improvement to all aspects of medical research is unknown.[18]

NHRC has made positive improvements since 2012 in several aspects. For example, NHRC has merged DoD pharmaceutical data with Career History Archival Medical and Personnel System data and transformed the Computer Assisted Rehabilitation Environment into a one-of-a-kind research and rehabilitation tool.[18] Additionally, NHRC was able to extend the Millennium Cohort Study to 67 years,[18] surpassing the DHB's recommended 60 year extension.[7] Of note, the previous sponsor of the Millennium Cohort Study, the Army's Military Operational Medicine Research Program, is divesting itself from funding the study after 2018, and the DHA has agreed to increase its funding to meet that gap.[27] The longevity of this agreement is unclear.

SUCCESSES AND ACHIEVEMENTS

Since 2012, NHRC has had numerous achievements, such as improving upon its staff experience and professional diversity, establishing Science Directorates to secure a greater leadership role in research, developing a robust communications plan to improve visibility of its research activities, and collaborating across the Services as well as industries.[18] Despite recruitment and retention difficulties at NHRC, the Center has had an overall growth in funding from DoD sponsors of more than 45 percent and increased productivity of more than 60 percent between 2011 and 2016 (Figure 10, Appendix A.3).[17]

The Millennium Cohort Study, located at NHRC and initiated in 2001, is a longitudinal study that measures the impact of deployment on long-term health outcomes of Service members.[28] This study is an asset to both DoD and the VA as it provides insight into issues such as posttraumatic stress disorder, suicide, alcohol misuse, sexual trauma, women in combat, and burn pit exposure.[17] The study has also contributed to decisions made on congressional legislation and policy updates (Table 9, Appendix A.3).[17] There is also the Millennium Cohort Family Study, initiated in 2011 to study the impacts of military experience and deployment on the health and wellness of military families, spouses, and children.[29] About 10,000 spouses have been enrolled, and families will be followed for at least 21 years to track experiences, family relationships, protective factors, and coping mechanisms over time.[29] NHRC has expressed interest in expanding recruitment for the Family Study; however, limited funding has posed challenges.[24]

NHRC has developed many collaborative efforts to support military readiness, such as:
- a collaborative data analysis with the Joint Trauma Analysis and Prevention of Injury in Combat program to help the program develop informed decisions on preventing and mitigating combat injuries;[30]
- a partnership with the Defense Threat Reduction Agency on a Joint biosurveillance project that involves identifying the point of need diagnostics for pathogen detection that cause acute illnesses;[31] and
- a collaborative effort with the Air Force medical assemblies and NHRC's medical modeling and simulation team to optimize and standardize combat support Authorized Medical Allowance Lists.[32]

NHRC also has numerous bench to battlefield innovations that have been adopted by the Department to improve health and readiness, such as:
- the **Medical Planners' Toolkit,** which is accredited for use across the Services and uses past empirical data to calculate patient condition occurrence frequency, casualty rate estimation, and expeditionary medicine requirements;[33]
- the **Joint Medical Planning Tool,** which is also accredited for DoD use and assesses patient flow from the patient injury to definitive care;[34] and
- the **"Life After Service" workbook,** which includes support and guidance for post-deployed military personnel transitioning to civilian life.[35]

NHRC is also involved in running clinical trials of the adenovirus vaccine[18] and provides influenza vaccine effectiveness data to the Centers for Disease Control and Prevention.[16]

CURRENT CHALLENGES

Strategy

NHRC's reliance on multiple sponsors for funding has numerous potential impacts, such as driving its strategic requirements, impacting its ability to collaborate with industry partners, inhibiting the retention of highly qualified civilian investigators, and threatening the funding required for research infrastructure support (e.g., personnel and equipment). The lack of core funding threatens NHRC's ability to meet its mission as a DoD DHC.

Process

Varying approval processes across collaborators, different interpretations in contracting and funding, as well as different Institutional Review Board and Public Affairs processes across the Services create challenges for collaborative research efforts for NHRC.[17] Such variations in processes may lead to delayed initiation of research, lost funding, and lost research opportunities. Additionally, there is no enterprise-wide electronic platform that provides visibility of all DHP-funded research projects and funding opportunities,[17] which inhibits collaborative medical research between DoD facilities.

People and Culture

It was stated to the DHB that slow hiring processes and NHRC's limited hiring authority are continued challenges for the Center.[24] Although contractors may be quicker to hire, they are not able to conduct certain governmental functions, such as serving as principal investigators on research studies and extending collaborations on behalf of the government.[36] Additionally, there are limited leadership positions and granting promotions and title changes is challenging at NHRC, thereby inhibiting retention of active duty and civilian NHRC personnel.[24] NHRC also lacks sufficient research support staff to sustain its research portfolios and institutional knowledge.[24]

Structure and Programs

The lack of programmed funding for NHRC's research activities, such as the Millennium Cohort Study, provides numerous challenges, detailed in Table 1.[17] In particular, the impact of NHRC's research becomes more difficult to measure, provided its need to use funding from multiple sources to maintain research activities and initiatives. Although NHRC has developed multiple tools, studies, and deliverables, the Center is unable to consistently measure cost-effectiveness, return on investment, or the impact of these contributions on health outcomes of military personnel and their families. Further, it is the DHB's understanding that there is no dedicated funding set aside for monitoring and evaluation of NHRC's programs to properly assess the contributions of implemented activities.[24]

Table 1. Challenges that Threaten NHRC Research[17]

Challenge	Impact	Solutions
Lack of central strategic control and oversight	• Uncertainty for key programs, such as the Millennium Cohort Study	• Realign tri-Service studies under the purview of the DHA
Lack of core funding	• Inhibits ability to attract partners and collaborators • Inhibits retention of highly qualified civilian researchers	• Direct lines of funds to support government scientist salaries, equipment, and costs for conducting research
Lack of funding for sustainment of basic research facilities and equipment	• Navy Medicine research and development labs do not have dedicated funds for facilities and equipment, which decreases competitiveness for extramural funding	• Developing a process for funding to procure, maintain, and provide lifecycle management of basic equipment and

Challenge	Impact	Solutions
		facilities
Decreased research funding and limited resources	• Research and development funds usually first to be reprogrammed • Lack of sustainment funds impacts Navy and Medicine application of research programs, such as: Millennium Cohort Study, Expeditionary Medical Encounter Database, Recruitment Assessment Program, Career History Archival Medical and Personnel System, DoD Birth and Infant Health Registry, Medical Modeling and Simulation analytic capabilities, and Computer Assisted Rehabilitation Environment as a tool for rehabilitation, injury prevention, and resilience	• Increasing core funding would help offset organizational operational costs and encourage collaboration through shared research funds

Adapted from NHRC, 2016.

Establishing career paths and training programs for military personnel interested in research has been a challenge in the Navy and across the Services; BUMED leadership's buy-in is necessary to develop viable career pathways for active duty personnel. Current DoD restrictions on conference attendance and frequent rotation of military personnel also hinder the professional development of DoD medical researchers. Further, there are challenges related to Navy and DoD medical research processes (Table 11, Appendix A.4).[17,37] For example, the reorganization of BUMED resulted in NHRC realigning further down the Echelon chain, thereby creating longer review and approval processes related to establishing agreements, such as cooperative research and development agreements. In addition, the cumbersome approval procedures associated with Institutional Review Boards and survey approval processes further delay NHRC's ability to conduct research. For example, survey approval through the U.S. Office of Management and Budget for the Millennium Cohort Study takes approximately two years, thereby impeding the ability to rapidly update the surveys, as well as the administration of the surveys for the longitudinal study (Table 11, Appendix A.4).[17,37] Although the establishment of the DHA Research and Development Directorate (J-9) aims to improve the coordination of medical research and development across the Services, there still remain varying policies and processes.[17]

WAY FORWARD AND FUTURE OPPORTUNITIES

There are a number of areas in which NHRC could expand its activities, such as the Wounded Warrior Recovery Project, which has collected data on Service members since 2001.[38,39] Additionally, data collected by the Recruitment Assessment Project, such as pre-service factors related to posttraumatic stress disorder and suicide risk, are unique to DoD. However, the pool of participants is solely male Marine Corps recruit volunteers.[24] Expanding the recruitment list to include women and men from other Services could provide more representative data and analysis and could be informative for decision-making across DoD military populations.[24]

NHRC plans to continue to strengthen core competencies, improve research for readiness, and form new partnerships. The team is also collecting feedback and information from their customers to improve services and research capabilities. Some of the initiatives NHRC has planned for the near future include:

- medical modeling and simulation support to develop adaptive force packages;
- Humanitarian Assistance/Disaster Response Authorized Medical Allowance Lists standardization aboard hospital ships;
- DoD lead for point-of-need diagnostics testing and evaluation for infectious diseases; and
- second phase of Norovirus vaccine participation in clinical trial at Recruit Training Command Great Lakes.[17]

The DHB was informed that if provided the appropriate environmental infrastructure and resources, NHRC would be an ideal location to develop Navy medical researchers, given the importance of both clinical and health systems research for the MHS overall.[40,24] Expanding active duty research positions at NHRC would require the creation of additional research billets within Navy Medicine, which should be considered as part of BUMED's ongoing manpower review.[41]

1.4 Armed Forces Health Surveillance Branch[**]

Background

Strategy

AFHSB conducts medical surveillance activities to ensure the protection of military personnel and their allies.[42] The mission of the Branch is to "provide timely, relevant, actionable, and comprehensive health surveillance information to promote, maintain, and enhance the health of military and military-associated populations."[42] Its vision is "to be the central epidemiologic resource and global health surveillance proponent for the U.S. Armed Forces."[42] To achieve this mission and vision, AFHSB:

- acquires, analyzes, interprets, and disseminates information and recommends evidence-based policy;
- develops, refines, and standardizes surveillance methods;
- serves as the focal point for sharing health surveillance products, expertise, and information; and
- coordinates a global program of militarily-relevant infectious disease surveillance.[42]

AFHSB, previously the AFHSC, operated under the Secretary of the Army until its realignment under the DHA in August 2015.[43] Since joining the DHA in 2015, AFHSB has aligned its priorities to the DHA's: strengthening its role as a combat support agency, strengthening its relationship with the Services, and optimizing operations (Figure 4).[44]

[**] This section is a summary of Appendix B, and further information on the DHB's program review of AFHSB can be found in this appendix.

Figure 4. DHA Strategy Map[44]
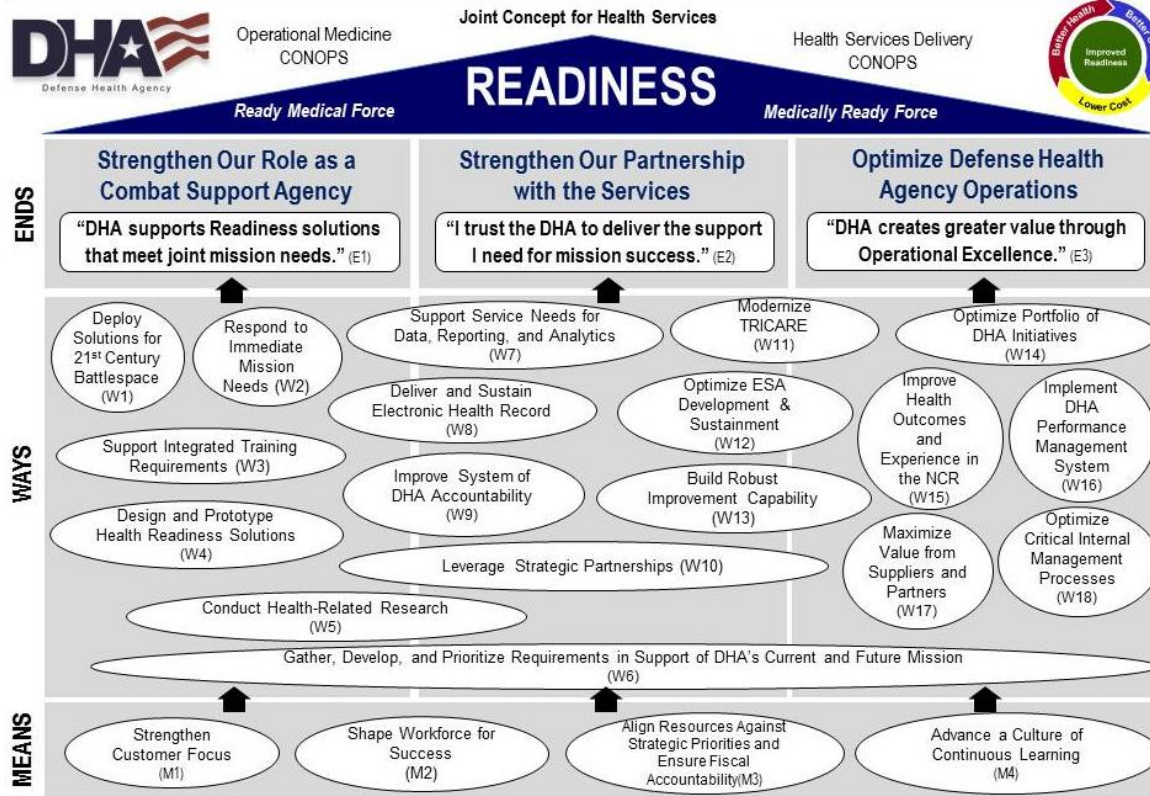
From DHA, 2017.

History

AFHSB was established in 2008, consolidating the Army Medical Surveillance Activity's DMSS, the DoD Serum Repository, DoD Global Emerging Infections Surveillance (DoD-GEIS), and the Global Health Surveillance Activity from the Office of the Deputy Assistant Secretary of Defense for Force Health Protection and Readiness.[42]

Organization

AFHSB has four sections: Data Management and Technical Support (DMTS), Epidemiology and Analysis, Integrated Biosurveillance, and GEIS.[45] These sections' key capabilities are highlighted in Table 13, Appendix B.1. AFHSC was subsumed into the DHA as AFHSB in 2015 and operates under the DHA Operations Directorate (J-3) Public Health Division (Figure 5).[46] The internal organizational structure of AFHSB is demonstrated in Figure 13b, Appendix B.1.

With its realignment under DHA J-3, AFHSB assumed responsibility for some of the health surveillance activities and personnel at the Services' public health hubs, including the U.S. Army Public Health Center at Aberdeen Proving Ground, Maryland; the Navy and Marine Corps Public Health Center in Portsmouth, Virginia; and the U.S. Air Force School of Aerospace Medicine at the Wright-Patterson Air Force Base in Dayton, Ohio.[42] These newly realigned

personnel provide valuable expertise in areas such as influenza surveillance, laboratory data analysis, behavioral and social health, and reportable medical event surveillance. They also provide a valuable joint perspective, as well as coordinate data requests from their respective Services and represent them in the Epidemiology and Analysis Request Assessment Process and working group meetings.[42]

Figure 5. Basic Organizational Chart of DHA and the DHA Operations Directorate
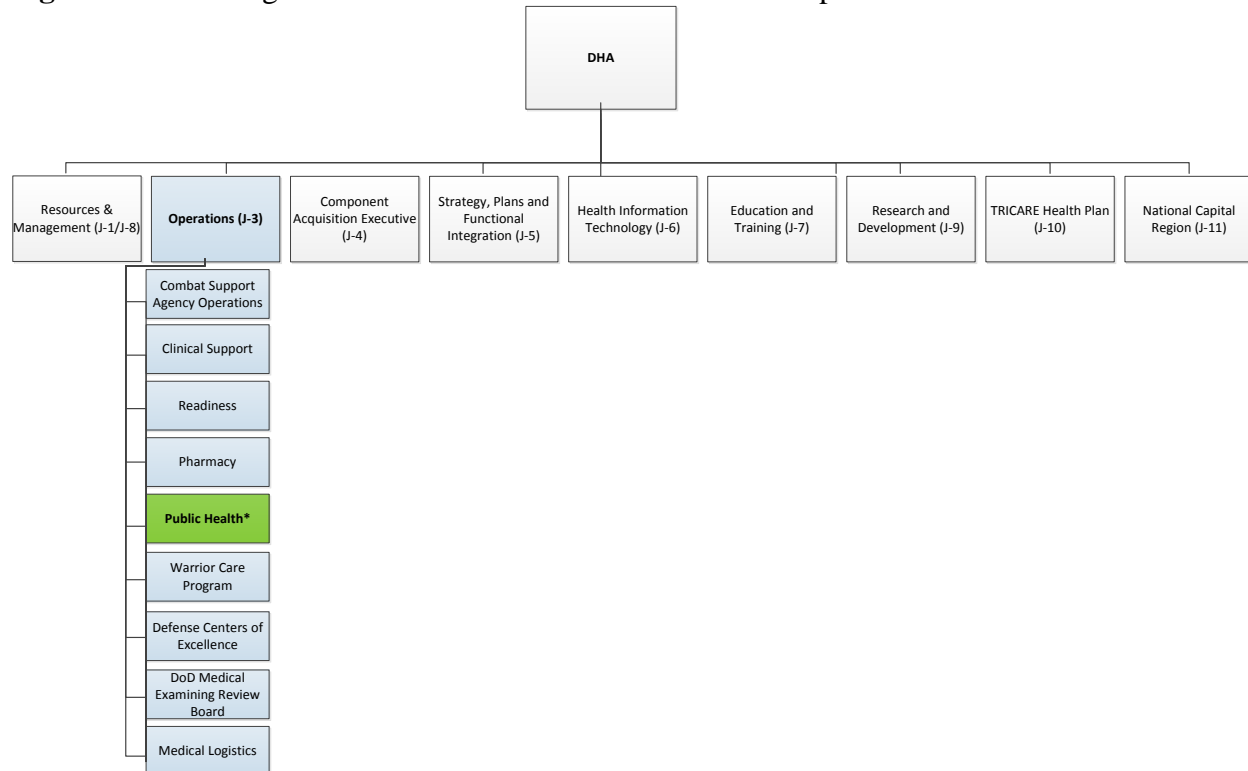
*AFHSB is located under DHA Public Health Division
Adapted from DHA, 2017.

PROGRESS SINCE LAST VISIT

Strategy

After the DHB's 2012 review of AFHSB, then AFHSC, the Board found that:

- **Funding is allocated on a yearly basis, presenting a risk to the organization's stability, and the DHB recommended long-term funding should be secured within the Program Objective Memorandum for greater stability and security; and**
- **AFHSC had staffing vulnerability because of reliance on contractors and recommended transitioning contract positions to civilian positions (Table 14, Appendix B.2).[7]**

Currently, nearly 80 percent of AFHSB's staff is composed of contractors; AFHSB has a limited number of civilian positions in the DHA J-3 Public Health Division Joint Table of Distribution.[47] Further, AFHSB lost three IPA slots. Since 2012, AFHSB has secured funding for the Future Years Defense Program 2017-2021. However, funds must be spent within the FY and cannot be

rolled over into future FYs.[47,48] Thus, AFHSB's current funding mechanism still presents a risk to the organizations stability and security.

AFHSB has developed a few preliminary performance measures and objectives that are under review at the DHA Public Health Division;[45] however, AFHSB currently does not capture metrics to further demonstrate the cost-effectiveness of its contributions.[48] Given the realignment of AFHSB into the larger structure of DHA J-3, there are further opportunities to leverage resources and capabilities across the DHA and the Services to serve AFHSB's mission.

Although AFHSB has not finalized performance measures that align with its mission and objectives overall, they have developed performance metrics that track the percent of their surveillance products that meet time and content requirements of the Combatant Commands and the percent of surveillance activities funded by GEIS that support Combatant Command Theater Campaign Objectives and the infectious disease priority list.[45] AFHSB's GEIS section has also developed a strategy and framework for monitoring performance in order to support enhanced Force Health Protection decision making across the Combatant Commands.[49]

Process

In 2012, the DHB noted that AFHSB had defined reporting structures and built strategic relationships. The DHB also stated:

- **Despite strategic relationships with health surveillance and intelligence agencies, challenges remained with the VA and the Defense Threat Reduction Agency, and the DHB recommended greater collaboration with the Defense Threat Reduction Agency, the VA, and others in international medical intelligence;**
- **AFHSB had processes for assuring the highest standard of quality and integrity in data collection, maintenance, and analysis and recommended this be a continued priority and periodically reviewed for improvements; and**
- **AFHSB required Secret Internet Protocol Router Network (SIPRNet) capabilities to enable communication on classified IT systems (Table 16, Appendix B.2).[7]**

There have been numerous efforts since 2012 to improve upon AFHSB's strategic relationships, such as a signed Memorandum of Agreement between the ASD(HA) and the Assistant Secretary of Defense for Nuclear, Chemical & Biological Defense Programs to improve AFHSB's relationship with the Defense Threat Reduction Agency.[47] AFHSB has also strengthened its relationship with government agencies, such as the Centers for Disease Control and Prevention and the Food and Drug Administration. However, the relationship between AFHSB and the VA remains informal.[47]

AFHSB has maintained and improved upon its high-quality processes with its incorporation into the DHA.[47] Currently, the Center is required to provide the status of quality assurance measures, reports quarterly at the Coordination & Collaboration Working Group, and reports monthly to the DHA's Defense Readiness Reporting System. AFHSB also reports periodically to the Director of DHA J-3 and the Director of the DHA.[47] AFHSB, however, is still awaiting SIPRNet access through DHA; the Center is still on the Army information technology system and is scheduled to transition to the DHA health information technology system.[47]

People and Culture

The DHB recognized in 2012:

- **AFHSB's uncertain funding streams result in a significant number of contractors and recommended examining contract staff agreements and transitioning contractor positions to civilian, particularly for leadership roles;**
- **AFHSB's staff had diverse skills, credentials, expertise, and staffing levels, which at a minimum, should be maintained; and**
- **Service liaisons are critical to the success of the Center and should be guarded from deployments ([Table 17](), Appendix B.2).[7]**

As stated previously, AFHSB has a limited number of civilian positions in the DHA Public Health Division Joint Table of Distribution and continues to have significant numbers of contractor personnel.[47] However, AFHSB was able to transition its Deputy Chief position, which used to be a contractor position, to a civilian position, and the Chief of the Integrated Biosurveillance section was transitioned from a temporary IPA position to a civilian position.[47] However, the Chief of Operations remains a temporary IPA position. AFHSB has been able to maintain its civilian and military staffing levels, as well; however, the Center has recently lost senior-level expertise, and it is unclear what impact the continued civilian personnel cuts at the DHA will have on AFHSB. Additionally, with the move to the DHA in 2015, AFHSB no longer has Service liaisons; instead, with the adoption of Service-specific satellites, those functions were assumed by military/GS-level officers at each of the Service-specific public health hubs. Interaction between AFHSB and the Services also occurs at various working groups, such as the DHA Public Health Division's Coordination & Collaboration Working Group or the Health Surveillance Working Group.[47]

AFHSB's Commanding Officer regards its success as a continuing endeavor, although many improvements have been implemented since the last visit.[48] Effective leadership is a requirement for progression and movement into new and innovative directions in military health surveillance tasks. The characteristics of effective leaders for the Branch would include leaders who understand science and medicine; have the ability to be a change agent in a quickly transforming environment; and have flexibility, business acumen, and executive experience.[48]

Structure and Programs

The DHB recognized in 2012 that the roles and responsibilities at AFHSB appeared to be well understood. The DHB also found and recommended:

- **AFHSB had conducted excellent work maintaining information for the Department, such as the DoD Serum Repository;**
- **The Defense Medical Epidemiology Database provides DoD end-users with access to a wealth of health surveillance data, and the DHB recommended that AFHSB maintain the database and continue screening and considering anyone requesting access and that the process for access to Defense Medical Epidemiology Database should be part of future DHB reviews; and**
- **Deployment health data were lacking from databases because of inconsistent in-theater data collection processes across the Services, and the DHB recommended the Services**

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and DoD collaborate to ensure data collection processes were streamlined ([Table 18](), Appendix B.2).[7]

Since 2012, AFHSB has continued to maintain excellent processes and improved its data collection processes across its sections. For example:

- **DMTS:** AFHSB has maintained high-levels of confidentiality for personally identifiable information and protected health information in the DMSS,[47] which is managed by the DMTS section.[50] AFHSB has also fully incorporated Theater Medical Data Stores into the DMSS since 2014, as well as the Services' Periodic Health Assessments, which is a new initiative since December 2016.[47] The DMTS also manages the DoD Serum Repository, which has over 62 million serial serum samples from more than 11 million individuals.[50]
- **GEIS:** AFHSB's GEIS section has maintained a high-level of scientific rigor with its epidemiologic analyses and has continued collaboration and sponsorship of military-relevant surveillance.[47] GEIS is developing workplan activities to provide more fidelity, granularity, and mechanisms to support the Combatant Commands' global health priorities.[48] It has also developed a timeline of their business cycle to provide more robust support to the Combatant Commands and refined its prioritization and review process for selecting GEIS-funded projects to ensure the focus on surveillance, global response, accountability, and effective program management.[45]
- **Epidemiology and Analysis:** AFHSB's Epidemiology and Analysis section has maintained its clear processes and highly-qualified staff and has continued to publish evidence-based information on the current status, trends, and determinants of health of Service members through the *Medical Surveillance Monthly Report*.[47]
- **Integrated Biosurveillance:** The Integrated Biosurveillance section was formed after the DHB's 2012 review, and it currently serves as AFHSB's central biosurveillance coordination unit to meet the needs of DoD medical and public health components and leadership.[51]

SUCCESSES AND ACHIEVEMENTS

AFHSB has provided multiple tools, reports, and input to technical discussions and decision making for the health of the Armed Forces. For example:

- AFHSB completed an analytical report for a congressional inquiry regarding women's health and deployments.
- AFHSB conducted an improved analysis of adverse events related to mefloquine use in Service members, which has been shared with DoD policymakers, U.S. Army Pharmacovigilance Center, and the VA.
- The surveillance activities related to monitoring viruses transmitted by *Aedes* mosquitoes in Kenya, Southeast Asia, and the Americas led to the first detection of the Zika virus in Thailand and Cambodia, thereby helping lead to the detection and monitoring of Zika as it emerged in the Western Hemisphere.[42]

The Integrated Biosurveillance section, AFHSB's newest section, leverages open source data to communicate critical information on health outbreaks and events and produces hundreds of disease-specific summaries yearly to integrate efforts within DoD, other federal agencies, and partner nations in regards to biosurveillance data and information.[51] For example, in FY 2015, the Integrated Biosurveillance section produced and distributed 236 surveillance summaries on

avian influenza A (H7N9), Middle East Respiratory Syndrome Coronavirus, chikungunya, Ebola, dengue, and enterovirus D68.[42]

CURRENT CHALLENGES

Strategy

AFHSB has outlined how its mission aligns with the DHA's strategy, and its GEIS section has developed its own strategic plan for addressing global health and infectious disease issues in order to support the Combatant Commands' priorities.[49] However, AFHSB does not have an overarching strategic plan. A strategy developed in coordination with the DHA would help ensure the value of AFHSB to the agency overall. Additionally, the DHA has instructed AFHSB to look into expanding into areas such as cognitive computing or expanding the use of unstructured data from sources such as the Electronic Medical Records system, as a few examples.[48] However, AFHSB is still determining how to fulfill this guidance.

For AFHSB to successfully meet its vision and mission, it is necessary to address resource constraints:
- AFHSB activities are funded by DHP operation and maintenance funds, which are only available for obligation for the period of one FY, whereas military medical research and development laboratories that AFHSB funds through GEIS are accustomed to two to three year funding cycles.[48]
- AFHSB cannot accept DHP RDT&E funds.[48]
- There is a need for programmed funding for GEIS activities, given the reorganization of AFHSB under the DHA and resulting reduced visibility of GEIS. Instability of GEIS funding would have secondary and tertiary effects on the mission and function of laboratories funded by GEIS.[52]

Process

Prior to the transition to the DHA, AFHSB operated its own network enclave and functioned independently.[48] However, with its transition into the DHA, AFHSB's DMTS section has not been able to fully integrate data with DoD because it remains on the Army's network. Additionally, the DHA's Health Information Technology Directorate has not been programmed to take on AFHSB infrastructure and the DMSS.[53] The costs associated with the DHA's management of the DMSS would be high initially, given the infrastructure changes needed to support the required capabilities.[53] Although DHA management of the DMSS would provide better information technology capabilities for AFHSB, as well as improved cybersecurity, streamlined management, better service, and sustainability, the transition could potentially be time intensive and may inhibit the functioning of the DMTS section, given the importance of the optimal use of data to its operations and objectives. AFHSB is also awaiting SIPRNet access,[48] thereby impeding communication with stakeholders such as the Combatant Commands. Further, the new structure and realignment into DHA has added multiple layers of approval for AFHSB, impeding its ability to manage formal requests with primary customers and Combatant Commands.[48]

People and Culture

As stated previously, AFHSB's staff is largely composed of contractors,[47] who are not authorized to conduct certain official government functions.[36,54] For example, contractors are unable to serve as Principal Investigators and cannot represent the government in an official capacity, requiring human resources to take on these functions.[36] Further, although contractors provide flexibility in pivoting to new projects, there may be frequent turnover of contractor staff, thus threatening the stability of staff and institutional knowledge. This has been a continued issue since the DHB's 2012 report. Additionally, three IPA positions have been lost since the 2012 report, and AFHSB has had difficulties obtaining more civilian positions because of DHA staff cuts and slow hiring processes.[48]

The DHB was also made aware of the dearth of necessary acquisition training in personnel filling acquisition billets during roundtable discussions with AFHSB staff.[48] To effectively conduct the operational and functional areas of research and surveillance, military personnel should have sufficient training on military acquisition rules. This is particularly important for GEIS, provided the scale and impact of acquisition-related decisions and large amounts of funding attached to its programs.

Structure and Programs

Through roundtable discussions with AFHSB staff, it was stated that AFHSB's transition into the DHA has created additional layers of approval for various processes and has thus inhibited the effectiveness of operations. For example:

- AFHSB is required to undergo an added level of scrutiny for data sharing through the DHA Privacy Office when conducting epidemiological analysis for studies.[48]
- In order to be recognized by the National Library of Medicine, AFHSB has maintained editorial integrity and independence for the *Medical Surveillance Monthly Report;* however, the articles must now be vetted through the DHA before publication, which compromises the peer-review process and delays publication. Maintaining editorial independence is a valuable and necessary requirement that should be retained.[48]

Implementing flexible measures by the DHA would help provide a more seamless transition for AFHSB staff and functions, such as timely processing of data sharing requests, maintaining the independence required for the *Medical Surveillance Monthly Report*, and improved SIPRNet access.

WAY FORWARD AND FUTURE OPPORTUNITIES

AFHSB continues to better define its growing role and is embracing possibilities in predictive surveillance and cognitive computing.[48] A potential area of growth would be mapping the impact of AFHSB's surveillance efforts on policies and decision-making processes across DoD and for stakeholders, which could help further demonstrate the value of the Branch.[48] Additionally, the DoD Serum Repository is a unique DoD resource with a wealth of serum and tissue samples collected since 1989, providing opportunities for collaborative partnerships such as the Cancer Moonshot initiative.[55]

AFHSB lacks an overarching strategic plan, and there is no formal overarching, coordinated strategy between AFHSB, NHRC, and DHCC. With AFHSB's recent transition into the DHA, the Branch can help the DHA achieve its strategic objectives, and expanding the DHA's strategic oversight over the Branch would be beneficial. There are also opportunities to leverage other branches within and outside of the DHA Public Health Division to support AFHSB's mission, such as the Defense Centers of Excellence Division or TRICARE Health Plan Division.

1.5 DEPLOYMENT HEALTH CLINICAL CENTER[††]

BACKGROUND

Strategy

DHCC is the psychological health component of the Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury (DCoE). Prior to 2008, the Center was responsible for maintaining and improving care for those affected by deployment-related health issues.[56] DHCC's focus has shifted over time, and its current mission is to "improve the lives of our nation's service members, veterans and families by advancing excellence in psychological health care and prevention of psychological health disorders."[56,57] DHCC's vision is to "be the trusted source and partner in shaping meaningful improvements in psychological health care and prevention of psychological health disorders."[56,57] The Center collaborates across DoD, the VA, and other agencies to help "provide leadership and expertise, inform policy, and drive improvements and policy in psychological health outcomes."[56,57]

DHCC has developed a strategic plan for FY 2016-2018 that details its strategic framework and four core priorities (Table 20, Appendix C.1), which are aligned with the MHS's Quadruple Aim (Figure 1) and the strategic goals of the DHA. DHCC's priorities are also aligned with previous findings and recommendations of multiple task forces and commissions on mental health, such as the DoD Task Force on Mental Health and the President's Commission on the Care for America's Returning Wounded Warriors.[10]

History

DHCC was originally founded as the Gulf War Health Center at the Walter Reed Army Medical Center in 1994 to provide physical and mental health care to veterans[‡‡] for conditions related to deployment. The Gulf War Health Center developed the tertiary treatment component of the Comprehensive Clinical Evaluation Program to provide "systematic clinical evaluations for the diagnosis and treatment of conditions connected to service in the Gulf War."[10] This tertiary care component included a specialized care program for veterans with medically unexplained physical symptoms.[10] In 1999, the Center was re-established as DHCC and designated one of

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[††] This section is a summary of Appendix C, and further information on the DHB's program review of the DHCC can be found in this appendix.
[‡‡] "The term 'veteran' means a person who served in the active military, naval, or air service, and who was discharged or released therefrom under conditions other than dishonorable."[58]

three DHCs. At that time, the Center coordinated the evaluation of veterans seeking care for post-deployment health concerns using the Post-Deployment Health Clinical Practice Guidelines. These guidelines replaced the Comprehensive Clinical Evaluation Program[56] and expanded its specialized care program to include veterans with trauma spectrum disorders or post-deployment reintegration challenges.

In 2008, with the mandate of the National Defense Authorization Act, DHCC became a center within DCoE[10] and its mission shifted primarily to psychological health—specifically the implementation of strategies to prevent, diagnose, mitigate, treat, and rehabilitate those suffering from post-traumatic stress disorder and other mental health conditions. In 2012, the oversight and administration of the specialized care program was transitioned to the National Intrepid Center of Excellence, while the direct patient care activities of DHCC were eliminated.[10,56] The Post-Deployment Health Clinical Practice Guidelines were retired in 2014 by the VA/DoD Evidence Based Work Group.[56]

Organization

DCoE and DHCC have undergone several realignments. In 2012, they were moved from the TRICARE Management Activity to the U.S. Army Medical Research and Material Command.[7] In February 2016, DHCC and the other DCoE Component Centers were transitioned into the DHA J-3 Directorate. As such, DCoE's and DHCC's strategic initiatives are now aligned directly with the goals and objectives with the DHA. Figure 6 demonstrates DHCC's placement within the DHA, and Figures 21 and 22b in Appendix C.1 detail DHCC's internal organization.

Figure 6. Basic Organizational Chart of DHA and the DHA Operations Directorate[§§]
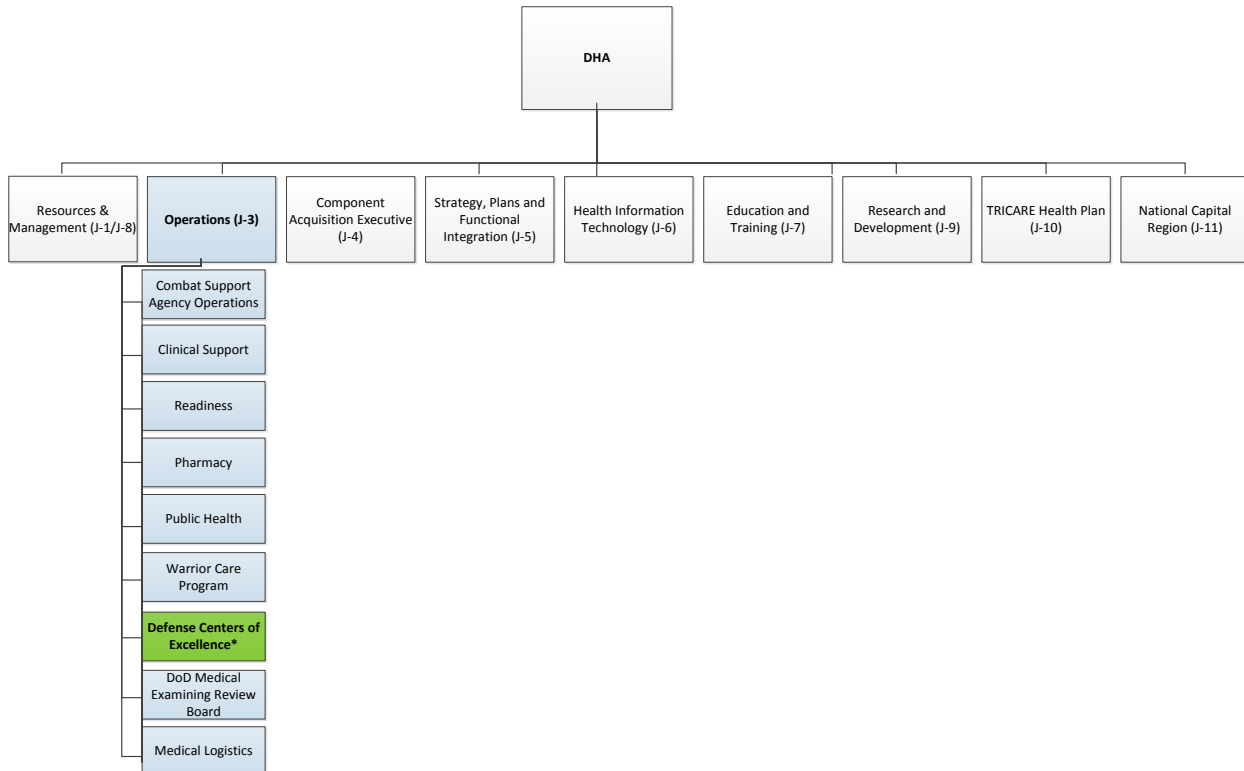
*DHCC is located under the Defense Centers of Excellence
Adapted from DHA, 2017.

PROGRESS SINCE LAST VISIT

Strategy

The DHB conducted two reviews of DHCC: one in 2012, and one in 2013.[7,8] During these separate visits, the DHB found and recommended the following:

- **DHCC was being repositioned and the DHB recommended its transition be closely monitored by the Department to ensure DCoE is able to monitor DHCC and ensure adequate oversight of component center budgets;**
- **DCoE and DHCC should continue to reassess strategic goals and objectives as part of normal strategic planning processes; and**
- **DHCC's name implies its focus is broader deployment health issues and it should consider changing its name to better align with its mission (Table 22, Appendix C.2).[7,8]**

[§§] The DHA organizational structure is simplified to only show only DHA Directorates J1-J11 and the organizations under DHA Operations Directorate (J-3).

Since the DHB's 2012 and 2013 reports, DHCC has undergone several transitions. DHCC has moved forward in developing a comprehensive strategic plan, and DHCC teams and leadership review strategic plans quarterly to ensure its efforts are aligned with its core strategic priorities (Table 20, Appendix C.1).[56] However, despite previous recommendations from the DHB, DHCC has been unable to change its name to better conform to its current mission and scope because of the frequent organizational transitions.[59]

Process

As part of its 2012-2013 program reviews of DHCC, the DHB found and recommended the following:

- **DHCC had provided limited data on the outcomes of its various projects and activities and no data on the cost effectiveness of its projects or programs. The DHB recommended DHCC develop and follow formal processes for assessing their projects;**
- **The reorganization and realignment of former DCoE components under DHCC resulted in the physical separation of DHCC staff and the DHB recommended collocating all DHCC offices; and**
- **DHCC should leverage the Public Health Service Commission Corps to obtain Public Health Service Officers and continue to strive to include greater representation of all three Services in their staffing (Table 23, Appendix C.2).[7,8]**

Since the DHB's previous reviews, DHCC has been working to recruit military leadership and Public Health Service officers, but has experienced challenges related to limited Service manning commitments and support, frequent reorganizations of DCoE, and external governance.[59] Currently, DHCC has three Public Health Service officers as well as three active duty personnel, one from each Service, but has yet to fill five additional military billets assigned to the Center by the DHA.[59]

In 2015, DHCC successfully consolidated all of its offices and collocated with DCoE in Silver Spring, Maryland.[56] Further, since the DHB's last visit, DHCC has developed and implemented the Concept Approval and Project Review (CAPR) initiative, which supports project selection, development, and monitoring. This initiative has seven, gated phases that help ensure DHCC's project management approaches are incorporated into project planning, development, and execution and provides DHCC leadership visibility of projects' progress towards established goals and objectives.[56]

People and Culture

After its 2013 review, the DHB noted DHCC's efforts to convert contract positions to civilian and Service positions; however, **rather than filling permanently authorized positions, a few military positions were detailed to the Center from other organizations. The DHB recommended that DCoE and DHCC secure permanent billets for military leadership positions at DHCC and convert contract positions to civilian personnel (Table 24, Appendix C.2).[7,8]** DHCC has since secured a qualified senior military leader as the Director, and has transitioned leadership positions held by contractor staff to civilian positions.[59] Currently, all of DHCC's Associate Director positions are filled with civilian staff, thereby maintaining institutional knowledge and providing project implementation continuity.[59]

Structure and Programs

In 2012, the DHB commented on DHCC's organizational structure and operational programs and recommended that its programmatic efforts align with DHCC's new strategy and direction.[7] Further, the DHB stated all programs should be cost-effective, using appropriate evaluation methods, and should adequately assess outcomes. After its 2013 review, the DHB recognized the following:

- **DHCC has made significant progress in meeting recommendations from 2012, and the reorganization of DHCC enhanced its capabilities; and**
- **DHCC established a department, the Psychological Health Performance and Analytics Directorate, which bridged a gap with DCoE's program effectiveness efforts (Table 25, Appendix C.2).[7,8]**

Since the 2012-2013 reviews, DHCC has maintained this structure and has enhanced its cross-directorate, and cross-agency collaboration.[59] For example, DHCC has collaborated with AFHSB to standardize mental health disorder case definitions, epidemiological methods and procedures, and routine mental health reporting. DHCC has also collaborated and consulted with NHRC on its DoD's Women's Health Workgroup and NHRC's research related to mental health issues.[56,60] DHCC's Psychological Health Performance and Analytics Directorate also uses the previously mentioned CAPR process to oversee and monitor program effectiveness.[59] The CAPR process promotes transparency; uniformity with DCoE's project management approach, tools, and templates; accountability; and organizational impact through alignment with DCoE's Strategic Objectives.[59]

SUCCESSES AND ACHIEVEMENTS

DHCC has made significant progress since the DHB's 2012 and 2013 reports, specifically providing:

- **Increased Readiness**, by ensuring Service members are psychologically ready to deploy and that military providers have the tools necessary to provide psychological health care anytime, anywhere.
- **Better Health**, by reducing barriers to care and providing prevention and early intervention methods that are effective in reducing psychological health disorders.
- **Better Care**, by providing evidenced-based tools and techniques that are Service driven and usable in the field.
- **Lower Cost**, by providing oversight to Service level programs (for example, Substance Use Disorders and Combat & Operational Stress Control) and facilitating DoD/VA standardization of research, clinical, and education methods.[56]

DHCC has had numerous successes since the previous reviews, such as increasing the capacity to conduct psychological health surveillance activities, establishing the VA/DoD Practice Based Network, and obtaining laboratory designation to streamline and enhance its administrative processes related to research.[56,61] Within DHCC, its departments have detailed its recent successes:

- **Administration and Operations:** Has successfully implemented the DHA Function and Manpower Alignment Prioritization tool to prioritize DHCC's work, products, resources, and

manpower optimally and has developed a financial management training program for key personnel to better develop common understanding of financial processes and improve fiscal accountability within the command.[62]

- **Psychological Health Research**: Is exploring using big data, conducting systematic reviews for initiatives to synthesize evidence-based practices, and has established an annual gap identification process for psychological health research.[62]
- **Psychological Health Performance and Analytics**: Is improving the process for ensuring quality data analysis and is leveraging resources, such as analysts from AFHSB and DCoE, to more efficiently complete requests in a timely manner. The team also implemented the CAPR process, which was presented to the American Evaluation Association.[57]
- **Psychological Health Clinical Care**: Has developed a Practice-Based Implementation Network and is evaluating its implementation at 31 clinic sites across DoD. Specifically, the Psychological Health Clinical Care team is working with a health care economist to determine if this model is sustainable and provides a return on investment, and they are waiting on provider feedback on the gaps to implementation and will determine the feasibility and scalability of this approach.[62]
- **Psychological Health Promotion:** Has worked with the RAND Corporation to develop an item bank on addressing stigma and other barriers to behavioral health care and measures these regularly. The draft was submitted to DoD in December 2016.[57,62]
- **Primary Care Behavioral Health**: Works on various initiatives and projects to integrate psychological and behavioral health services with primary care to ensure that Service members and beneficiaries are psychologically healthy, such as the completion of a curriculum and regular training programs for Internal Behavioral Health Consultants, behavioral health care facilitators, external behavioral health consultants, and patient-centered medical home leaders.[62]

Further examples of recent DHCC successes are provided in Appendix C.3.

CURRENT CHALLENGES

Strategy

As previously noted, DHCC has been challenged to develop a comprehensive strategy because of its frequent organizational transitions and changes in leadership.[59] The DHA does not specifically provide overarching strategic guidance to the two DHCs it oversees, DHCC and AFHSB, and frequent reorganizations make it difficult for DHCC to receive consistent strategic guidance and direction from leadership.[59] DHCC requires a constant, enduring home and governance structure to continue to strengthen its cohesive team and fully execute its mission.

Process

Hiring processes for DHCC have been cumbersome, due to limited Service manning commitments and support, as well as the Center's recent and frequent organizational changes and realignment.[59] With the restructuring, there are also uncertainties in titles for staff, and some positions have been eliminated.[62] An updated Joint Manning Document could help clarify many of these issues for leadership moving forward; however, this is currently still being developed

and finalized by DHA.[62] It is the DHB's understand that currently, the teams at DHCC have a high workload due to being understaffed, which is then compacted by the issue of hiring delays with the transition under the DHA.[59,62] Moving forward, DHCC leadership would like to ensure that staff is professionally diverse and not solely psychologists.[62]

With the realignment under DHA J-3, DCoE now reports to DHA J-3 first, then to DHA, and then up to the Office of the Secretary of Defense for Health Affairs.[56] The Centers of Excellence Oversight Board continues to oversee the work of DCoE and DHCC.[56] Because of the additional layers of reporting with its realignment under DHA, DHCC has struggled with timely approvals for survey requests and Institutional Review Board approvals.[56] DHCC is also still on the Army's IT network, which inhibits DHCC's communication with the DHA; however, DHCC is scheduled to transition onto the DHA IT network.[62]

DHCC experiences challenges related to the funding of its research projects, which are strictly DHP operation and maintenance-funded and are only available for obligation for the period of one FY,[63] which is not conducive for long-term research activities. The Center is currently trying to expand education and training opportunities for staff related to acquisition and financial processes.[62] Another challenge is the lack of sufficient metrics to demonstrate the effectiveness of DHCC, particularly the value of individual projects and initiatives. However, DHCC has actively worked to become more data driven overall with their processes and outcome metrics.[60]

DHCC has been unable to change its name to better align with its current mission, as previously recommended by the DHB. Given the improvements in developing a clear strategic plan, mission, and vision, DHA and DCoE can now work with DHCC to establish a name that reflects the level of expertise and scope of the Center, while also ensuring the name properly reflects the new alignment within the agency.[62]

People and Culture

DHCC has continued to have staffing challenges since the 2012-2013 reports. The Center continues to rely heavily on contractors, which is not sustainable for building capacity and maintaining institutional knowledge. Although a 2015 functional analysis conducted on staffing requirements for DCoE identified a requirement of 150 government positions, DCoE was only granted approval to hire up to 89 civilians.[56] Further, the DHA Joint Table of Distribution, a manpower document that identifies the positions and number of spaces approved for each organizational element of a joint activity for a specific FY, lists DCoE's military personnel requirements (Table 27, Appendix C.4).[64] However, the Services have not authorized personnel to fill the available positions; the Services currently provide personnel at their own discretion, as filling a DCoE or DHCC position means another authorized position goes unfilled.[56] DHCC has three military personnel on staff (one from each Service) and three Public Health Service officers.[56] Public Health Service officers have been easier to hire at DHCC, as the Center has had historic difficulties hiring civilian personnel into vacant positions and securing additional military personnel.[59,61] Further, Public Health Service officers help fulfill important government functions. As for contract positions, DCoE does not have the authority to convert these to government positions. Contractor positions are determined depending on the number of civilian positions filled and the number required to adequately and efficiently complete

activities.[56] As of May 2017, DHCC had yet to staff 28 civilian and 5 military positions (Table 27, Appendix C.4).[56]

Structure and Programs

Teams within DHCC have expressed challenges with implementation of specific programs and initiatives. For example:

- **Primary Care Behavioral Health**: Has faced difficulties integrating Primary Care Behavioral Health programs with primary care as the implementation process was not initially effective, clinics are owned by the Services, and there is high turnover of staff in clinics. Additionally, there are challenges associated with primary care and specialty care staff working more effectively together. The team is revamping it to ensure primary care providers and leaders are more involved and invested in the program.[62]
- **Psychological Health Research:** Has developed an annual gap identification process for psychological health research across DoD, but this process is not comprehensive since there is no aggregated system to make information on psychological studies funded by DoD accessible.[62]
- **Psychological Health Clinical Care:** Implements the Practice-Based Implementation Network, but has encountered challenges trying to standardize implementation practices from one environment to the other. It is difficult to standardize methodology and approaches across the Services; however, the proposed changes in the FY 2017 National Defense Authorization Act may bring more standardization in the future.[62]

WAY FORWARD AND FUTURE OPPORTUNITIES

DHCC's realignment under the DHA could provide beneficial opportunities to collaborate with other entities within DoD and DHA that perform similar functions, such as the other Centers of Excellence. The Centers' resources could be shared, there is potential for increased utilization of products developed by the Centers of Excellence, and there are opportunities for developing robust, standardized, and streamlined metrics to measure impact. Additionally, the DHB was informed that DHCC is now better positioned to collaborate across DoD and with other federal agencies, such as the VA.[62]

Through the CAPR process, DHCC has developed a monitoring and evaluation approach and now assesses the alignment and effectiveness of some of its programs. However, the strategic measures for the Center are currently in development and will continue to be in a preliminary phase throughout FY 2017. On a quarterly basis, the strategic alignment of projects are reviewed, as new activities come forth, leading to more refined metrics for measurement of effectiveness. The team is working on both project level and portfolio level metrics to guide the Center overall.

DHCC leadership has also expressed the goal of improved capture and collection of cost data to fulfill requests from DHA and to demonstrate the cost-effectiveness of their studies. One challenge in conducting cost analyses is that financial data is not easily available or captured within the MHS. Although DHCC does not measure the cost-effectiveness of its programs on a continuous basis, the Center has begun weekly accounting for its resources, which are aligned

with portfolio initiatives, as part of the CAPR process. This process is being continuously improved and is an opportunity to monitor cost-effectiveness.[60] Moreover, it was stated to the DHB that DHCC has also been leveraging the skills of the health economist, based at DCoE, to better understand and present the added value of its research.[62]

In terms of upcoming activities and projects, the DHCC team will be focusing on three areas of implementation: combat and operational stress control, suicide prevention, and substance use disorders.[56] New assignments will undergo the CAPR process review to ensure they align with DHCC's mission, to improve the psychological health and prevent psychological health disorders for Service members, veterans, and their families. Other projected activities include establishing a working group to enhance provider utilization of DoD mental health technicians and a variety of health services studies and projects that will use big data for analysis and research.[56]

Within the DHA, DHCC is positioned to be a leader in psychological health research and could assist with analyses related to the Mental Health Assessment portion of the Periodic Health Assessments. It will be important going forward to determine the effectiveness of these Periodic Health Assessments to adequately assess the psychological health of Service members, particularly deployed personnel. Analyses of Periodic Health Assessments could help lead to the development of predictive indicators for the long-term impact of repeated deployments as well as other psychological health challenges experienced by Service members. DHCC could be the portal for determining which emerging therapies, both medical and nonmedical, can be considered for piloted study in the military.

SUPPORTING APPENDICES

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APPENDIX A. NAVAL HEALTH RESEARCH CENTER

A.1 BACKGROUND

STRATEGY

The Naval Health Research Center (NHRC) is the designated Department of Defense (DoD) Deployment Health Research Center, and its mission is to optimize "the operational health and readiness of our armed forces by conducting research and development to inform DoD policy and practice."[12] The Center has four core research focus areas: Operational Readiness and Health, Medical Informatics,[14] Military Population Health,[15] and Operational Infectious Diseases. It is strategically located at Naval Base Point Loma in San Diego with access to 95,000 U.S. Navy and Marine Corps Service members,[12] world-class universities, and biotechnology and industry partners.[18] Further, its location allows for collaboration with other local Navy institutions, including Naval Hospital Camp Pendleton, Naval Medical Center San Diego, and their higher headquarters, Navy Medicine West.[19]

NHRC's research aligns with Navy Medicine and fleet requirements, supporting medical readiness, health, and wellbeing for Service members and their families.[18] Further, although NHRC is not aligned under the Defense Health Agency (DHA), its research aligns with the DHA's goals as it supports "the health and readiness of all Service members – the Soldier, the Airman, the Marine, and the Sailor."[17] Finally, NHRC's requirements-driven medical research, development, test, and evaluation supports the intent of the DoD Deployment Health Centers: to "improve the ability to identify, treat, and minimize the short- and long-term adverse effects of military service on the mental and physical health of veterans."[1,17]

HISTORY

NHRC was established as the U.S. Navy Medical Neuropsychiatric Research Unit in 1959 and in 1960 began its first longitudinal research efforts.[12] In 1974, it was re-designated NHRC "to study medical and psychological aspects of performance."[12] In September 1999, the Assistant Secretary of Defense for Health Affairs (ASD(HA)) was delegated authority to establish a center devoted to "longitudinal study to evaluate data on the health conditions of members of the Armed Forces upon their return from deployment,"[2] as required by Section 743 of the Fiscal Year 1999 National Defense Authorization Act. As a result, NHRC was designated the DoD Deployment Health Research Center in 2001 to conduct "epidemiological studies investigating the longitudinal health experience of previously deployed military personnel, and the development and evaluation of appropriate health surveillance strategies."[2]

Navy Medicine West, an Echelon III command, is under the command and control of the U.S. Navy Bureau of Medicine and Surgery (BUMED), and, in August 2015, it assumed cognizance over the U.S. Navy research and development enterprise headquartered by Naval Medical Research Center.[20] Figure 7 demonstrates a timeline of NHRC's history.

Figure 7. Timeline of NHRC History[2,7,12,20]
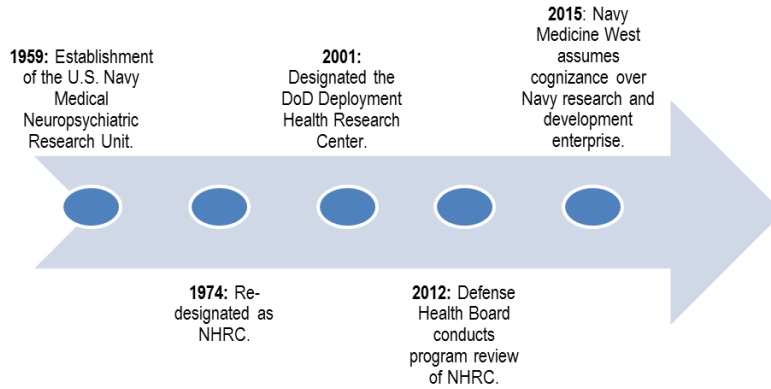
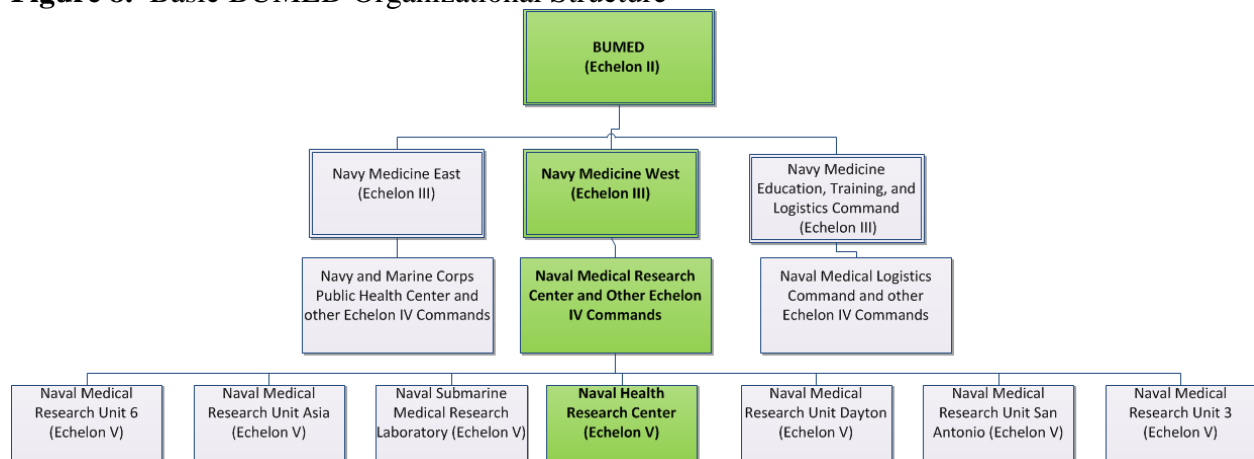

Adapted from NHRC, 2016.

ORGANIZATIONAL STRUCTURE

Figure 8 illustrates the organizational structure of BUMED. NHRC is one of seven subordinate laboratories that falls under Naval Medical Research Center in Silver Spring, Maryland, and is also a major research laboratory.[19] NHRC, as an Echelon V command, has additional layers of command and control that provide more complexity to its research processes and approvals.[17]

Figure 8. Basic BUMED Organizational Structure[21]


Adapted from Navy Medicine, 2017.

Figure 9 demonstrates the internal organizational structure of NHRC. Of note, the DoD HIV/AIDS Prevention Program, currently located at NHRC, is undergoing realignment to fall under the DHA. It is the Defense Health Board's (DHB's) understanding that the program's resources and staff will move with the program, with funding to be funneled through the DHA.[24]

Figure 9. Organizational Structure of NHRC[18]
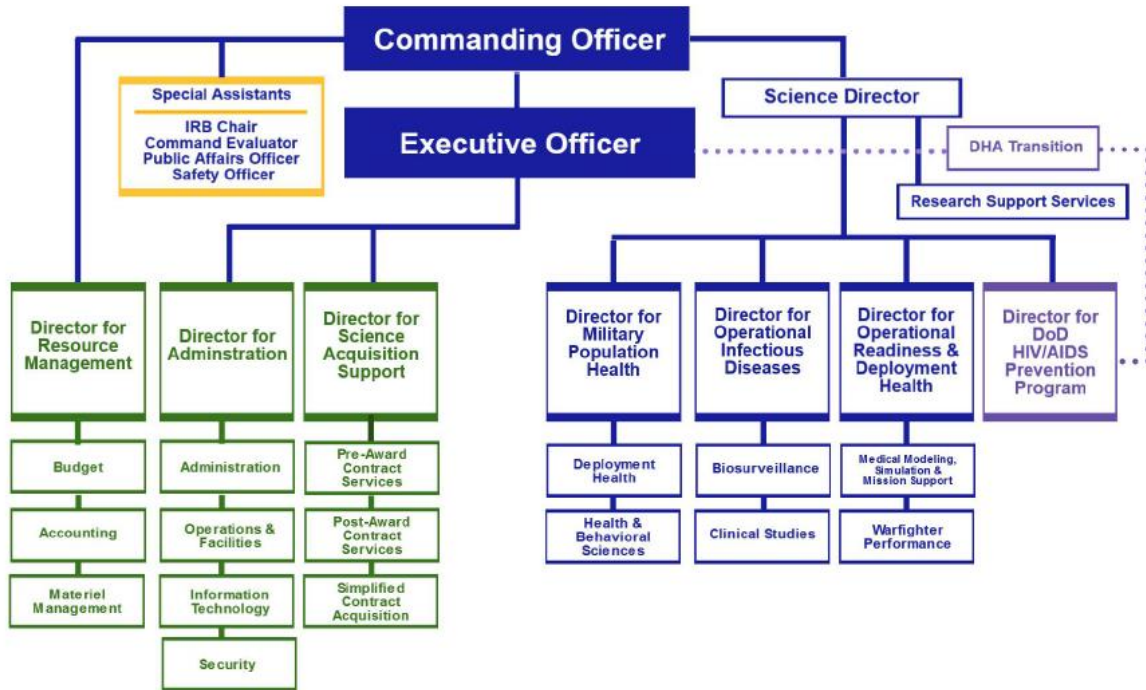
From NHRC, 2016.

NHRC has a diverse and talented staff, comprised of active duty members, government staff, contractors, and temporary employees through the Intergovernmental Personnel Act Mobility Program.[18] Within this staff, there is a broad range of subject matter experts with diverse educational backgrounds, including the following degrees: Doctor of Philosophy (PhD), Doctor of Medicine (MD), Master of Public Health (MPH), Master of Science (MS)/Master of Arts (MA), and Master of Business Administration (MBA) (Table 2). NHRC's researchers are experts in fields such as physiology, microbiology, psychology, biomechanical engineering, and epidemiology (Table 3).[18] Key leadership qualities of the Commanding Officer are critically important to continued momentum of NHRC: a clear understanding of the conduct of research, ability to clearly communicate and translate research products into initiatives and policies, and an effective collaborator.

Table 2. Staff Composition at NHRC, by Number[18]

Type of Staff	Active Duty: 18 Government: 55 Contractors: 342 Intergovernmental Personnel Act: 3
Educational Background	PhD: 56 MD: 5 MPH: 46 MS/MA: 35 MBA: 4

From NHRC, 2016.

As stated previously, NHRC conducts research in Operational Readiness and Health, Medical Informatics, Military Population Health, and Operational Infectious Diseases; Table 3 lists the primary research portfolios for each of these areas; subject matter expertise on staff, when available; and capabilities.

Table 3. Research Portfolios at NHRC[13-16]

Core Research Area	Research Portfolio	Staff Subject Matter Expertise	Capabilities
Operational Readiness and Health	• Warfighter Performance • Psychological Health and Readiness • Operational Readiness Studies and Analyses	• Physical therapists • Kinesiologists • Biomechanical engineers • Neuropsychologists • Microbiologists • Molecular biologists • Aerospace experimental psychologists	• Driven by fleet requirements and addresses the physical and psychological health of Service members • Support military leaders and decision-makers by harnessing the power of the Medical Informatics Division to support operational planning and readiness
Medical Informatics	• Proprietary Databases • Studies with Data Collection • Data Extraction and Analyses • Data Collection and Analyses	Not Available	• Collect, analyze, and interpret health and medical data • Capabilities: medical planning, casualty estimation, and data management; casualty care and operational risk assessment; and medical intelligence for expeditionary medical planning and logistics
Military Population Health	• Longitudinal Research Studies • Behavioral Health Products • Global Public Health Support	• Preventive medicine physicians • Epidemiologists • Microbiologists • Research psychologists • Biostatisticians • Nurse researchers	• Conduct longitudinal studies on military populations • Develop and evaluate programs and products that support health and wellness • Execute research that supports public and global health initiatives.

Core Research Area	Research Portfolio	Staff Subject Matter Expertise	Capabilities
Operational Infectious Disease	• Febrile Respiratory Illness Disease Surveillance • Enterics Surveillance • Etiology and Epidemiology of Pneumonia • Streptococcus Pneumoniae Surveillance • Meningococcal Surveillance • Rapid Diagnostics and Testing • Vaccine and Therapeutic Clinical Trials • Post-Vaccination Studies	• Clinicians • Scientists • Technicians • Administrative support personnel	• Conduct basic and applied biomedical research to address infectious diseases that can impact military personnel across the globe • Populations-based surveillance for enteric and respiratory pathogens

From NHRC, 2017.

A.2 PROGRESS SINCE LAST VISIT

STRATEGY

After its designation as a DoD Deployment Health Research Center in 2001, NHRC was provided with a revised mission and a detailed concept of operations that outlined specific areas for inclusion in its research portfolio, as well as staffing and capability requirements. In 2012, the DHB reported, "NHRC has successfully incorporated all requirements outlined in the founding concept of operations into its organizational structure" and that "operations are well within its pre-defined scope of operations and are in accordance with its mission."[7] The DHB found in 2012 that "NHRC receives funding from a wide variety of sources;"[7] "very little funding is provided through the Program Objective Memorandum,*** with the exception of funding for the Millennium Cohort Study and infectious disease surveillance."[7]

As described in Table 4, while NHRC's overall funding has not significantly changed since the 2012 report, this has been driven largely by their collective capacity to find funding to keep the core human capital infrastructure in place. This lack of core funding comes with a risk; reliance

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*** "The final product of the programming process within DoD, a Component's POM [Program Objective Memorandum] displays the resource allocation decisions of the military department in response to, and in accordance with the Defense Planning Guidance (DPG). The POM shows programmed needs 5 years hence (e.g., in FY 2016, POM 2018–2022 will be submitted)."[65]

on external funding inadvertently drives NHRC's strategic requirements for its research activities.[22] Further, there is no formal process to align DoD medical research requirements and priorities with DoD's strategic mission, thus making it difficult to compete for and obtain funding for core competencies.[17] As stated in a 2011 Center for Strategic and International Studies report on DoD overseas medical research laboratories:

> limited and unpredictable budgets, combined with increasing competition for external research funds, threaten the scientific capabilities on which the laboratories rely to achieve their military readiness mission. This chronic deficiency in core funding motivates the laboratories to take on research and program opportunities beyond their primary missions of product development and disease detection.[66]

Due to these multiple sources of funding and strategic direction, including direction from Naval Medical Research Center or Navy Medicine West, NHRC has faced challenges in forming a comprehensive strategic plan**.** Although the autonomy of NHRC to achieve its mission and vision is important, there is also benefit to engaging in more integrative strategic planning with similar organizations, such as the other DHCs, in order to improve performance and dynamism.[23] Part of NHRC's research portfolio and capabilities overlap with those of other DHCs (e.g., behavioral health and surveillance).[24] However, there is currently no formal coordination between NHRC, the Armed Forces Health Surveillance Branch, and the Deployment Health Clinical Center, but there are informal coordination efforts.

Table 4. 2012 DHB Findings and Recommendations and 2016-2017 Status Update[7,18]

	2012 Findings	2012 Recommendations	2016-2017 Status Update Since Last Report
2012	Budget appears to be managed well. Scientific Support Office fulfills a critical role in securing ongoing funding.	As funding becomes more limited, DHB recommends that DoD continue to provide funding for research activities at NHRC to the greatest extent possible. Sustainment of Armed Forces Health Surveillance Center (AFHSC) Global Emerging Infections Surveillance funding to maintain NHRC's Biosafety level-3 lab as well as funding for the Millennium Cohort Study should be considered imperative.	• There have been no significant changes in the budget since the last review. • DHA management of Defense Health Program funds has made other competitive funding streams accessible. • NHRC Biosafety level 2+/3 project was funded for a $1.8 million renovation and upgrade and is estimated to be completed in October 2017. • Although Millennium Cohort funding has been consistent at $6.5 million, the program needs to attain a DoD sponsor for survey and database sustainment rather than obtaining those funds through various sponsors. Continuing strategic funding is the key to sustainment over the 67 year scheduled life of the longitudinal study. Also, the partnership with the Department of Veterans Affairs and Million Veteran Program requires additional DoD funding for those related, but separate initiatives.
2012	NHRC seems to be functioning optimally within current organizational structure.	DHB recommends as much stability as possible be maintained through any potential reorganization by BUMED.	• NHRC has shifted from an Echelon IV command to an Echelon V command. • NHRC Departments have been maintained. Science Directorates have been created to ensure a greater leadership role in representing the research. • Although the latest reinvention at BUMED has had minimal impact on NHRC's internal structure or research portfolio, the position of NHRC deep within the Navy organizational structure creates difficulty in completing some administrative processes.

Adapted from NHRC, 2016.[†††]

[†††] Responses on progress since the 2012 report were provided by each of the DHCs; the DHB modified the 2016-2017 status updates based on their observations.

PROCESS

In 2012, the DHB cited NHRC's central location as beneficial for partnerships with other academia, industry, and other military medical facilities, noting that these partnerships strengthen communication with key stakeholders.[7] Further, the DHB found that while some departments at NHRC conducted tri-Service research, all departments were strongly embedded in Navy and Marine Corps operations. Additionally, the DHB recommended expanding communication with the Army and Air Force and expanding pilot studies and outreach activities, such as the Recruit Assessment Project.[7] The DHB also found that communication within NHRC was strong.[7] The DHB noted that NHRC's website contained limited information about its current research and activities, as detailed in Table 5. To improve its communication processes, NHRC leadership has recently hired a Public Affairs Officer, who provides directors with monthly growth statistics to track NHRC's communication tools and the benefit they provide to customers and stakeholders.

Table 5. 2012 DHB Findings and Recommendations and 2016-2017 Status Update[7,18]

	2012 Findings	2012 Recommendations	2016-2017 Status Update Since Last Report
2012	NHRC has developed many partnerships and maximizes available resources.	Improving visibility online for NHRC is important. NHRC should redesign the website to help solicit additional interests from potential research partners and sponsors.	• Since 2012, NHRC has revamped its website and refinements continue today. NHRC has also developed a robust communication plan to help increase the center's visibility and reach. Additionally, NHRC has leveraged social media to promote communication.
2012	Some departments conduct substantial Tri-Service research; all departments are strongly embedded in Navy and Marine Corps operations.	Communication should be expanded with Army and Air Force in some departments, through pilot studies and outreach activities for example.	• NHRC regularly partners with colleagues from other Services on studies, working groups, and collaborative projects that inform the policies of DoD and its agencies. • Partnerships include: Joint Trauma Analysis and Prevention of Injury in Combat, Centers for Disease Control and Prevention, Defense Threat Reduction Agency, Department of Veterans Affairs, Extremity Trauma and Amputation Center of Excellence, Global Emerging Infections Surveillance, Armed Forces Health Surveillance Branch, Food and Drug Administration, all DHA Joint Program Committees, and the Military Women's Health Research Interest Group.

From NHRC, 2016.

The Public Affairs team has developed a cohesive branding strategy and marketing tactics, with a focus on social media, to increase their reach and visibility. The Public Affairs team has also developed indicators and metrics to measure outputs and reach. For example, the team captures

the number of times NHRC is featured in published stories or news releases. Since the establishment of the Public Affairs team, NHRC has increased its activity on social media with a 76 percent increase in Facebook "Likes" and more than 10,500 impressions on Twitter.[17]

The Public Affairs team has also worked to include more information on its current work and accomplishments. This includes making NHRC informational, educational, and health promotion materials available online, to include tri-folds, one-pagers, books and e-books, and videos. These efforts build stakeholder awareness on the research capabilities of NHRC, highlight research expertise and accomplishments, expand the reach of important products to the customer, and communicate the impact the Center has on operational readiness.[17]

As cited by the DHB's 2012 report, NHRC's broad scope of work and its strategic location in southern California provide opportunities for partnerships with academia, industry, other federal agencies, and across the Services;[7] Table 6 lists current research partnerships.

NHRC's partnerships and collaborations are multi-faceted and directly support the Center's diverse focus areas, including:
- optimizing warfighter performance and health through the Deployment Health and Operational Readiness focus area;[25]
- collecting, analyzing, and interpreting medical data for improving the health outcomes of Service members through medical informatics;[14] and
- promoting and protecting the health of the military and their families through the Military Population Health focus area.[15]

Table 6. NHRC Partners for Operationally Relevant Research[18]

Partnership Agency	Specific Partnerships
DoD	Congressionally Directed Medical Research Programs
	Military Operational Medical Research Program
	U.S. Army Medical Research and Materiel Command
	Defense Health Agency
	Global Emerging Infections Surveillance
	Extremity Trauma and Amputation Center of Excellence
	Center for Security Forces- Survival, Evasion, Resistance and Escape
	Defense Threat Reduction Agency
	Armed Forces Health Surveillance Branch
	Joint Program Office/Medical Countermeasure Systems
	Joint Program Committee-5/Joint Program Committee-8
	Defense Advanced Research Projects Agency
	Joint Trauma Analysis and Prevention of Injury in Combat
Navy/Marine Corps	U.S. Navy Bureau of Medicine and Surgery
	Naval Sea Systems Command
	Naval Air Systems Command
	Navy Personnel Command
	Navy Special Warfare Command
	Explosive Ordnance Disposal
	International Maritime Exercise Force

Partnership Agency	Specific Partnerships
	Marine Corps Forces Command
	Marine Corps Training and Education Command
	Office of Naval Research (Codes 30 and 34)
Federal Agencies	National Institutes of Health- National Institute of Allergy and Infectious Diseases
	Centers for Disease Control and Prevention
	Department of Veterans Affairs
	Food and Drug Association

Adapted from NHRC, 2016.

PEOPLE AND CULTURE

The DHB previously stated that "the staff members at NHRC are one of the Center's strongest assets."[7] Today, NHRC's breadth of expertise helps the Center meet its mission as a DoD Deployment Health Center, and NHRC has not only maintained, but improved upon its staff experience and diversity (Table 7). NHRC intends to integrate more military personnel from the Navy and from across the Services, as well as hire additional government civilians. However, the process for hiring government staff at NHRC has been slow. It was stated to the DHB that NHRC leadership is challenged by limited authority over hiring as the numbers and processes are controlled by the Department of the Navy, which has a smaller Human Resources staff compared to the other Services. This has inhibited hiring of government staff at NHRC.[24]

Table 7. 2012 DHB Findings and Recommendations and 2016-2017 Status Update[7,18]

	2012 Findings	Recommendation	2016-2017 Status Update Since Last Report
2012	Experience and credentials of research staff are broad, ensuring research capabilities encompass conceptual framework put forth by ASD(HA) in 1999.	DHB commends NHRC on their diverse and experienced staff composition. This should be maintained.	• NHRC has maintained and improved on staff experience and diversity. Currently, NHRC staff is made up of 18 active duty Service members (includes 1 Army and 1 Air Force), 85 civil service employees, and 275 contractors (see Table 2) • NHRC's education and experience is also key to success with 56 PhDs, 5 MDs, 46 MPHs, 35 MS/MA, 4 MBA and expertise in relevant fields including epidemiology, physiology, microbiology, psychology, biomechanics, software and biomechanical engineering, and neuroscience

From NHRC, 2016.

The Commanding Officer and leadership team have implemented several initiatives to improve the organizational culture at NHRC. For example, the Commanding Officer conducts meetings with incoming staff to ensure their proper welcome and integration into the team and uses this as an opportunity to address and note any issues the Center may be facing. Leadership also distributes surveys to government staff and military personnel to measure culture and satisfaction in the workplace. There is visibly effective collaboration across the departments and synergistic interaction between staff, with cross-pollination across the Operational Readiness and Health,

Medical Informatics,[14] Military Population Health,[15] and Operational Infectious Diseases focus areas.[24]

Effective leadership is crucial to building and maintaining a beneficial organizational culture. Important leadership qualities required to successfully drive NHRC include:

- understanding and approaching the organization as a small business given the challenges NHRC faces with securing funding and changes to BUMED's organizational structure;
- adhering to the core mission while remaining in alignment with larger strategies, such as championing the research staff's issues and ensuring that stakeholders and external entities understand the significance of research; and
- developing a research career path and understanding its significance in being able to lead research at NHRC.

STRUCTURE AND PROGRAMS

The DHB affirmed the effectiveness of NHRC's organizational structure in 2012 and recommended that it be maintained.[7] As shown in Table 8, DHB also commented on the value of various research projects and technologies, provided recommendations on their continuity, and also provided recommendations to encourage efficiency of data access.[7] As stated previously, the reorganization of BUMED has had little impact on NHRC's internal organization or its research portfolio.[18] However, the reorganization has shifted NHRC from an Echelon IV command to an Echelon V command, adding additional layers to the review and approval processes (see Figure 8).[18] Specifically, the timeline for establishing agreements, such as cooperative research and development agreements has been lengthened by the additional layers of approval required.[17] These challenges make it difficult to function as an effective research unit.

NHRC has been able to improve the efficiency of data access, such as merging DoD pharmaceutical data with Career History Archival Medical and Personnel System (CHAMPS) data for optimal research potential, successfully extending the Millennium Cohort Study to 67 years, maintaining stable funding for medical modeling and simulation research, and transforming the Computer Assisted Rehabilitation Environment (CAREN) System into a one-of-a-kind research and rehabilitation tool.[18] However, NHRC still funds its medical modeling and simulation research and the Millennium Cohort Study through multiple sponsors, instead of through core funding, thereby threatening their stability.[18] Further, relying on multiple sponsors for funding threatens the strategic vision of longitudinal studies, such as the Millennium Cohort Study. However, the DHB was informed that the Army Military Operational Medicine Research Program is divesting itself from funding the Millennium Cohort Study after 2018, and the DHA has agreed to increase its funding to meet that gap.[27]

Since the 2012 DHB report, the DHA Research and Development Directorate (J-9) was established in 2014.[26] This Directorate is DoD's core research program and helps "coordinate and enhance the related medical research and development programs of the Army, Navy, Air Force, and Defense Advanced Research Projects Agency."[26] As directed by the Office of the ASD(HA), DHA J-9 manages and executes the Defense Health Program research, development, test, and evaluation appropriation.[26] Despite the establishment of DHA J-9, challenges related to

the efficient conduct of Defense Health Program medical research across the Services remain.

Table 8. 2012 DHB Findings and Recommendations and 2016 Status Update[7,18]

	2012 Findings	2012 Recommendations	2016-2017 Status Update Since Last Report
2012	Current organizational structure should be maintained since it is effective in facilitating high quality research.	BUMED should limit reorganization of NHRC within the Navy, since it can hamper stability and critical research efforts. DHB recommends that the current structure be maintained.	• Since 2012, BUMED has undergone a reorganization that has had modest impact on NHRC's internal organization and research portfolio. However, there are some external structural and process changes that have resulted in impacts to the efficient conduct of research. For example, the reorganization moved NHRC down the Echelon chain, adding layers to the review and approval process. • The impact of new DHA policy, oversight, and process improvement to all aspects of medical research cannot be overlooked. The final impact of these changes is still unknown.
2012	The DHB commends NHRC for its medical modeling and simulation research and tools, which will be helpful in the care and rehabilitation of Wounded Warriors.	Funding should be maintained for this department, even during the drawdown of troops.	• Funding for medical modeling and simulation has been stable; however, the funding for the programmatic elements, Expeditionary Medical Encounter Database, Wounded Warrior Recovery Project, and others have been from multiple sponsors, which hinders program stability. NHRC has requested sustainment funds for medical modeling and simulation capabilities, as well as Expeditionary Medical Encounter Database, the master database, through establishment of a budget line item with no approval to date.
2012	NHRC has cutting edge research in novel technologies.	The novel technological assets of the Warfighter Performance department, such as the CAREN virtual reality system should be protected. The research conducted in this department is essential for the health and operational capacity of Armed Forces and should be used to inform practices and policies across Services.	• Since 2012, NHRC researchers have transformed the CAREN from a tool that supports clinical research and therapies into one that can be used for research to improve warfighter health and performance. Researchers have designed and implemented several modifications to expand the CAREN, including a drive simulator and laser rifle shooting system, which is now used for studies related to survivability, load carriage, rehabilitation, and fatigue mitigation to inform practices across the Services. The CAREN has been transformed into a one-of-a-kind research and rehabilitation tool that NHRC is seeking to be named the DoD lead.

|	2012 Findings	2012 Recommendations	2016-2017 Status Update Since Last Report
2012	Studies conducted on behavioral sciences are important due to the number of Service members and Veterans who experience combat stress, post-traumatic stress disorder, and other psychological issues.	Although true estimates of the use and impact of NHRC educational and health promotion products may not be determinable, DHB recommends that the proposal recently submitted by this department to assess use and impact of these tools be accepted, as even a rough estimate will help to inform further distribution of these products and future development of similar tools.	• NHRC has been evaluating several mechanisms to determine use and impact of various tools developed by the command, as well as Service or DoD incorporation of recommendations from knowledge products. • Specifically regarding the behavioral health tools, NHRC has tracked and filled requests for over 173,000 printed behavioral health guides and has now converted the products to e-books and placed them on their website for download. A download tracker has recently been incorporated to better assess interest.
2012	CHAMPS database contains much of the same data compiled in AFHSC's Defense Medical Surveillance System database. In founding concept of operations, the ASD(HA) indicated NHRC will have access to Defense Medical Surveillance System data; however, this preceded the establishment of AFHSC, which is to serve as the single source of medical surveillance data for DoD.	DHB recommends that AFHSC and NHRC discuss whether there is a more efficient way for AFHSC to maintain and supply NHRC research staff with unrestricted access to the required data.	• NHRC has unrestricted access to the same data source that the Armed Forces Health Surveillance Branch uses to pull Defense Medical Surveillance System data. The original data source provides information in a form that is more useful for NHRC research purposes.
2012	NHRC staff indicated capability to add TRICARE pharmaceutical utilization data to CHAMPS is currently being considered; however, potential change to TRICARE data use agreement policy would make this information difficult to obtain.	DHB recommends that this pharmaceutical utilization data be a required data feed to CHAMPS, or be provided to NHRC via an AFHSC data feed when pharmaceutical data is added to Defense Medical Surveillance System.	• NHRC has direct access to DoD Pharmaceutical data; therefore, rather than feed the data to CHAMPS, NHRC has chosen to merge the pharmaceutical data with CHAMPS data for optimal analytical research potential.

	2012 Findings	2012 Recommendations	2016-2017 Status Update Since Last Report
2012	Millennium Cohort Study is a critical DoD asset; however, recent changes in Deployment Health Department leadership resulted in changes to structure of study oversight.	DHB recommends the approval for funding request of the study to be extended for a total of 60 years.	• In May 2013, Office of the ASD(HA) directed the extension of the Millennium Cohort Study to 67 years; however, sustainment funding for the Millennium Cohort Longitudinal Study was not provided. There are multiple sponsors currently funding the Millennium Cohort Study, but no dedicated line of sustainment funding from DoD.

From NHRC, 2016.

A.3 SUCCESSES AND ACHIEVEMENTS

Since the last DHB review in 2012, NHRC has improved staff experience and professional diversity, established Science Directorates within the organizational structure to ensure a greater leadership role in research, developed a robust communications plan to increase visibility, and collaborated across the Services and in industries.[18] Additionally, despite staff recruitment and retention difficulties, there has been an overall growth in funding from DoD sponsors to NHRC of more than 45 percent and increased productivity of more than 60 percent over the past five years (Figure 10).

Figure 10. NHRC Resources and Productivity[17]
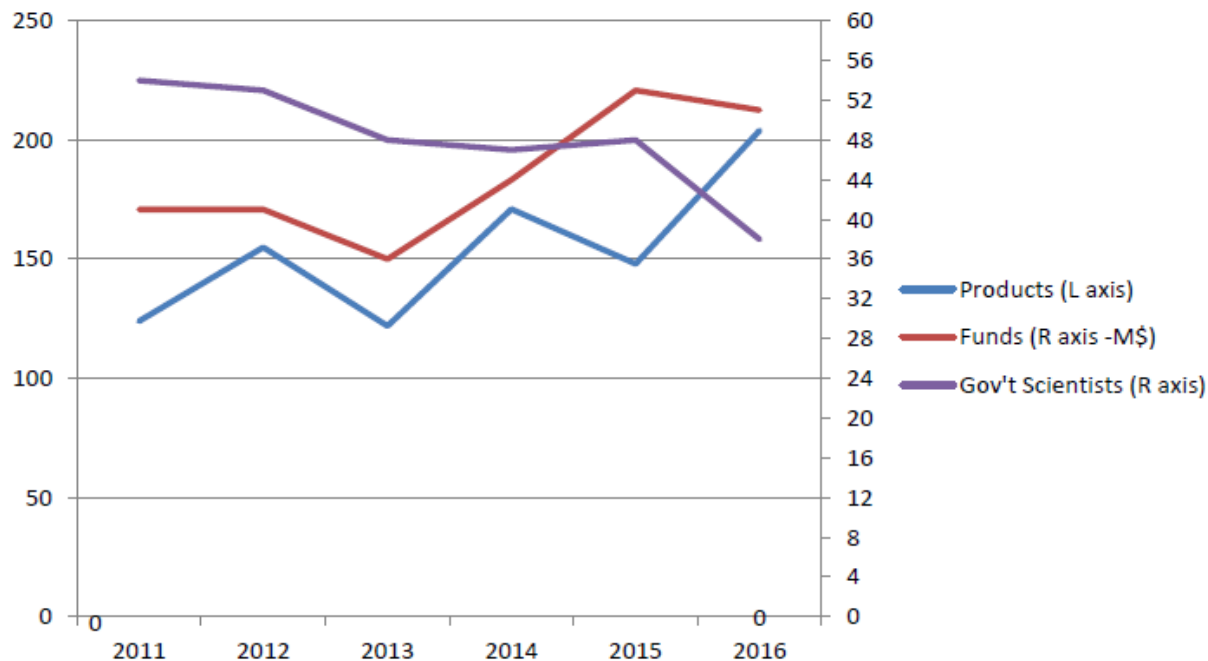
From NHRC, 2016.

The Millennium Cohort Study, which began in 2001, is a longitudinal study that measures the impact of deployment on long-term health outcomes of Service members. It is an asset to both DoD and the Department of Veterans Affairs, providing a wealth of information on issues such as post-traumatic stress disorder, suicide, alcohol misuse, sexual trauma, women in combat, and burn pit exposure.[17] The cohort contains over 200,000 Service members and veterans and has contributed to decisions made on congressional legislation and policy updates. Additionally, it has been the source of informative and impactful research in the areas of sexual assault, chronic multi-symptom illness, substance abuse, sleep and resilience/readiness, mental health, women's health, environmental, and pulmonary health. Table 9 refers to some illustrative examples.[17]

Table 9. Selected Contributions of the Millennium Cohort Study to Policy Decisions and Research[17]

Topic Area	Areas of Contribution	Examples
Sexual Assault	Congressional Legislation	• National Defense Authorization Act Fiscal Year 2016
	Policy Changes	• DoD Instruction 6295.02 – Sexual Assault Response and Prevention Program updates (7/7/2015)
	Relevant Research	• Millegan J, Wang L, LeardMann CA, Miletich D, Street AE. Sexual Trauma and Adverse Health and Occupational Outcomes Among Men Serving in the U.S. Military. J Trauma Stress. 2016 Apr;29(2):132-40.
Sleep and Resilience/Readiness	Policy Changes	• Submarine Operations and Regulation Manual
	Relevant Research	• Seelig AD, Jacobson IG, Donoho CJ, Trone DW, Crum-Cianflone NF, Balkin TJ. Sleep and health resilience metrics in a large military cohort. Sleep. 2016;39(5):1111-1120.
Women's Health in the Military	Policy Recommendations	• DOD Is Expanding Combat Service Opportunities for Women, but Should Monitor Long-Term Integration Progress. GAO-15-589: Published: Jul 20, 2015. Publicly Released: Jul 20, 2015.
	Relevant Research	• Jacobson IG, Donoho CJ, Crum-Cianflone NF, Maguen S. Longitudinal assessment of gender differences in the development of post-traumatic stress disorder among US military personnel deployed in support of the operations in Iraq and Afghanistan. Journal of Psychiatric Research. 2015 Sep;68:30-6.

Adapted from NHRC, 2016.

Furthermore, in 2011 the Millennium Cohort Family Study (Family Study) was established to conduct longitudinal research on the impacts of military experience and deployment on the health and wellness of the military family, spouses, and children.[29] Approximately 10,000 spouses have been enrolled, and families will be followed for 21 years or more to track experiences, family relationships, protective factors, and coping mechanisms over time.[29] NHRC has collaborated with partners within the military family research arena, as well as Walter Reed Army Institute of Research universities, working to analyze and interpret data.[67] It was stated during discussions with NHRC personnel that the Center has been interested in expanding recruitment for the study; however, limited funding has constrained efforts.[24] The Family Study provides an "opportunity to explore the impact of relationship quality on the physical and

psychological health of Service members, their spouses and children" and thus helps to create effective interventions and support mechanisms for military families, thus increasing the readiness of Service members and beneficiaries.[29]

NHRC has also developed numerous meaningful collaborations in support of military readiness and looks to provide innovative solutions for improving military health and readiness through research. Such collaborations have resulted in impactful products, programs, and initiatives to include:

- a collaborative data analysis with the Joint Trauma Analysis and Prevention of Injury in Combat program, based out of U.S. Army Medical Research and Materiel Command, for which NHRC provided accurate and extensive data on combat injuries during deployments, including related rehabilitative care offered from its Expeditionary Medical Encounter Database. This data analysis allows for the Joint Trauma Analysis and Prevention of Injury in Combat program to develop informed decisions on preventing and mitigating combat injuries, improving the health and readiness of the Armed Forces, as well as reduce costs on the Military Health System (MHS).[30]
- a partnership between NHRC and the Defense Threat Reduction Agency, which focused on a Joint biosurveillance project to identify point of need diagnostics for pathogen detection that cause acute illnesses, threatening warfighter readiness and global public health.[31]
- a collaborative effort with the Air Force medical assemblies and NHRC's medical modeling and simulation team to optimize and standardize combat support Authorized Medical Allowance Lists.[32]
- a collaborative effort with multiple DoD CAREN sites and NHRC's Physiological and Cognitive Operational Research Environment team to enhance rehabilitation of injured Service members while also capturing data on warfighter performance overall.[68]

NHRC has developed multiple innovative products that have been recognized and adopted by DoD, in an effort to improve health and readiness across the Services. Some of the successful bench to battlefield efforts include:

- **The Medical Planners' Toolkit,** which uses past empirical data to calculate patient condition occurrence frequency, casualty rate estimation, and expeditionary medicine requirements.[33] These functions allow for effective medical support planning, and the Toolkit is accredited for DoD use across the Services.
- **The Joint Medical Planning Tool**, which fully integrates with the Medical Planners Toolkit and is also accredited for DoD use. The tool assesses patient flow from the patient injury to definitive care.[34] The system includes over 400 patient conditions, their standard treatment guidelines, and appropriate medical supplies and commodities, while also calculating the number of wounded who died due to delayed care and complications.[34]
- **The "Life After Service" workbook,** which includes support and guidance for post-deployed military personnel to transition back to civilian life. The workbook includes study statistics, case studies, and activities to help reinforce social ties, manage anger, reduce pain, and sleep better, providing a comprehensive and multi-dimensional approach to the well-being and health of Service members.[35]
- **A weekly surveillance report,** which describes disease burden for respiratory and enteric diseases within military recruits.

- **A study to improve the readiness of Independent Duty Corpsmen,**[‡‡‡] by creating Highly Realistic Training programs. Simulating the external environment of a warzone allows the Independent Duty Corpsman students to prepare and practice their ability to apply their trauma combat casualty care skills in a mass casualty situation.[70]

NHRC has also been involved in Wargaming for Operation Plans;[§§§] testing clinical specimens for Zika virus; running clinical trials of the adenovirus vaccine;[17] and providing influenza vaccine effectiveness data to the Centers for Disease Control and Prevention.[16] In addition, between FY 2014 and 2016, NHRC has published 477 unique titles and 617 total authored works, which include abstracts, posters/presentations, technical reports, and journal articles.[17]

A.4 CURRENT CHALLENGES

STRATEGY

Relying on multiple sponsors for funding not only drives the Center's strategic requirements, but also enables increased collaboration with industry partners. The funding allows NHRC to retain highly qualified civilian investigators and budget for infrastructure support required to conduct research (e.g., personnel and equipment).[17] However, the lack of core funding threatens NHRC's ability to meet its mission as a DoD Deployment Health Center. The lack of unified strategic oversight over all DHCs (NHRC, Armed Forces Health Surveillance Branch, and Deployment Health Clinical Center) adds additional constraint.

PROCESS

As stated in A.2, NHRC regularly partners with colleagues from other Services on studies, working groups, and collaborative projects that inform the policies of DoD and its agencies.[18] However, NHRC reports that challenges arise due to varied and disjointed approval processes.[17] The challenges include different interpretations in contracting and funding among collaborators, as well as varying Institutional Review Board and Public Affairs processes across the Services.[17] The differences make collaborative research efforts with other Services and external partners challenging and may ultimately lead to delayed initiation of research, and loss of funding and research opportunities. Additionally, there is no enterprise-wide electronic platform that provides visibility of all Defense Health Program-funded research projects and funding opportunities, which inhibits collaborative medical research between DoD facilities.[17]

[‡‡‡] Independent Duty Corpsmen are enlisted personnel that serve as Medical Department Representatives aboard surface ships, with Fleet Marine Force Units, and isolated duty stations, independent of a medical officer. They provide patient care, including diagnostic procedures, advanced first aid, basic life support, nursing procedures, minor surgery, among other responsibilities.[69]

[§§§] An Operation Plan is either "1. Any plan for the conduct of military operations prepared in response to actual and potential contingencies. 2. A complete and detailed joint plan containing a full description of the concept of operations, all annexes applicable to the plan, and a time-phased force and deployment data."[71]

PEOPLE AND CULTURE

NHRC is committed to maintaining and improving the diversity and expertise of its staff.[18] However, the slow hiring processes and the limited hiring authority continue to challenge the Center.[24] While contractors are typically easier to hire, they are prohibited from conducting certain official government functions, such as serving as principal investigators on research studies and extending collaborations on behalf of the government.[36,54] The DHB was informed that retention of NHRC personnel, both active duty and civilian, has also been a challenge, since there are limited leadership positions, and granting promotions or title changes is difficult.[24] NHRC also lacks sufficient research support staff to sustain its research portfolios and institutional knowledge.[24]

STRUCTURE AND PROGRAMS

NHRC is home to innovative research technology, such as the CAREN. However, without programmed funding, NHRC is reliant on securing extramural funding, which provides numerous challenges, detailed in Table 10.[17] Also, given the need to use funding from multiple sources to maintain projects and initiatives, it makes the impact of NHRC's research more difficult to measure. Although NHRC has developed multiple tools, studies, and deliverables, the Center is unable to consistently measure cost-effectiveness, return on investment, or the impact of these contributions on health outcomes of military personnel and their families.[24] It was indicated to the DHB during roundtable discussions that one of the challenges NHRC faces with outcome data is that there has not been dedicated funding set aside for monitoring and evaluation of their programs, which is needed to properly assess the contributions of implemented activities.[24]

With long-term funding, adequate resources are ensured and available for operational and research costs, which can be focused and aligned with command priorities.

Table 10. Challenges that Threaten NHRC Research[17]

Challenge	Impact	Solutions
Lack of central strategic control and oversight	• Uncertainty for key programs, such as the Millennium Cohort Study	• Realign tri-Service studies under the purview of the DHA
Lack of core funding	• Inhibits ability to attract partners and collaborators • Inhibits retention of highly qualified civilian researchers	• Direct lines of funds to support government scientist salaries, equipment, and costs for conducting research
Lack of funding for sustainment of basic research facilities and equipment	• Navy Medicine research and development labs do not have dedicated funds for facilities and equipment, which decreases competitiveness for extramural funding	• Developing a process for funding to procure, maintain, and provide lifecycle management of basic equipment and facilities
Decreased research funding and limited resources	• Research and development funds usually first to be reprogrammed • Lack of sustainment funds impacts Navy and Medicine	• Increasing core funding would help offset organizational operational

Challenge	Impact	Solutions
	application of research programs, such as: Millennium Cohort Study, Expeditionary Medical Encounter Database, Recruitment Assessment Program, CHAMPS, DoD Birth and Infant Health Registry, medical modeling and simulation analytic capabilities, and CAREN as a tool for rehabilitation, injury prevention, and resilience	costs and encourage collaboration through shared research funds

Adapted from NHRC, 2016.

Establishing career paths and training programs for military personnel interested in research has been a challenge across the MHS. Buy-in is necessary from BUMED leadership to develop viable career pathways for active duty personnel. There are several challenges related to the professional development of DoD medical researchers, such as DoD's restrictions on conference attendance,[72] which constrain the ability to network and disseminate NHRC's research findings. Frequent rotation of military personnel also threatens continuity of ongoing investigations and hinders the ability to conduct and complete research. An example of MHS applying a model of building a cadre of medical researchers is the Tri-Service Nursing Research Program at the Uniformed Services University of the Health Sciences.[73] The Tri-Service Nursing Research Program supports studies on operational or deployment health topics in force health protection; nursing competencies and practice; and leadership, ethics, and mentoring.[74]

There are additional challenges related to Navy and DoD medical research processes (Table 11).[17] For example, as mentioned in A.2, the reorganization of BUMED has moved NHRC down the Echelon chain, which has created longer review and approval processes related to establishing agreements, such as cooperative research and development agreements, materiel transfer agreements, and non-disclosure agreements.[17] Also, although the establishment of DHA J-9 aims to improve the coordination of medical research and development across the Services, there still remain varying policies and processes.[17]

Currently, DHA's policy on data sharing agreements creates challenges for NHRC. According to NHRC, even if extracted data are de-identified with intended use for population health research, they must still undergo DHA approval before use. This current process for data sharing could take up to a year to get staffed through the DHA.[24] Further, the Naval Medical Research Center determined in 2016 that Navy Medicine's research and development enterprise is considered a covered entity.[75,76] Therefore, anything containing Personal Identifiable Information and Protected Health Information must undergo the same stringent requirements for data sharing agreements and privacy to which hospital data is held, such as compliance reviews of the request for data by TRICARE Management Activity, implementation of the Health Information Portability Accountability Act Privacy and Security Rules, and implementation of the Privacy Act of 1974.[75-78] In addition, the long approval procedures associated with Institutional Review Boards and survey approval processes further delay NHRC's ability to conduct research.[17] NHRC cites that survey approval through the U.S. Office of Management and Budget (OMB) for the Millennium Cohort Study takes approximately two years, thereby hindering the ability to rapidly update the surveys, as well as the administration of the surveys for the longitudinal study (Table 11).[17]

Table 11. DoD Research Process Challenges and Potential Solutions[17,37]

Process	Barriers to Research & Readiness	Solutions
Manuscript review process for authored works on sensitive topics	• When an authored work contains research on a topic deemed by Navy Medicine or the DoD to be sensitive, it requires review and approval from higher headquarters, sometimes taking several months • Once a manuscript leaves NHRC, unable to track its routing	• A more consistent and transparent process with established timelines that is incorporated into existing instructions would support a more efficient routing process
Process for establishing agreements/collaborations	• The current process is lengthy and can result in work-stoppage, loss of funds, loss of collaborations • Current timelines for cooperative research and development agreement, material transfer agreement, and non-disclosure agreement completion are too long, despite recent improvements	• Developing a policy that allows for review and signature of designated agreements at a lower level would improve efficiency and expedite the process • Must be nimble to respond to emerging threats and other urgent issues • Decouple approval process from MTF approval processes
OMB submission process	• Currently takes approximately two years to get OMB approval for a survey. The Millennium Cohort Study has had to delay survey administration by up to a year while awaiting approval • The delay in the OMB submission process occurs when DoD is preparing the submission • The length of the process also precludes rapid updating of the survey in response to new events or concerns	• Streamlining DoD's routing process and/or obtaining an exemption to OMB approval for Millennium Cohort Study
Defense Manpower Data Center Survey Burden Reduction Action Plan	• Under Secretary of Defense for Personnel and Readiness implemented survey burden reduction plan, which NHRC supports; however, the plan is written broadly and applies to all or nearly all research • Mechanisms for complying are not yet formulated, and the full impact is yet to be understood • Implementation of restrictions inhibits ability to compete for funding and execute studies in DoD laboratories • Special approvals are needed from DoD to use social security numbers (e.g., tracking subjects in a longitudinal study), to ask about sexual orientation (approval needed from the Under Secretary of Defense for Personnel and Readiness, or	• Consider the application of the Survey Burden Action Plan for population health surveys conducted regularly, such as the Millennium Cohort Study

Process	Barriers to Research & Readiness	Solutions
	to ask about sexual trauma. NHRC has received approvals for these in the past, however with current plan must receive approval each time send survey (every three years)	

Adapted from NHRC, 2016.

A.5 WAY FORWARD AND FUTURE OPPORTUNITIES

Armed with the appropriate resources, NHRC is poised to make significant contributions across numerous programs and projects. For example, the Wounded Warrior Recovery Project is uniquely capable of investigating numerous health areas of interest for DoD, given that data has been collected on Service members since 2001 with the flexibility to use multiple assessment tools and surveys.[38,39] Furthermore, with more financial capabilities, NHRC could also expand the surveillance program to include more disease areas of interest to DoD. Further, the data collected by the Recruitment Assessment Project, such as pre-service factors related to PTSD and suicide risk, are limited solely to male Marine Corps recruit volunteers.[24] By enlarging the recruitment list to include women and men from other Services, data and analysis could be more representative and informative for decision-making across DoD military populations.[24]

NHRC plans to continue to strengthen core competencies, improve research for readiness, and form new partnerships. The team is also collecting feedback and information from their customers to improve services and research capabilities. Some of the initiatives NHRC has planned for the near future include:
- medical modeling and simulation support to develop adaptive force packages;
- Humanitarian Assistance/Disaster Response Authorized Medical Allowance Lists standardization aboard hospital ships;
- DoD lead for point-of-need diagnostics testing and evaluation for infectious diseases; and
- second phase of Norovirus vaccine participation in clinical trial at Recruit Training Command Great Lakes.[17]

It was stated to the DHB that if provided the appropriate environmental infrastructure and resources, NHRC would be an ideal location to develop Navy medical researchers, given the importance of both clinical and health systems research for the MHS overall.[40,24] Expanding active duty research positions at NHRC would require the creation of additional research billets within Navy Medicine, which should be considered as part of BUMED's ongoing manpower review.[41]

APPENDIX B. ARMED FORCES HEALTH SURVEILLANCE BRANCH

B.1 BACKGROUND

STRATEGY

Armed Forces Health Surveillance Branch (AFHSB) conducts medical surveillance activities to ensure the protection of military personnel and their allies.[42] The mission of the Branch is to "provide timely, relevant, actionable, and comprehensive health surveillance information to promote, maintain, and enhance the health of military and military-associated populations."[42] Its vision is "to be the central epidemiologic resource and global health surveillance proponent for the U.S. Armed Forces."[42] To achieve this mission and vision, AFHSB has numerous critical functions, including:

- acquiring, analyzing, interpreting, and disseminating information and recommending evidence-based policy;
- developing, refining, and standardizing surveillance methods;
- serving as the focal point for sharing health surveillance products, expertise, and information; and
- coordinating a global program of militarily-relevant infectious disease surveillance.[42]

AFHSB, previously the Armed Forces Health Surveillance Center (AFHSC), operated under the Secretary of the Army until its realignment under the Defense Health Agency (DHA) in August 2015.[43] Since joining the DHA in 2015, AFHSB has aligned its priorities to the DHA's, which include strengthening its role as a combat support agency, strengthening its relationship with the Services, and optimizing operations (Figure 11).[44]

Figure 11. DHA Strategy Map[44]
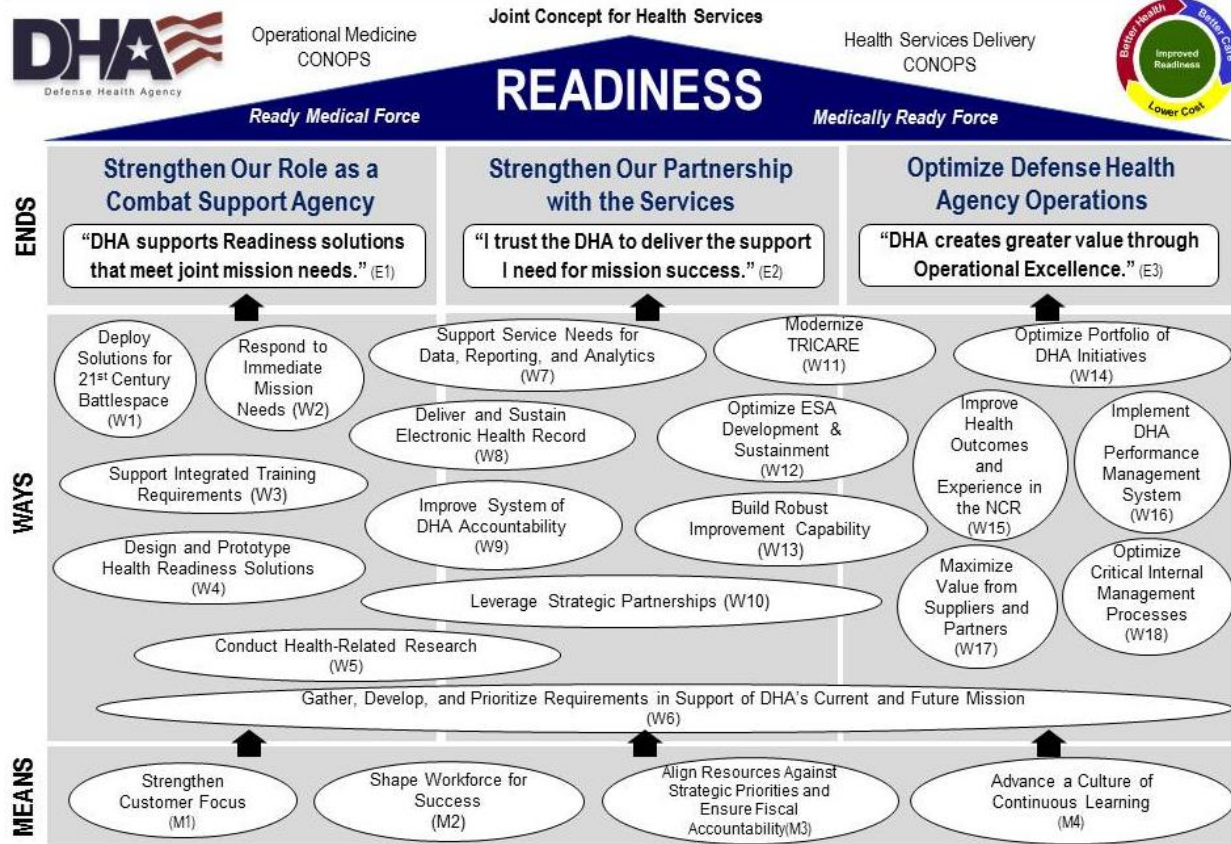
From Defense Health Agency, 2017.

As illustrated in Table 12, AFHSB's mission is aligned to help the DHA meet its strategic objectives. For example, in support of DHA objective W1 "Deploy Solutions for 21st Century Battlespace," AFHSB is developing, refining, and standardizing surveillance methods.[44,45]

Table 12. Alignment of AFHSB's Mission with Select DHA Strategy Map Objectives[44,45]

ID	DHA Objective	Definition	AFHSB Mission
W1	Deploy Solutions for 21st Century Battlespace	• In coordination with Office of the Joint Staff Surgeon, continuously refine our "supporting to supported" relationship with Combatant Commands • In coordination with Office of the Joint Staff Surgeon, guided by the Joint Concept for Health Services, and vetted through the Joint Capabilities Integration and Development System: o Support Military Health System (MHS) enterprise, standardized: information technology (IT), medical equipment, logistics, clinical processes, patient management, and patient movement o Support MHS enterprise, standardized deployment of future Joint Operational Medicine Information Systems solutions (e.g.,	• Develop, refine, and standardize surveillance methods

ID	DHA Objective	Definition	AFHSB Mission
		electronic health record, virtual health, etc.) ○ Build MHS enterprise, standardized infrastructure and conduct continuous and predictive surveillance of global health threats • Use Combat Support Agency Review Team as framework for Combat Support Agency performance review and improvement	
W2	Respond to Immediate Mission Needs	• Build infrastructure for and conduct continuous surveillance of global health threats • In coordination with the Joint Staff Surgeon, convene coordinating body with all appropriate stakeholders to provide timely response to health threats • Support all deployed forces with high-quality health services (e.g., purchased health services in host countries, patient transportation, etc.) • Ensure all members of the National Capital Region health team and their families are ready for deployment, supported during deployment, and reintegrated upon return	• Acquire, analyze/interpret, and disseminate information and recommend evidence-based policy • Coordinate a global program of militarily-relevant infectious disease surveillance
W7	Support Service Needs for Data, Reporting, and Analytics	• Develop and execute a coherent data strategy that specifically supports the Joint Concept for Health Services (and subordinate concept of operations) and Component (Service and DHA) priorities • Create and manage data repositories that are reliable, user-friendly, and readily available to users across the MHS • Build analytic capability within the DHA that can be leveraged by the Services to support optimal decisions • Provide a consistent and transparent view of performance to frontline, managers, governance, and external stakeholders • Complete deployment of analytic and performance management tools to support the needs of managers and leaders at all levels of the MHS • Support communities of interest (e.g., primary care, perinatal, surgical product line, electronic health record deployment, etc.) by delivering information that meets a specific need defined by end users	• Acquire, analyze/interpret, and disseminate information and recommend evidence-based policy • Develop, refine, and standardize surveillance methods
W9	Improve System of DHA Accountability	• Provide transparency and accountability into performance for Services and Combatant Command • Conduct regular performance reviews with customers using standard measures (e.g., Agency Mission Essential Task List, Defense Readiness Reporting System, Combat Support Agency Review Team, Partnership for Improvement, etc.) • Align incentives/rewards/recognitions with fulfillment of customer requirements	• Serve as the focal point for sharing health surveillance products, expertise, and information

ID	DHA Objective	Definition	AFHSB Mission
W10	Leverage Strategic Partnerships	• Operationally define strategic partnerships/ alliances within current and future contexts • Coordinate with the stakeholders to prioritize, update, and maintain portfolio of MHS' strategic partnerships required for mission effectiveness (e.g., academic affiliations, training augmentation for readiness, extramural research, best practice identification, etc.)	• Develop, refine, and standardize surveillance methods • Serve as the focal point for sharing health surveillance products, expertise, and information • Coordinate a global program of militarily-relevant infectious disease surveillance

From DHA, 2017 and Badzik, 2016.

HISTORY

AFHSC was established in February 2008, merging the resources and capabilities of the:

- **Army Medical Surveillance Activity's Defense Medical Surveillance System (DMSS):** A database for HIV screening, clinical care, and epidemiological research programs was established in 1986. In 1993, this database, called the Army's HIV-1 data system, was transitioned to the Army Medical Surveillance System and later transitioned to the DMSS in 1997.[42]

- **Department of Defense Serum Repository (DoDSR)**: DoDSR was established in 1989 to store blood sera collected for the Department's HIV testing program, and it was later designated to receive pre- and post-deployment serum specimens.[42]

- **DoD Global Emerging Infections Surveillance (DoD-GEIS)**: DoD-GEIS was established in 1997 after a presidential directive called for the expansion of the Department's mission, to include support of global surveillance, training, research, and response to emerging infectious disease threats.[42]

- **Global Health Surveillance Activity from the Office of the Deputy Assistant Secretary of Defense for Force Health Protection and Readiness.**[42] In 2009, DoD Directive 6490.02E directed the transfer of surveillance activities and personnel of the Office of the Deputy Assistant Secretary of Defense for Force Health Protection and Readiness to the AFHSC.[79]

Figure 12 depicts the history of AFHSB, including its transition to the DHA in 2015.

Figure 12. Timeline of AFHSB History[7,42,79]
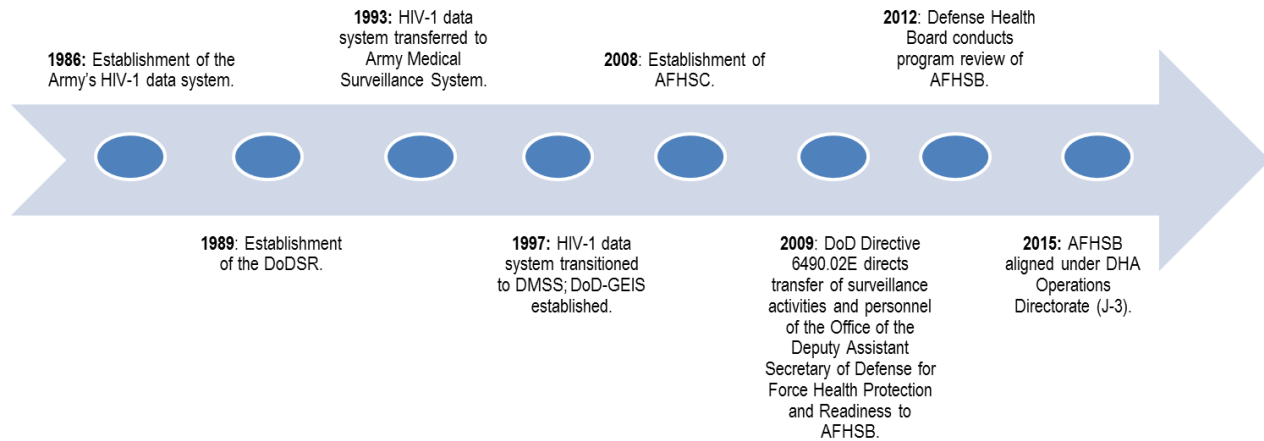
Adapted from AFHSB, 2016.

ORGANIZATIONAL STRUCTURE

AFHSB is divided into four sections, each highlighting the Branch's key capabilities (Table 13).

Table 13. AFHSB Key Capabilities[45]

Section	Capabilities
Data Management and Technical Support	• Design, operation, and management of the DMSS • Operation of the DoDSR
Epidemiology and Analysis (E&A)	• Periodic reporting of DoD health statistics and indicator-based surveillance • Customized analysis and reports for military leadership • Training of Preventive Medicine Residents
Integrated Biosurveillance (IB)	• Event-based medical surveillance based on open-source information • Integration of indicator and event-based biosurveillance • Focal point for DoD Biosurveillance efforts in the interagency (close coordination with the Defense Threat Reduction Agency, Joint Program Executive Office for Chemical and Biological Defense) • Dedicated support and liaison to Joint Staff & Combatant Commands
GEIS	• Management of DoD global infectious disease surveillance portfolio • Coordination among overseas laboratories and other partners in the global surveillance network • Response to outbreak alerts and emergency notifications

From Badzik, 2016.

In 2015, the AFHSC joined the DHA as a branch under the Operations Directorate (J-3) Public Health Division and changed its name to reflect its new designation (Figures 13a and 13b).[46] As part of its realignment under the DHA, and in support of the DHA shared services initiative, AFHSB assumed responsibility for some of the health surveillance activities and personnel at the Services' public health hubs, to include the U.S. Army Public Health Center at Aberdeen Proving Ground, Maryland; the Navy and Marine Corps Public Health Center in Portsmouth, Virginia; and the U.S. Air Force School of Aerospace Medicine at the Wright-Patterson Air Force Base in Dayton, Ohio.[42] These newly realigned personnel currently serve as liaisons to AFHSB and provide valuable expertise in areas such as influenza surveillance, laboratory data analysis, behavioral and social health, and reportable medical event surveillance. These satellite staff also provide a valuable joint perspective, as well as coordinate data requests from their respective Services and represent them in the E&A Request Assessment Process and working group meetings.[42]

Figure 13a. Basic Organizational Chart of DHA and the DHA Operations Directorate
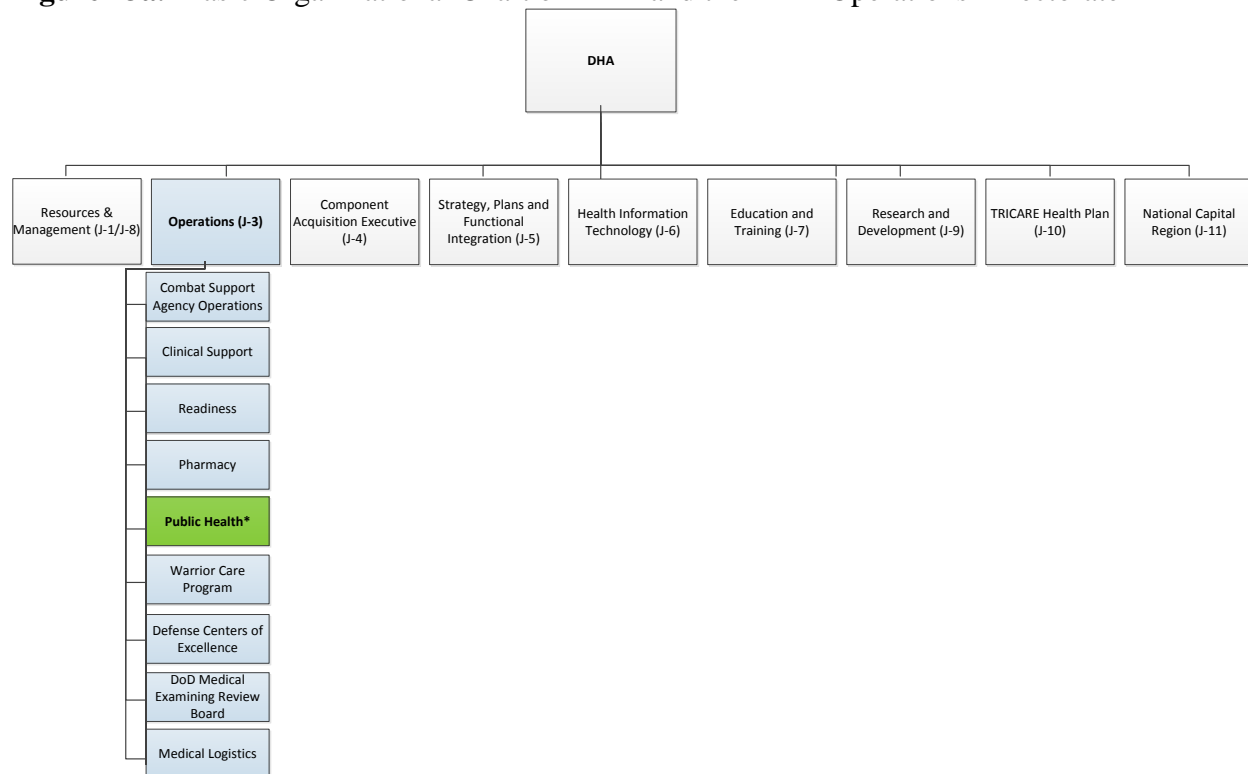
*AFHSB is located under DHA Public Health Division
Adapted from DHA, 2017.

Figure 13b. AFHSB Organizational Structure[45]
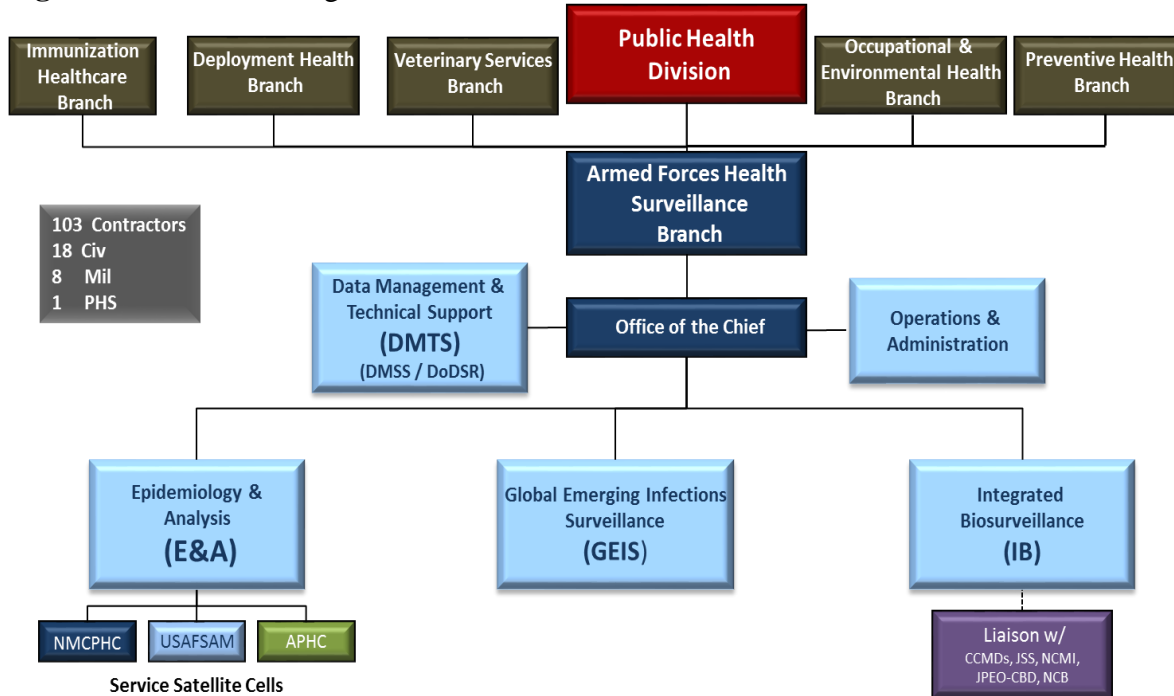
From Badzik, 2016.

B.2 PROGRESS SINCE LAST VISIT

STRATEGY

The Defense Health Board (DHB) conducted its first review of AFHSB in 2012 and found that it had successfully aligned its operations and outputs with its pre-defined scope of work and "that all activities seek to achieve the Center's mission and vision."[7] The DHB noted that a majority of the Center's funding was provided by the Defense Health Program (DHP) appropriation, with the exception of Army, Navy, Air Force, and Overseas Contingency Operations funds, noting that "funding is allocated on a yearly basis, presenting an ongoing risk to the organization's sustainability."[7] As shown in Table 14, the DHB recommended long-term funding for the Center for stability and security. The DHB also cited staffing vulnerabilities, given the significant proportion of staff that was contractors.[7]

Table 14. 2012 DHB Findings and Recommendations and 2016-2017 Status Update[7,47]

	2012 Findings	2012 Recommendations	2016-2017 Status Update Since Last Report
2012	Staffing vulnerability is due to the reliance on contractor positions.	Transition contract positions to DoD civilian positions.	• Contractors still make up larger percentage of staff (103 of 130 - 79% personnel). • Limited number of civilian positions in the DHA, Public Health Division Joint Table of Distribution. • Three Intergovernmental Personnel Act (IPA) slots were lost thereby decreasing the number of staff that can speak for the government.
2012	Ongoing funding to ensure the AFHSC may continue to meet its mission is needed. The uncertainty associated with one-year funding streams is not optimal considering the Center's ongoing mission requirements.	Long term funding to AFHSC should be secured within the Program Objective Memorandum for greater stability and security.	• Funds still need to be spent within the fiscal year with no roll-over into future fiscal years; Program Objective Memorandum funding is secured for the Future Years Defense Program 2017-2021 at ~$75 million.

From AFHSB, 2016.

Also stated in Table 14, a majority of the positions at AFHSB are still held by contractors, also detailed under B.2, People and Culture. AFHSB was allocated $75.7 million in Fiscal Year (FY) 2015, which was allocated to multiple sources and partners (Figure 14). The largest proportion of funds, nearly 65 percent, was distributed to laboratory partners through the GEIS program after the proposal review process.[42] Although currently the Branch has been guaranteed around $75 million of DHP operation and maintenance (O&M) for the Future Years Defense Program 2017-2021, these funds must be spent within the year with no possibility to roll funds over, limiting effective use.[48]

Figure 14. FY 2015 Financial Management and Accountability[42]

AFHSB Allocated Funds

$5,982,000
$3,513,014
$21,686,070
$17,636,654
$1,650,000
$4,144,000
$21,116,162

☐ Army ☐ Navy ☐ Air Force ☐ USU ☐ Contracts ☐ Other Partners ☐ AFHSB Biosurveillance, DoDSR, DMSS
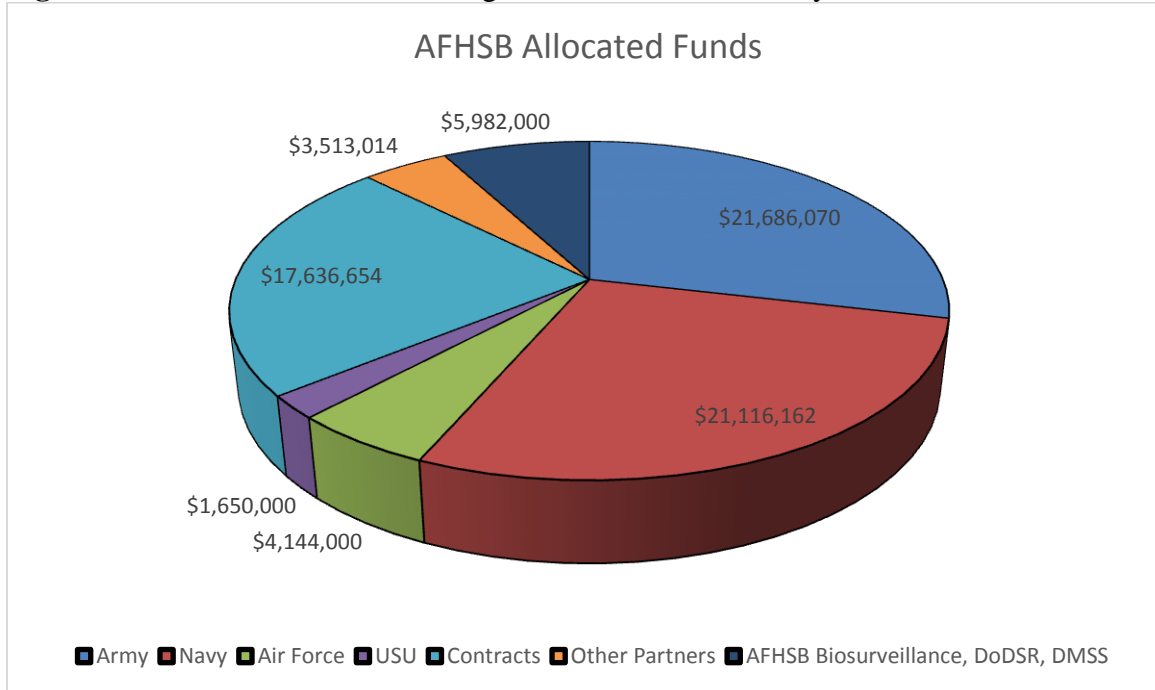
From AFHSB, 2016.

Since the publication of the 2012 report, AFHSB has developed some preliminary performance measures and objectives, which are currently under review at the DHA Public Health Division. Currently, AFHSB currently does not capture metrics to further demonstrate the cost-effectiveness of its contributions.[48] Because AFHSB has moved into the larger structure of the DHA J-3, there are now more opportunities to leverage resources and capabilities across the DHA and the Services, which can better serve AFHSB's mission. Additionally, synergies will be created by language in the FY 2017 National Defense Authorization Act. In order for AFHSB to focus on value-add activities, metrics to capture value must be instituted.

Although AFHSB has not finalized performance measures that align with its mission and objectives overall, some examples of metrics they are currently using are represented below in Table 15.[45] However, the GEIS section has developed its own strategy and metrics for the Combatant Commands, which support funding of projects that are best aligned to theater objectives and priorities.

Table 15. Examples of Performance Metrics Used Currently by AFHSB[45]

Metric	Target	Actual	Relation to DHA Strategy
Percent of surveillance products produced by AFHSB that meet time and content requirements of the Combatant Commands	>90%	1267/1290 = 99%	M1: Strengthen Customer Focus
Percent of surveillance activities funded by GEIS supporting the Combatant Command Theater Campaign Objectives and infectious disease priority list.	>90%	431/431 = 100%	M2: Shape Workforce for Success

From Badzik, 2016.

GEIS operations are designed to provide early detection, prevention, and response to infectious disease outbreaks and are directed by global health surveillance policies, Theater Engagement Plans, Department of State Mission Support Plans, and Implementation Plans for the DHA along with guidance from leadership in the MHS, Combatant Commands, and DoD Overseas Laboratories.[49] GEIS's strategy and framework for monitoring performance revolve around the end goal of enhanced Force Health Protection decision making across the Combatant Commands.[49] The ways and means in which the team intends to do so are represented in Figure 15.

Figure 15. GEIS Performance Framework[49]
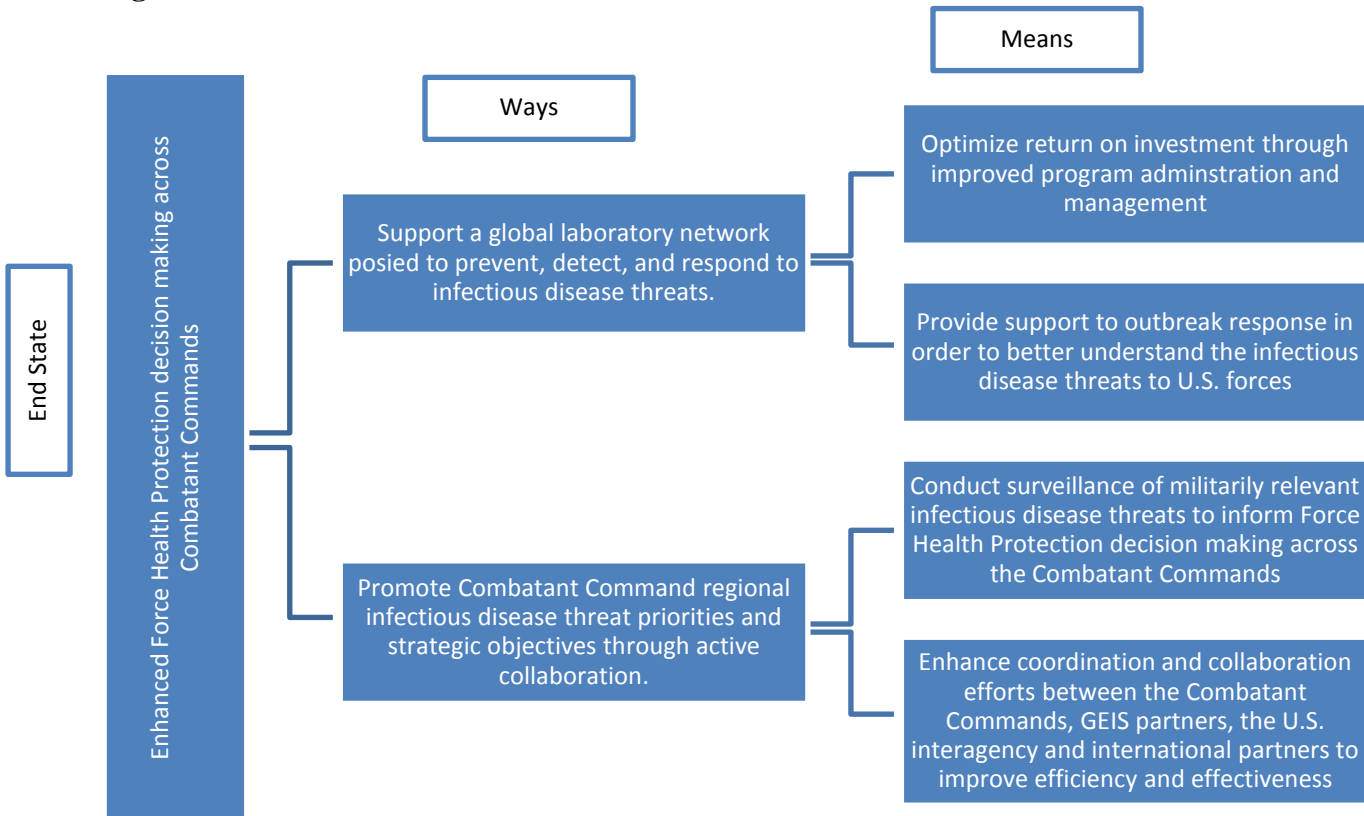
Adapted from AFHSB, 2016.

The DHB stated in 2012 that the Center had defined reporting structures and had built strategic relationships with other health and surveillance organizations, such as the National Center for Medical Intelligence; the DHB also stated that communication with the Services was enhanced by the Service liaisons. However, the DHB noted that "communication with Line components such as the Combatant Commands and Joint Staff is hampered due to incompatible IT systems"[7] and ultimately recommended that the AFHSC acquire classified IT system capability (Table 16).[7] Currently, AFHSB is awaiting Secret Internet Protocol Router Network (SIPRNet) access through DHA, which would allow them to communicate directly with Combatant Commands, who use SIPRNet as their primary e-mail communication method;[48] currently, AFHSB is looking into the opportunity of using SIPRNet fly away kits to resolve this issue. Additionally, AFHSB is still on the Army IT system and is awaiting its scheduled transition to the DHA health IT system.

The DHB previously commended the relationships built by the Center, but noted the challenges that existed with the Defense Threat Reduction Agency (DTRA) and the Department of Veterans Affairs (VA) (Table 16). To strengthen its relationship with DTRA, AFHSB established a Memorandum of Agreement between the Assistant Secretary of Defense for Health Affairs and the Assistant Secretary of Defense for Nuclear, Chemical & Biological Defense Programs.[47] AFHSB is currently working alongside DTRA to collaborate on global infectious disease surveillance and the development of IT tools.[47] Since 2012, AFHSB has also strengthened its relationships with government agencies, such as the Centers for Disease Control and Prevention, U.S. Department of Agriculture, U.S. Department of State, and the Food and Drug Administration.[48] However, the relationship between AFHSB and the VA remains informal and needs to be strengthened to ensure continuation of these programs (Table 16).[47]

Regarding quality assurance and data integrity, the DHB previously cited that the Center had "established a detailed process for receiving and assessing requests for epidemiologic analysis. A critical aspect of this process is review by a board within AFHSC consisting of leaders and staff epidemiologists."[7] AFHSB has continued its high quality processes, and with its incorporation into the DHA in August 2015, AFHSB is now required to provide status of quality assurance measures and reporting at the quarterly meetings of the DHA Public Health Division's Coordination & Collaboration Working Group (CCWG). AFHSB also provides status updates monthly to the DHA's Defense Readiness Reporting System and periodic updates to the DHA J-3 Director and the Director of the DHA (Table 16).[47]

Table 16. 2012 DHB Findings and Recommendations and 2016-2017 Status Update[7,47]

2012 Findings	2012 Recommendations	2016-2017 Status Update Since Last Report
2012 AFHSB has built strategic relationships with health surveillance and intelligence agencies; strong established relationship with National Center for Medical Intelligence; however some challenges with VA and DTRA.	Need greater collaboration with DTRA and others in international medical intelligence gathering to ensure health surveillance activities are comprehensive. Cooperation in information sharing with VA should be priority to streamline health information for Service members and Veterans. Continue to enhance communication with operational components of DoD, while balancing transparency so all DoD providers have necessary surveillance information to promote public health.	• Relationship with DTRA has improved significantly through the Memorandum of Agreement between the Assistant Secretary of Defense for Health Affairs and Assistant Secretary of Defense for Nuclear, Chemical & Biological Defense Programs. • AFHSB/GEIS and DTRA/Cooperative Biological Engagement Program are working on a charter to define collaboration on global infectious disease surveillance. • AFHSB/IB and DTRA/Joint Science and Technology Office are working together on development of IT tools for biosurveillance. • Strong relationships with the Services now in place via the DHA's Public Health Division and its CCWG. • A Defense Intelligence Agency/National Center for Medical Intelligence-DHA/AFHSB Memorandum of Agreement was signed by Director, Defense Intelligence Agency and by Deputy Director, DHA in late 2016. • Relationship with the VA remains on a consultative/informal form with sharing of documents (such as influenza surveillance data) and as requested by each organization.
2012 AFHSB uses processes for assuring highest standard of quality and integrity in data collection, maintenance, and analysis procedures.	Continue to be a high priority and should be periodically reviewed for potential improvements, based on new scientific knowledge and technological advancements.	• Continued use of high-quality processes. With incorporation into the DHA in August 2015, AFHSB is now required to provide status of quality assurance measures and reporting at the CCWG (quarterly), the DHA's Defense Readiness Reporting System (monthly), as well as periodically to the Director, Operations and the Director, DHA.
2012 AFHSC is in the process of acquiring the capability to	To enable open communication within DoD that use classified IT systems, AFHSB needs this capability (SIPRNet).	• In process of acquiring SIPR Fly Away kits. 1st unit may be installed late second quarter of FY 2017. Researching communication and

2012 Findings	2012 Recommendations	2016-2017 Status Update Since Last Report
send messages via DoD SIPRNet.		investigatory capabilities the fly away kits will provide in order to minimize ramp up time once received. Acquisition deadline extended to 4th Quarter FY 2017. AFHSB has a SIPR room with capability for review of Secret/Top Secret documents which can be brought over from Defense Health Headquarters or other locations.

PEOPLE AND CULTURE

In 2012, the DHB recognized that AFHSB's staff was highly qualified and possessed significant operational military experience as well as academic expertise and credentials (Table 17). The Service liaison staff enabled "improved communication and collaboration between the Services and AFHSC" and "the Services' willingness to continue to fill these billets and limit absences due to deployments is necessary to maintain this collaborative communication and to provide Tri-Service representation."[7] The DHB recommended maintaining staffing levels as they were, at a minimum, and protecting Service liaison positions from deployment. Finally, the DHB emphasized that "uncertain funding streams yield a significant number of contractors, which is a vulnerability to the organization"[7] and recommended examining contract staff agreements and transitioning contractor positions to civilian positions, especially for leadership roles (Table 17).[7]

AFHSB staff continues to maintain expertise in key areas, such as data analysis, epidemiology, communicable diseases, and disease surveillance.[42] In 2016, AFHSB hired a civilian to fill the position of Chief for the IB section, which is beneficial for maintaining the stability of the section's biosurveillance coordination, synchronization, and evaluation efforts. Furthermore, the Deputy Chief for AFHSB has been categorized as a GP-15 position (which is a position for physicians and dentists covered by the General Schedule classification system),[80] helping to maintain institutional memory as well as the technical, managerial, and operational stability of AFHSB.[47] However, the recent loss of senior level staff at AFHSB threatens the depth of expertise, and the limited number of civilian personnel positions available under DHA Public Health Division's Joint Table of Distribution presents a challenge for AFHSB (Table 17).[47]

Since reorganizing under the DHA in 2015, AFHSB no longer has Service liaisons (Table 17). However, as discussed under Organizational Structure, the Services' public health hubs serve as satellites to AFHSB, expanding tri-Service collaboration. Further, interaction with the Services also occurs at various working groups, such as the CCWG (Table 17).

Table 17. 2012 DHB Findings and Recommendations and 2016-2017 Status Update[7,47]

	2012 Findings	2012 Recommendations	2016-2017 Status Update Since Last Report
2012	Uncertain funding streams yield a significant number of contractors, which is a vulnerability to the organization.	Examine contract staff agreements to ensure arrangements are most cost-effective and provide stability. Transition positions to civilian, especially critical leadership roles (like Deputy Director).	• As mentioned above, there are a limited number of civilian positions in the DHA, Public Health Division Joint Table of Distribution. However, the Deputy Chief, AFHSB position has been transitioned to a GP-15 civil service position and the Chief of IB from an IPA to a GS-15. Chief of Operations still remains as an IPA.
2012	AFHSC staff possess significant skills, credentials, and experience.	DHB recommends current staffing levels are, at minimum, maintained.	• Current civilian and military staffing levels have been maintained; however, AFHSB has lost 3 of 7 subject matter experts/IPAs decreasing the number of staff with senior-level expertise and that can speak for the government. As DHA continues to undergo civilian personnel cuts, unsure on impact on AFHSB civilian staffing levels.
2012	Strong collaborative culture exists. Due to the Tri-Service nature of the mission, Service liaisons are critical to success and streamlining communications with the Services.	Service liaison positions should be guarded from deployments.	• AFHSB no longer has Service Liaisons since the move to DHA. The Service liaisons performed other duties as well as being able to speak for the government. • IB section is currently working with Services Public Health commands in order to receive more timely notifications of outbreaks. • Access to Disease Reporting System Internet will enhance IB's monitoring of outbreaks, and notification to respective service to investigate. • Since August 2015, interaction with the Services occurs at the Public Health Division's CCWG and other working groups such as at the Health Surveillance Working Group, the Public Health Working Group, Armed

2012 Findings	2012 Recommendations	2016-2017 Status Update Since Last Report
		Forces Reportable Medical Event Guidelines Working Group, and the Individual Longitudinal Exposure Record Working Group.

From AFHSB, 2016.

The Commanding Officer regards the success of AFHSB as a continuing endeavor, although many improvements have been implemented since the last visit.[48] Effective leadership is a requirement for progression and movement into new and innovative directions in military health surveillance tasks. The characteristics of effective leaders for the Branch would include leaders who understand science and medicine; have the ability to be a change agent amidst rapid transformation; and have flexibility, business acumen, and executive experience.[48]

STRUCTURE AND PROGRAMS

In 2012, the DHB stated that the "AFHSC provided the DHB with clear, complete organizational charts for its organization as a whole, as well as for each division, encompassing all personnel. Roles and responsibilities appear to be well understood."[7] The DHB commended AFHSB's efforts and capabilities, such as the DoDSR, the Defense Medical Epidemiology Database (DMED), and its epidemiologic analyses (Table 18).[7] The DHB commended the AFHSC's commitment to increasing transparency in health surveillance, such as through the *Medical Surveillance Monthly Report (MSMR)*, and noted the integral role that GEIS plays in advancing public health and stopping the spread of disease in the military population (Table 18).[7] However, the DHB found that deployment health data were lacking from its databases because of a lack of consistent in-theater data collection processes across the Services. The DHB recommended that DoD and the Services collaborate to ensure that theater data collection processes were streamlined and that adequate and complete theater data were supplied to the AFHSC (Table 18).[7]

Table 18. 2012 DHB Findings and Recommendations and 2016-2017 Status Update[7,47]

	2012 Findings	2012 Recommendations	2016-2017 Status Update Since Last Report
2012	Excellent work collecting and maintaining vast database of information for DoD (especially the Serum Repository).	Mechanisms to maintain confidentiality should be controlled and routinely assessed to ensure compatibility with DoD Personally Identifiable Information/Protected Health Information, Health Insurance Portability and Accountability Act, and other industry standard requirements.	• AFHSB has continued to maintain high-level of confidentiality for DoD Personally Identifiable Information/Protected Health Information in the DMSS.
2012	External web-database, DMED, provides DoD end-users with access to wealth of health surveillance data.	AFHSC should continue to maintain this database, while also continuing to screen and consider anyone requesting access. The process for determining access should be part of future DHB reviews to ensure opportunities to contribute to pathophysiology of disease are appropriately balanced against DoD priorities.	• DMED capacity has been maintained with access to over 3000 registered users via Common Access Card. Concur that the process for access to DMED should be reviewed at the DHB's visit in December 2016. Currently, all requests for DMED access are reviewed by the Chief of the E&A Section and if warranted, approved based on factors such as stated reason for access and relevance to public health & DoD.
2012	Deployment health data lacking from databases due to lack of consistent in-theater data collection processes across Services.	To ensure comprehensive databases, DoD and Services must collaborate to ensure theater data collection processes are streamlined and adequate data supplied to AFHSB.	• Theater Medical Data Stores (both encounter and medication data) have been fully incorporated into the DMSS with daily feeds. • Deployment rosters data dates back to 1990, civilian deployment data dates back to 2010, pre- and post-deployment health assessment data dates back to 1994, Theater Medical Data Stores data was fully implemented in 2014. • Since 2008, AFHSB has been able to pull data from U.S. Transportation Command Regulating and Command & Control Evaluation System (TRAC2ES) each week, so it has access to the data, but TRAC2ES data has not been incorporated into DMSS because data feeds cannot be automated. It is expected that routine annual Periodic Health

	2012 Findings	2012 Recommendations	2016-2017 Status Update Since Last Report
			Assessment data for all Service members will begin to be incorporated into the DMSS no later than December 2016.
2012	DHB is impressed with the comprehensive process for receiving and reviewing requests for epidemiological analysis; this maintains a high level of scientific rigor. They respond to a high volume of requests in a timely manner.	Maintain the clear processes and high qualified staff.	• AFHSB has continued to maintain a high-level of scientific rigor for epidemiologic analyses, especially with oversight on a 3 times a week via the Request Assessment Process established by the E&A section. Includes oversight by the DHA Human Research Protections Office.
2012	AFHSC has commitment to increasing transparency in health surveillance; it transmits data in a timely manner.	Maintain scientific rigor.	• AFHSB has continued to maintain high-level of scientific rigor for data sharing and availability of military-relevant studies and analyses published in the *MSMR.* In addition, there have been over 40 peer-reviewed publications by AFHSB staff in the past 4 years since the DHB's last visit.
2012	GEIS plays an integral role in advancing public health and stopping the spread of disease in the military population.	Maintain GEIS laboratory partnerships around the world, as they are critical components of surveillance efforts.	• High-level collaboration and sponsorship of military-relevant surveillance continues to be a top priority of the GEIS section at AFHSB (funding ~$58 M annually).

From AFHSB, 2016.

Data Management and Technical Support

Since the 2012 report, AFHSB has preserved excellent capabilities and processes for its various programs, such as the high level of confidentiality for DoD Personally Identifiable Information/Protected Health Information in DMSS and the capacity of DMED.[47] Within AFHSB, the Data Management and Technical Support section manages both DMSS and the DMED,[50] which is a subset of data contained within DMSS.[81] DMSS compiles current and historical data (e.g., hospitalizations, ambulatory visits, immunizations);[42] however, it does not directly interface with other DoD surveillance databases.[48] Data Management and Technical Support also operates the DoDSR, which provides a wealth of valuable data from stored blood sera of Service members from the DoD HIV testing program and expanded serum samples collected for pre- and post-deployment-associated conditions.[50] The repository has the capacity for 100 million samples and is the world's largest storage facility of its kind, with over 62 million serial serum specimens from more than 11 million individuals.[50] DMSS also compiles data from:

- the Services' Periodic Health Assessments, a new initiative for AFHSB since December 2016;[47]
- pre- and post-deployment forms;[47]
- data linked to the serums;[48] and
- Theater Medical Data Stores, which include inpatient and outpatient records and data.[82] The inclusion of Theater Medical Data Stores in DMSS is an improvement from the last site visit and has been ongoing since 2014.[47]

Global Emerging Infections Surveillance

Since the DHB's last visit, AFHSB has maintained a high level of scientific rigor with its epidemiologic analyses, as well as continued collaboration and sponsorship of military-relevant surveillance by the GEIS section (Table 18).[47] The GEIS section has developed a strategy and a rigorous process of activity review in order to support the Combatant Commands' global health priorities to prevent, detect, and respond to infectious disease threats.[49] This process is informed by numerous policy documents, plans from federal agencies, and input from DoD leadership. Global health priorities may be determined by policy documents such as the Chairman of the Joint Chiefs of Staff's *Joint Concept for Health Services*, the U.S. National Security Strategy, and the Global Health Security Agenda. Further, Theater Engagement Plans, Department of State Mission Support Plans, and DHA Implementation Plans determine infectious disease priorities.[49] Additionally, guidance from leadership within the MHS, Combatant Commands, and DoD Overseas Laboratories help shape future operations for GEIS.[49,83] Currently, the GEIS section is developing specific workplan activities to provide more fidelity, granularity, and mechanisms to better support the Combatant Commands' global health priorities.[48] Furthermore, GEIS has also developed a timeline of their business cycle for a given year, in order to provide more robust support to the Combatant Commands (Figure 16).[45]

Figure 16. GEIS Business Cycle[45]
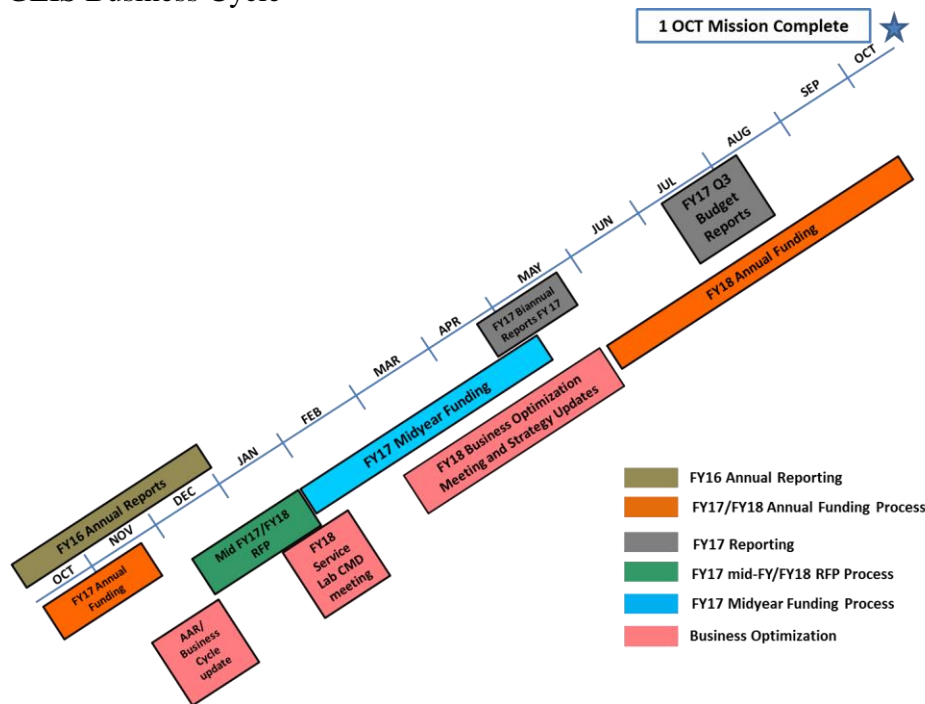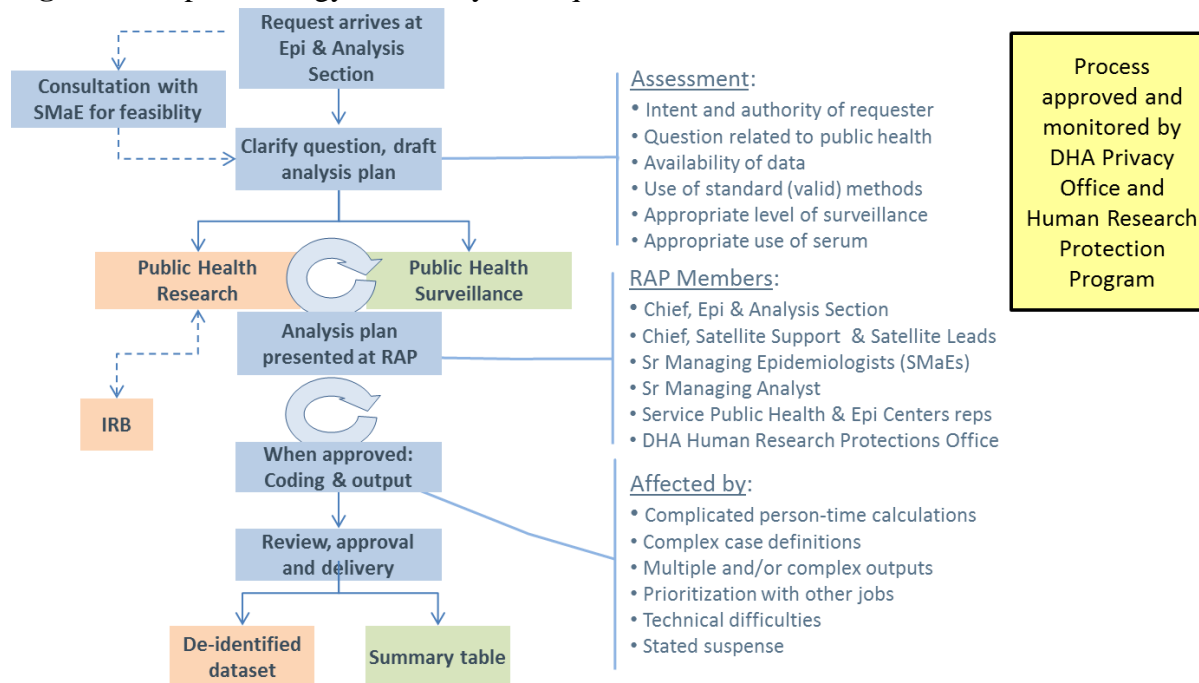

From Badzik, 2016.

Recently, the GEIS section has refined its prioritization and review process for selecting GEIS funded programs to ensure the focus is on surveillance, global response, accountability, and effective program management.[48] It is the DHB's understanding that in previous years, the process had not been as rigorous, creating inconsistencies with the types of programs being funded.[48] This improved process allows for effective review of proposals, and ensures alignment with strategic requirements across GEIS's four focus areas: antimicrobial resistant infections, enteric infections, febrile and vector-borne infections, and respiratory infections.[52] This process also aligns efforts with Combatant Command priorities. Additionally, GEIS aims to leverage existing DoD, other U.S. agency, or partner nation surveillance activities and capacities to streamline geographic initiatives and minimize costs.[49] Furthermore, to meet its surveillance goals, GEIS uses an algorithmic approach to prioritize select cases for identification, genetic characterization, and antimicrobial resistance testing.[49]

Epidemiology and Analysis

AFHSB prioritizes congressional requests for operational surveillance and information, and likewise AFHSB's various sections have also developed prioritization processes, which allow them to respond to epidemiological and surveillance requests quickly and effectively. For example, the E&A section has developed an effective and well-documented Request Assessment Process to manage requests for epidemiological analysis and serum samples (Figure 17). AFHSB also receives assistance from the preventive medicine residents from the Uniformed Services University of the Health Sciences and the Walter Reed Army Institute of Research, who conduct a four- to six-week practicum under the supervision and mentorship of senior AFHSB staff.[42]

Figure 17. Epidemiology and Analysis Request Assessment Process[45]

From Badzik, 2016.

AFHSB also continues to disseminate scientifically rigorous, evidence-based information on the current status, trends, and determinants of health of Service members through its *MSMR*.[45] The publication has been ongoing since April 1995, and, in 2011, it was accepted for indexing in MEDLINE® and the U.S. National Library of Medicine's Medical Literature Analysis and Retrieval System®, given the scientific quality and merit the studies provide.[45]

Integrated Biosurveillance

Since the publication of the DHB's 2012 report, AFHSB formed the IB division, which serves as a central biosurveillance coordination unit for DoD medical and public health components and leadership.[51] The division's efforts are primarily directed at monitoring the infectious disease of humans, but also "embraces the 'all-hazards' aspect of biosurveillance."[51] IB section serves as a central biosurveillance coordination unit to meet the needs of the DoD medical and public health components and leadership.[51]

Most efforts of the IB division are directed to monitoring the infectious diseases of humans.[51] The IB division has seven functional areas, derived from key documents such as the 2013 Deputy Secretary of Defense memorandum "Interim Guidance for Implementing the National Strategy for Biosurveillance," DHA Public Health Division Concept of Operations, the Health Affairs – Nuclear/Chemical/Biological Defense Program Memorandum of Understanding Operations Plan, and AFHSB Strategic Plan.[51] These areas include:

- indicator-based surveillance;
- event-based surveillance;
- reporting;

- technology evaluation;
- quality improvement;
- coordination of biosurveillance efforts; and
- epidemiologic investigation.[51]

B.3 SUCCESSES AND ACHIEVEMENTS

The respective sections of AFHSB have contributed impactful accomplishments, which include multiple tools, reports, and input to technical discussions and decision-making on the health of the Armed Forces. Some of the highlighted accomplishments include:

- Completion of an analytical report for a congressional inquiry on the overview of women's health and its relation to deployments. The analysis included conditions most frequently diagnosed both during and after deployment, which included the prevalence of contraceptive use during deployment.[42]
- Improvement on the analysis of adverse events related to mefloquine use in Service members. The findings have been shared and briefed to DoD policymakers, the U.S. Army Pharmacovigilance Center, and the VA.[42]
- Completion of an assessment of the risk factors leading to severe outcomes related to pneumonia and influenza in Service members. The results of the study have demonstrated the importance of prioritizing certain risk groups in the military for the influenza vaccine.[42]
- The GEIS program's support of the Multidrug-resistant Repository and Surveillance Network, which collected and tested over 5,000 multidrug resistant organisms at over 40 military treatment facilities and participating civilian hospitals worldwide. The information allowed for hospitals to save costs through interventions such as optimized empirical antibiotic selection, earlier detection of outbreaks, and emerging pathogens.[42]
- The surveillance activities related to monitoring the emergence of viruses transmitted by the *Aedes* mosquitoes in Kenya, Southeast Asia, and the Americas led to the first detection of Zika virus in Thailand and Cambodia. This accomplishment led to the detection and monitoring of the virus as it emerged in the Western Hemisphere.[42]

IB, AFHSB's newest section, leverages open source data to communicate critical information on health outbreaks and events.[48] The IB section produces hundreds of disease-specific surveillance summaries each year to integrate efforts within DoD, other federal agencies, and partner nations in regards to biosurveillance data and information.[42] Partnerships, open source data, and collaborations are necessary for the success of an integrated biosurveillance approach.[48] The IB section was instrumental in developing products, such as:

- Surveillance summaries with updated information on cases of Zika virus, which the National Security Council used.[48]
- In Fiscal Year 2015, the IB section produced and distributed 236 surveillance summaries on avian influenza A (H7N9), Middle East Respiratory Syndrome Coronavirus, chikungunya in the Caribbean, the Ebola outbreak in West Africa, dengue in Japan, and enterovirus D68.[42] Such reports inform efforts for force health protection and readiness, as well as comprehensive health surveillance across nations.
- In addition, the IB section produces tools and guidance on detecting diseases for DoD and partners to use, as well as interactive maps for disease surveillance.[42]

Given the depth and range of surveillance data AFHSB manages and analyzes, multiple products and deliverables are regularly produced to inform decisions on the health of the Armed Forces (Table 19). For example, the E&A section uses the DMSS and DoDSR to produce analytical reports on disease and injury trends.[42,84] The section also publishes the *MSMR*,[84] which provides peer-reviewed articles on estimates of incidence, distribution, impact, and trends of injury and illness across the Services and beneficiary populations.[85] Another unique product is a document that lists categories of diseases for case definitions for data analysis and health reports, which assists in producing standardized surveillance case definitions across DoD public health practitioners.[42,86]

Table 19. FY 2015 AFHSB Periodic Reports in One Year[42]

Deployment Reports	Injury Reports (continued)
▶ Deployment Health Compliance Report	▶ Injury Installation Reports
▶ Deployment Health Report	▶ Reserve Lost Duty Metric
▶ PostDeployment Health Assessment (DD2796) Summary Report	▶ U.S. Army Training and Doctrine Command (TRADOC) Cold Injury Report
▶ PostDeployment Health Reassessment (DD2900) Summary Report	▶ DoD Eye Injury Annual Report
▶ PreDeployment Health Assessment (DD2795) Summary Report	▶ DoD Hearing Injury Annual Report
▶ Army Disease & Injury Report	▶ TRADOC Heat Injury Report
▶ U.S. Coast Guard Defense Health Agency Report	▶ Army Annual Injury Report
Disease Reports	**Mental Health Reports**
▶ Respiratory Illnesses Report	▶ Health Affairs (HA) TBI Report
▶ Influenza Surveillance Report	▶ HA Mental Health Report
▶ Influenza Modeling Report	▶ Military Health System Dashboard Measures
▶ Influenza-Like Illness Army Report	▶ Air Force Special Operation Command (AFSOC) Mental Health and TBI Quarterly Report
▶ Veterans Affairs Influenza Surveillance Report	▶ AFSOC Mental Health and TBI Annual Report
▶ Department of Defense (DoD) Communicable Disease Report	▶ HA PTSD Report
▶ National Capital Region Medical Directorate Communicable Disease Report	▶ Defense and Veterans Brain Injury Center TBI Screen
▶ Malaria Case-Finding Report	▶ Force Health Protection and Readiness (FHP&R) Mental Health Screen Report
▶ Reportable Events Monthly Report (REMR)	▶ FHP&R Harm and Violence Report
▶ Malaria Year-To-Date Korea	▶ FHP&R PTSD Depression Screen Report
▶ Meningococcal Report	▶ USASOC Mental Health and TBI Monthly Report
▶ Armed Forces Pest Management Board (AFPMB) Arthropod-Borne Hemorrhagic Fever Report	**Special Reports**
▶ AFPMB West Nile Fever Report	▶ FHP&R QA Compliance Audits: Automated Neuropsychological Assessment Metrics (ANAM)
▶ AFPMB Mosquito Borne Encephalitis Report	▶ U.S. European Command Reportable Medical Events Monthly Summary
▶ AFPMB Dengue/Hemorrhagic Fever Report	▶ ANAM Report
▶ AFPMB Leishmaniasis Report	▶ Smallpox Cardiac Adverse Event Report
▶ AFPMB Lyme Disease Report	▶ *Medical Surveillance Monthly Report (MSMR)* Deployment Health Assessment Summary
Injury Reports	▶ Special Surveillance (*MSMR*): Motor Vehicle Accidents
▶ Army Injury & Overuse Report	▶ Special Surveillance (*MSMR*): Amputations, TBI, DVT, Leishmaniasis, Severe acute pneumonia, and heterotrophic ossification
▶ Army Public Health Command 360	▶ USCG Burden of Disease Report
▶ U.S. Army Special Operations Command (USASOC) Special Reportable Events (Semi-Annual)	▶ USCG Reportable Event Report
▶ DoD Eye Injury Quarterly Report	**Total number of reports: 904**
▶ DoD Hearing Injury Quarterly Report	
▶ TRADOC Training-Related Injuries Report	

From AFHSB, 2016.

B.4 CURRENT CHALLENGES

STRATEGY

Although AFHSB leadership has outlined how their mission aligns with the DHA's strategy, AFHSB currently lacks an overarching strategic plan. AFHSB's GEIS section has developed its own strategy for addressing global health and infectious disease issues in order to better support Combatant Command priorities;[49] however, this strategy is not applicable to all AFHSB functions. In order to ensure the value of the Branch to the agency overall, it would be beneficial if they developed a strategy in coordination with the DHA. Recently, the DHA has instructed AFHSB to look into expanding into areas to include cognitive computing; expanding the use of unstructured data from large data sources such as the Electronic Medical Records system; using geospatial information for predictive modeling; and leveraging collaborations within the Public Health Division.[48] However, the Branch is still determining how to fulfill this guidance, which does not come with additional resources.

In order to successfully meet the goals of AFHSB's vision and mission, it is necessary to address its resource constraints. For instance:

- AFHSB activities are funded by DHP O&M money as they are categorized as surveillance and not research.[48] The need for a more balanced portfolio, with both O&M and research, development, test, and evaluation funds, would better allow AFHSB to address proposals with relevant research components. Since AFHSB cannot accept DHP research, development, test, and evaluation funds, this limits their ability to address research studies around epidemiological issues, relevant to further understanding of surveillance patterns, and also constrains AFHSB to use O&M funding within the obligation year.[48]
- DHP O&M funding is only available for obligation for the period of one fiscal year, whereas the military medical research and development laboratories that AFHSB funds through GEIS are accustomed to two or three year funding cycles.[52]
- There is a need for programmed funding for GEIS activities given the reorganization under the DHA and reduced visibility. The GEIS program is not only integral to DoD surveillance activities, but also is a significant source of funding for the military medical research and development laboratories.[52] Instability of GEIS funding would have secondary and tertiary effects on the mission and function of these labs, as many are dependent on GEIS (receiving up to 50 percent of their funding from GEIS).[48]

PROCESS

Since the transition into the DHA, AFHSB has faced challenges related to IT and communication. For example, the Data Management and Technical Support section has not been able to integrate data with DoD since the transition to the DHA because it is still on the Army's network. Prior to joining the DHA, AFHSB had the convenience of operating its own network enclave and functioning independently. However, the DHA's Health IT Directorate has not programmed to take on AFHSB infrastructure and the DMSS.[53] The costs associated with the DHA's management of DMSS would be high initially, given the infrastructure changes needed to support the required capabilities.[53] Some of the benefits associated with DHA management of the DMSS would include better IT capabilities, improved cybersecurity, streamlined

management, better service, and sustainability of the database. However, this aspect of the transition could potentially be time intensive and inhibit the efficient functioning of DMTS, since the optimal use of data is important to the operations and objectives of the section.[48] In terms of communication processes, AFHSB would benefit from swift action on granting SIPRNet access to provide direct communication with stakeholders, such as the Combatant Commands.[48]

The new structure and realignment into DHA has added multiple layers of approval for AFHSB, inhibiting the Branch's ability to directly manage formal requests with primary customers and Combatant Commands, such as proposals for concurrence.[48] However, the daily communications with stakeholders and customers has largely remained the same.[48]

PEOPLE AND CULTURE

AFHSB has been challenged to ensure it is adequately staffed to provide adequate surveillance capabilities. For example:

- Currently, 79 percent of AFHSB staff is composed of contractors, who are not allowed to conduct certain official government functions, such as officially representing the government in any capacity or functioning as a Principal Investigator on a study, requiring human resources to take on these functions.[36] Further, three IPA slots have been lost since the Board's previous site visit.[48]
- AFHSB has had difficulties obtaining more civilian positions because of the 25 percent staff cuts DHA is undergoing, as mandated by the Joint Table of Distribution, which is the "manpower document that identifies the positions and enumerates the spaces that have been approved for each organizational element of a joint activity for a specific fiscal year;"[64,87] and
- Hiring processes through the DHA are slow.

The reliance on contract employees has been a continued issue since the Board's site visit in 2012.[47] Although contractors provide flexibility in pivoting to new projects, they are unable to conduct certain official government functions[47] and do not provide stability or institutional knowledge within the organization due to frequent turnover; thus threatening the sustainability of long-term strategic projects (Table 17). Ideally, enhancing the engagement of active duty and government manpower could provide sustained levels of focus on strategy, allow opportunities for career development, and ensure relevance to the mission-critical objectives of AFHSB. Transitioning some of the contractor positions into government positions would also build sustainability and consistency within AFHSB's sections. In the long run, this will be more cost effective for the agency.

The establishment of the Chief of IB to a GS-15 position and the transitioning of the Deputy Chief position to a GP-15 civil service position have been important accomplishments, which, at the very least, should be duplicated across other key positions, such as the Chief of Operations. Processes for hiring of civilians through the DHA should also be assessed and reviewed in order to identify barriers and roadblocks to timely hiring of required staff.

AFHSB collaborates with Uniformed Services University of the Health Sciences and Walter Reed Army Institute of Research to host students and medical residents in a four to six week rotation in epidemiological studies.[42] The residents or Masters of Public Health students are mentored by AFHSB senior staff and develop skills in health surveillance systems, knowledge and application of epidemiology, and critical analysis. The residents design an epidemiological study, analyze and interpret data using DMSS, and generate publications and oral presentations for conferences. The program has been successful for AFHSB, with 57 trained residents since 2008 across the Services (28 Army, 15 Navy, and 14 Air Force residents).[42] However, there is not a defined career path for epidemiological research or the resources within the Branch to expand this collaboration further within or outside the Services.[48]

Through roundtable discussions with AFHSB staff, the Board was made aware of the dearth of necessary acquisition training in personnel filling acquisition billets. In order to effectively conduct the operational and functional areas of research and surveillance, military personnel should have sufficient training on military acquisition rules. This is particularly important for GEIS, provided the scale and impact of acquisition-related decisions and large amounts of funding attached to its programs.

STRUCTURE AND PROGRAMS

Through roundtable discussions with AFHSB staff, it was made clear to the DHB that being realigned into the DHA has created additional layers of approval for certain processes, changing AFHSB's surveillance and data sharing processes, which have inhibited the effectiveness of operations. For example:

- AFHSB is required to undergo an added level of scrutiny for data sharing through the DHA Privacy Office when conducting epidemiological analysis for studies.[48]
- In order to be recognized by the National Library of Medicine, AFHSB has maintained editorial integrity and independence for the *MSMR;* however, the articles must now be vetted through DHA before publication, which compromises the peer-review process. Maintaining editorial independence is a valuable and necessary requirement that should be retained.[48]

Implementation of more flexible measures by DHA with the transition processes of AFHSB would be helpful to a more seamless transition for staff and functions. This may include considerations to ensure the timely processing of data sharing requests, the independence required to maintain the *MSMR,* and better SIPRNet access to keep communication channels open with stakeholders.[48]

Despite the improvements to GEIS's prioritization and proposal review processes, the Combatant Commands have been challenged with understanding GEIS's new requirements for completing proposals for submission. To help its customers better understand these new requirements and improve the quality of submitted proposals, GEIS will develop and conduct training sessions for customers on the requirements. This updated proposal review process will help align funded proposals with GEIS's strategic requirements across the four strategic focus areas and provide a venue for customers to report on their funded projects, creating a more transparent financial accounting mechanism to track funding alongside activities and outcomes.[48]

B.5 WAY FORWARD AND FUTURE OPPORTUNITIES

AFHSB is currently working to better define its growing role for the future and is embracing possibilities in predictive surveillance and cognitive computing, among other issues. A potential area of growth would be mapping the impact of AFHSB's surveillance efforts to specific policies and decision-making processes across DoD and for stakeholders. Such exercises could demonstrate the value the Branch presents to biosurveillance capabilities and improved force health.[48] Further, DoDSR is a unique DoD source that contains a wealth of serum and tissue samples by the Department since 1989, thus providing opportunities for collaborative partnerships such as the Cancer Moonshot initiative.[55]

As noted previously, AFHSB lacks an overarching strategic plan. Further, there is no overarching, coordinated strategy between the Naval Health Research Center, AFHSB, and Deployment Health Clinical Center. However, AFHSB's recent realignment under the DHA helps the combat support agency achieve its strategic objectives (Table 12), and expanding its strategic oversight over AFHSB would be beneficial.

AFHSB interacts with customers and stakeholders regularly and conducts these tasks as relationship-building activities. With the transition into the DHA, there is an opportunity to leverage other branches within and outside of the DHA Public Health Division to support the mission of AFHSB, such as the Defense Centers of Excellence Division, TRICARE Health Plan Division, or the Pharmacy Division. Examples of AFHSB's primary customers are displayed in the figure below (Figure 18).

Figure 18. AFHSB's Customers and Stakeholders[45]
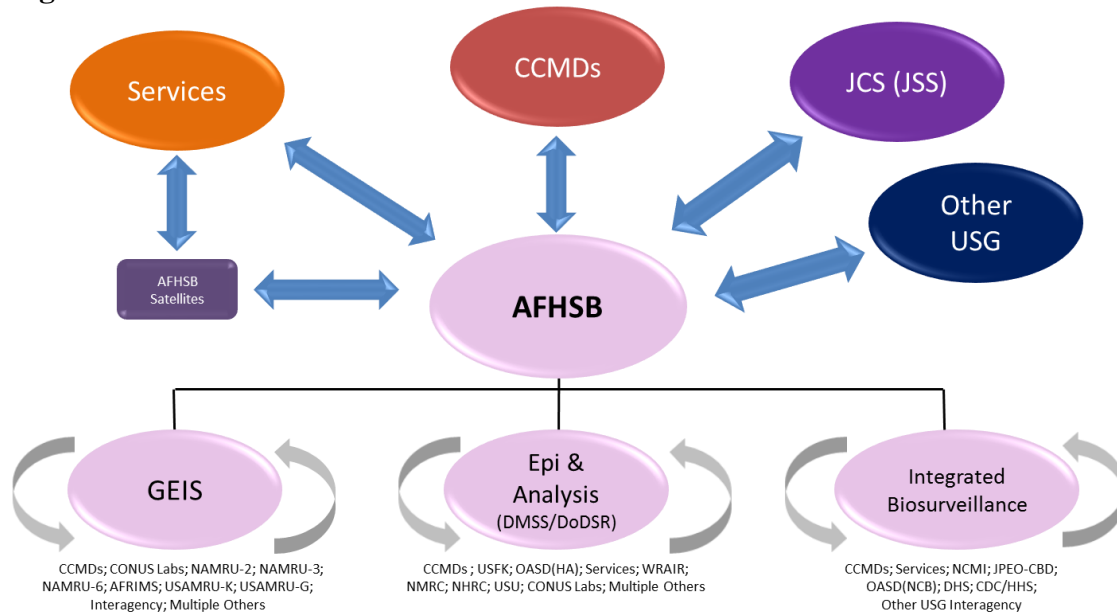
From Badzik, 2016.

APPENDIX C. DEPLOYMENT HEALTH CLINICAL CENTER

C.1 BACKGROUND

STRATEGY

The Deployment Health Clinical Center (DHCC) is the psychological health component of the Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury (DCoE). Prior to 2008, the Center was responsible for maintaining and improving care for those affected by deployment-related health issues.[56] DHCC's focus has shifted over time, and its current mission is to "improve the lives of our nation's service members, veterans and families by advancing excellence in psychological health care and prevention of psychological health disorders."[56,57] DHCC's vision is to "be the trusted source and partner in shaping meaningful improvements in psychological health care and prevention of psychological health disorders."[56,57] The Center collaborates across the Department of Defense (DoD), Department of Veterans Affairs (VA), and other agencies to help "provide leadership and expertise, inform policy, and drive improvements and policy in psychological health outcomes."[56,57]

DHCC has developed a strategic plan for Fiscal Years (FYs) 2016-2018 that outlines its strategic framework and its four core priorities (Table 20).

Table 20. DHCC Strategic Priorities[10]

Strategic Priority	Description	Activities Included
1.0 Improve care quality	DHCC works to improve the quality, effectiveness, and efficiency of psychological care in the DoD to support better health and enhanced readiness.	• 1.1 Translate existing knowledge and evidence-based practice into mechanisms of clinical care • 1.2 Increase adherence to evidence-based practice • 1.3 Facilitate improved quality and efficiency of psychological health programs • 1.4 Provide expert training and clinical consultation • 1.5 Evaluate DHCC's impact in improving care quality
2.0 Increase access, reduce barriers, and encourage optimal use of psychological health resources	DHCC aims to increase access to care while reducing barriers to care for psychological health across the MHS.	• 2.1 Increase psychological health literacy • 2.2 Educate and train providers on evidence-based practices • 2.3 Promote and support system level care delivery approaches to increase access to care • 2.4 Analyze, influence, and facilitate policy development • 2.5 Evaluate DHCC's impact in increasing access, reducing barriers, and encouraging optimal use of psychological health resources

Strategic Priority	Description	Activities Included
3.0 Advance the science of psychological health	DHCC creates and manages knowledge to support optimal psychological health across the enterprise.	• 3.1 Surveil and identify trends in mental health data to develop recommendations to improve the system of care • 3.2 Identify critical gaps and evaluate effective psychological health prevention and treatment strategies • 3.3 Translate psychological science into practice • 3.4 Disseminate evidence for emerging psychological health concerns and treatments • 3.5 Produce research and evidence synthesis products that directly inform translational science • 3.6 Increase shared knowledge through scientific consultation • 3.7 Evaluate DHCC's impact in advancing the science of psychological health
4.0 Foster organizational development	DHCC strives for excellence in organizational performance through continuous workforce development and building a culture of mutual trust.	• 4.1 Cultivate a learning environment and continually improve processes • 4.2 Build a culture of wellbeing, trust, teamwork, innovation, and productivity • 4.3 Promote workforce development, expertise and agility • 4.4 Recruit and retain a high quality workforce • 4.5 Evaluate DHCC's impact in fostering organizational development

Adapted from DHCC, November 2016.

These strategic priorities align with the Military Health System's (MHS) Quadruple Aim (Figure 19), the strategic goals of Defense Health Agency (DHA), as well as with the mission of DCoE, which is "to improve the lives of our nation's service members, veterans and their families by advancing excellence in psychological health and traumatic brain injury prevention and care."[88]

As of March 2017, the DHA strategic goals are to:
1. strengthen our role as a Combat Support Agency;
2. strengthen our partnership with the Services; and
3. optimize DHA operations. [44]

Figure 19. The Military Health System Strategic Plan - Quadruple Aim[10]
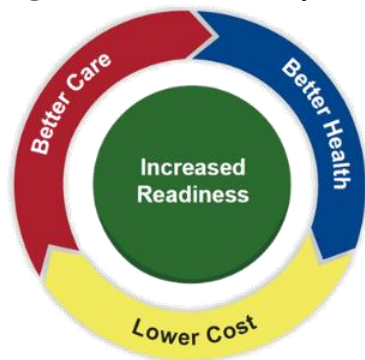
From DHCC, November 2016.

DHCC's strategic priorities (Table 20) also are aligned with previous findings and recommendations of multiple task forces and commissions on mental health, such as the DoD Task Force on Mental Health and the President's Commission on the Care for America's Returning Wounded Warriors.[10]

DHCC has developed a value proposition to further guide the quality and scope of its work, which includes:

- **Scientific rigor:** apply consistent, precise, and objective methodology to all activities performed across the Center.
- **Inquiry and synthesis:** utilize exploratory, analytical, and surveillance capabilities to help advance psychological health care, to include health systems research aimed at improving quality and efficiency across the continuum of care.
- **Implementation and sustainment:** bridge research and practice through gap analyses of research and practice; translate, disseminate and implement evidence-based innovations; provide ongoing evaluation; and educate providers, Service members, veterans, and families.
- **Collaboration:** partner with internal and external MHS stakeholders to provide focused analyses, research, leadership, and expert consultation to enhance relationships and achieve the greatest return on investment.[10]

HISTORY

In 1994, the Gulf War Health Center at the Walter Reed Army Medical Center was established to provide physical and mental health care to veterans[****] related to deployment and developed the tertiary treatment component of the Comprehensive Clinical Evaluation Program, which was developed by DoD to provide "systematic clinical evaluations for the diagnosis and treatment of conditions connected to service in the Gulf War."[10] This tertiary care component included a specialized care program for "veterans with medically unexplained physical symptoms."[10] In 1999, the Center was re-established as DHCC and designated one of three Deployment Health Centers (DHCs). At that time, the Center was responsible for "coordinating the evaluation of veterans seeking care for post-deployment health concerns using the Post-Deployment Health Clinical Practice Guidelines," which replaced the Comprehensive Clinical Evaluation Program,[56] and it expanded its specialized care program to include veterans with trauma spectrum disorders or post-deployment reintegration challenges. DHCC also offered a week-long program for significant others of Service members facing deployment-related challenges and initiated a deployment-related research portfolio, among other activities.[10]

In 2008, with the mandate of the National Defense Authorization Act, DHCC became a center within DCoE.[10] The Center's mission shifted primarily to psychological health at this time—specifically the implementation of strategies to prevent, diagnose, mitigate, treat, and rehabilitate those suffering from posttraumatic stress disorder (PTSD) and other mental health conditions. In 2012, the oversight and administration of the specialized care program was transitioned to the National Intrepid Center of Excellence, and direct patient care activities of DHCC were


[****] "The term "veteran" means a person who served in the active military, naval, or air service, and who was discharged or released therefrom under conditions other than dishonorable."[58]

eliminated.[10,56] The Post-Deployment Health Clinical Practice Guidelines were retired in 2014 by the VA/DoD Evidence Based Work Group.[56]

Historically, DCoE and DHCC have undergone several realignments. In 2012 they were moved from the TRICARE Management Activity to U.S. Army Medical Research and Material Command (MRMC),[7] and in 2016 they were realigned to the DHA under the Operations Directorate (J-3)—which includes programs focused on clinical care, TRICARE, wounded warrior care, pharmacy, public health, and readiness.[10] Figure 20 presents a timeline marking these significant changes throughout DHCC's history.

Figure 20. Timeline of DHCC History[10]
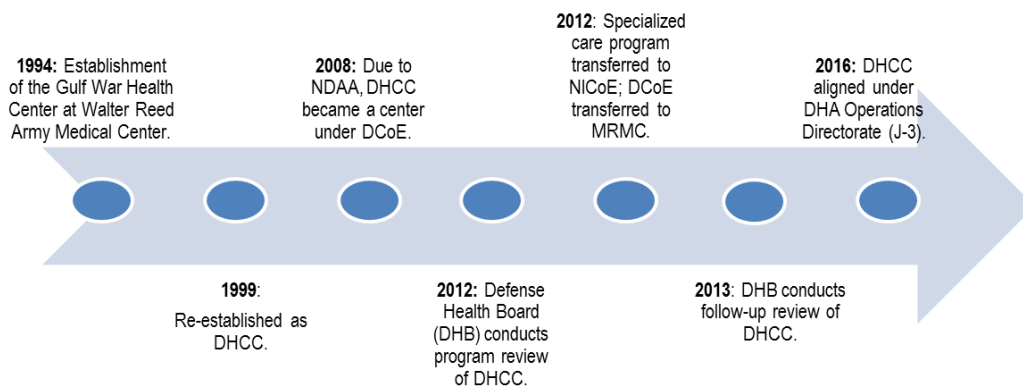
Adapted from DHCC, November 2016.

ORGANIZATIONAL STRUCTURE

Figure 21 illustrates the organizational structure of DHCC. Under the Office of the Director, which includes the Director, Deputy Director, and Special Staff, the following areas are represented:

- Administration and Operations (Administrative Support; Operations Support);
- Psychological Health Research (Research Translation & Integration; Research Production & Investigation);
- Psychological Health Promotion (Psychological Health Advocacy; Early Intervention);
- Primary Care Behavioral Health (Medical & Collaborative Care; Science, Development, & Education);
- Psychological Health Clinical Care (Evidence Based Practice; Implementation); and
- Psychological Health Performance & Analytics (Clinical Surveillance and Medical Intelligence; Program Modeling & Assessment).[56,62]

Figure 21. Organizational Chart of DHCC[57]
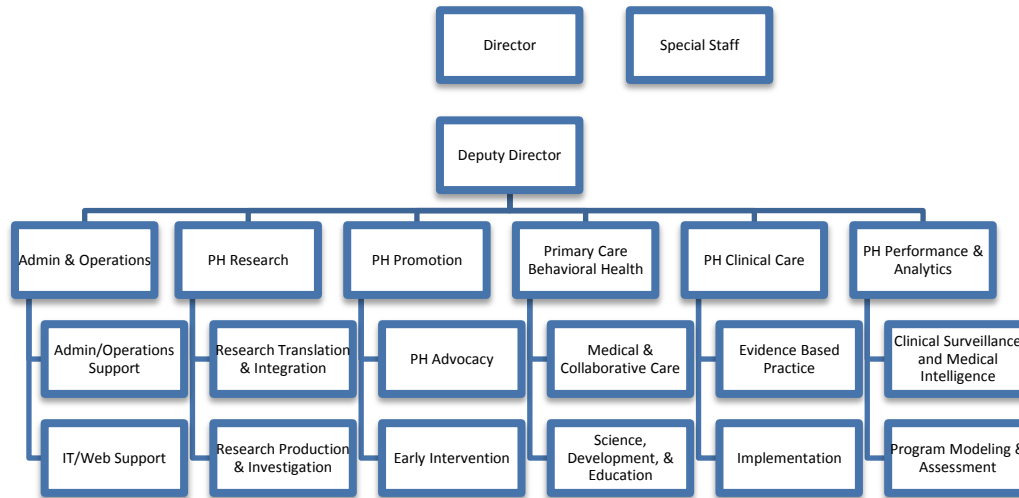
From DHCC, 2016.

During a 2012 site visit, the Defense Health Board (DHB) found that DHCC had limited direct interaction with DoD leadership and policy makers, noting that DHCC was "monitored almost exclusively by DCoE."[7] The DHB indicated that "DCoE must ensure that adequate reporting and evaluation procedures are in place and are followed."[7] In 2012, a Government Accountability Office report recommended an additional coordinating authority be established for DCoE.[89] Although the DHB recognized the purpose of the realignment of DCoE under MRMC in 2012, it further recommended that DoD carefully monitor this transition so that DCoE would still have the ability to competently monitor its component centers, including DHCC.[7] The DHB also recommended that there be adequate oversight of component center budgets.[7]

With the transition to DHA J-3 and out of MRMC, DCoE no longer has an independent Office of Strategy Management.[59] All strategic initiatives for DCoE and DHCC are now aligned directly with the goals and objectives of the DHA.[59] Currently, the Center is working to further collaborate and modify its performance metrics to align with the DHA.[59] As noted previously, there is no centralized strategy or funding for the DHCs.

Figures 22a and 22b illustrate DHCC's place within the DHA organizational structure.

Figure 22a. Basic Organizational Chart of DHA and the DHA Operations Directorate[††††]
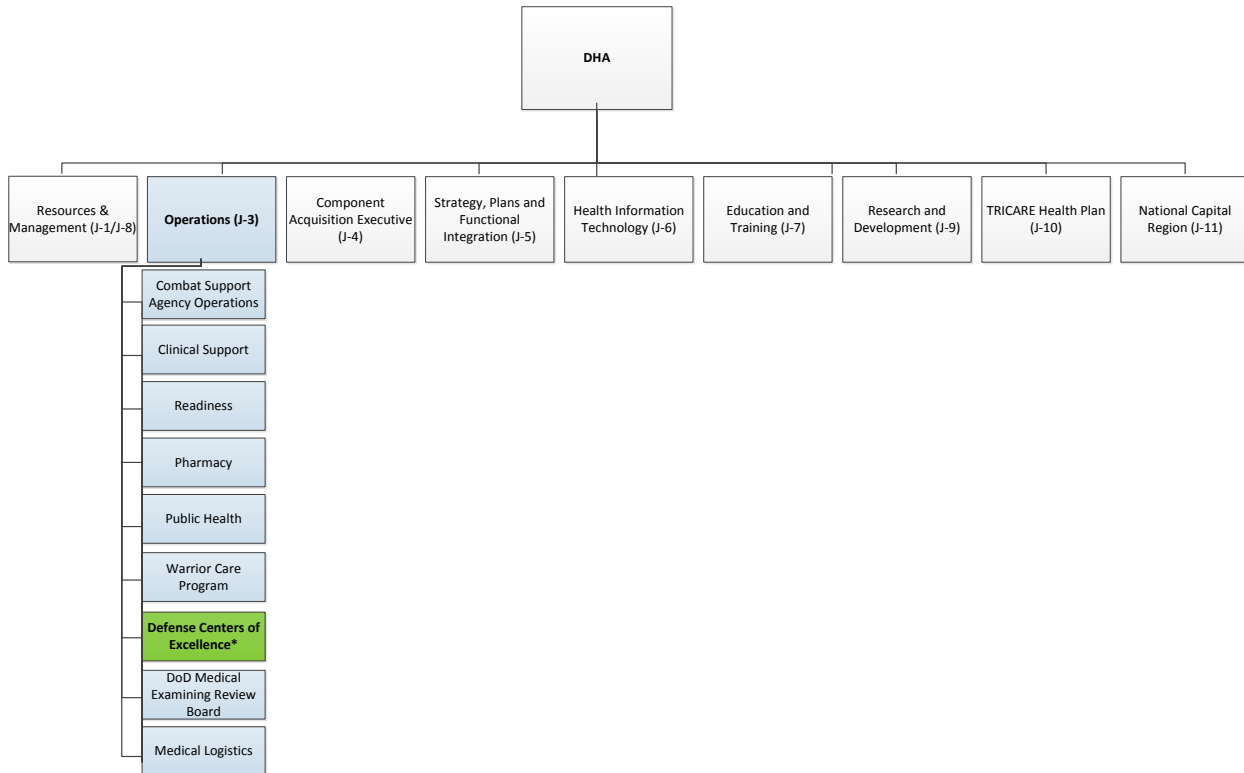
*DHCC is located under the Defense Centers of Excellence
Adapted from DHA, 2017.

Figure 22b. Basic Organizational Chart of DHCC within DCoE[90]

[††††] The DHA organizational structure is simplified to only show only DHA Directorates J-1 - J-11 and the organizations under DHA Operations Directorate (J-3).
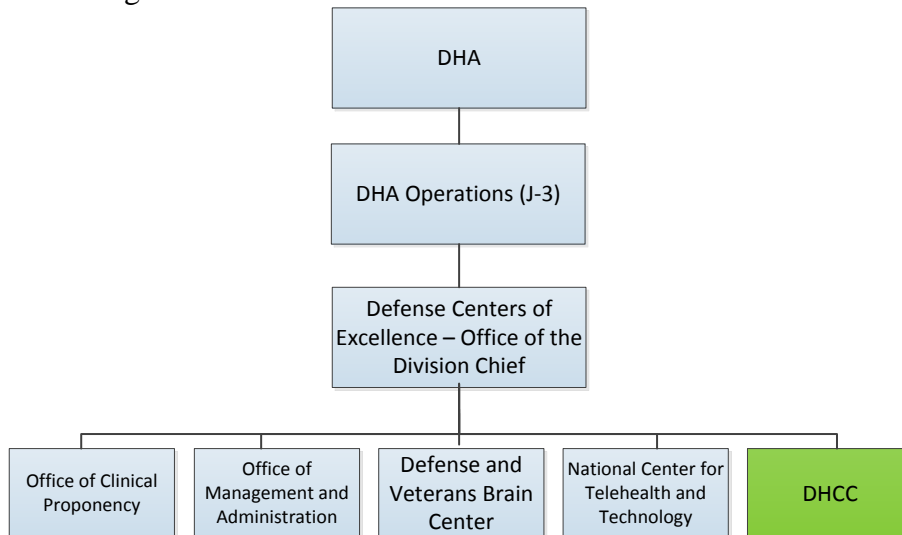
Adapted from DHCC, 2017.

C.2 PROGRESS SINCE LAST VISIT

STRATEGY

Despite frequent realignments, DHCC has moved forward significantly in developing a comprehensive strategic plan that aligns with its own mission, as well as with DCoE, DHA, and MHS priorities. DHCC teams and leadership review strategic plans quarterly to ensure its projects and efforts continue to be aligned with four core strategic priorities (Table 20). Some of the activities that support DHCC's strategy are outlined in Table 21.

Table 21. Examples of Activities to Support DHCC Strategy[56]

Activity	Description
Quarterly strategic meetings	• DHCC leadership holds quarterly strategic meetings to review strategic objectives and metrics and any updates to the strategic plan.
Weekly Associate Directors meetings	• Each week, all DHCC Associate Directors meet to review center-wide topics. Additional personnel, including the Deputy Director of DCoE, are invited to discuss DCoE initiatives as needed.
Concept Approval and Project Review (CAPR)	• DHCC's CAPR process is designed to provide administrative oversight to review, approve, manage, and evaluate DHCC projects from concept through completion. The CAPR process promotes: o transparency through a structured approval process for proposed concepts and clear performance evaluation criteria for executed projects; o uniformity with DCoE's project management approach, tools, and templates; and o organizational impact by promoting alignment with DHA/DCoE's Strategic Objectives and enhancing project relevance and effectiveness.
Internal workgroups	• Under the direction of DHCC Administration and Operations Associate Director, a monthly work group was initiated involving the DHCC leadership team (Associate Directors) in all aspects of financial planning/forecasting and execution of DHCC allocated resources. • In addition, DHCC has initiated three other workgroups to increase collaboration and efficiencies across the Center directorates. These workgroups examine the DHCC tasking process, DHCC product consistency, and education and training initiatives at DHCC.
Increase outreach to partners	• DHCC continues to develop strategic partnerships across DoD and other mental health organizations in government, academia, and throughout the world with the aim of sharing information and collaborating on projects to better the psychological health of Service members.
Align with governance	• DHCC continues to collaborate with higher governance including the VA/DoD Psychological Health and Traumatic Brain Injury Work Group, the VA/DoD Health Executive Committee Women's Health Work Group, the DoD Mental Health Workgroup, the Primary Care Behavioral Health Tri-Service Work Group, and the Psychological Health Council.

Adapted from DHCC, 2016.

The past three years have encompassed significant transitions for the Center. However, despite previous recommendations from the DHB, DHCC has not yet been able to change its name to better conform to its current mission and scope because of its frequent realignments. The Center

does plan to change its name consistent with other centers under DCoE in the near future.[56] Table 22 includes the 2012-2013 DHB recommendations related to strategy, as well as a current status update from DHCC.

Table 22. 2012-2013 DHB Findings and Recommendations and 2016-2017 Status Update[7,8,59]

2012-2013 Findings	2012-2013 Recommendations	DCoE Response	2016-2017 Status Update Since Last Report
2013 DHCC completed their strategic review, including revision of mission statement and addition of vision statement, and reorganization, aligning with more focused strategy.	DCoE and DHCC should continue to reassess strategic goals and objectives as part of normal strategic planning process, in accordance with strategic planning best practices.	Concur. • Together with DCoE's Office of Strategy Management, DHCC has conducted several strategic planning meetings with its associate directors to ensure that each division's mission, goals, and objectives are strategically aligned and mapped to DCoE's strategic initiatives and the DCoE Director's intent. • This process will continue as we complete our plans for organization during the second quarter of FY 2014.	• DHCC has worked over the last three years to change its name; however, DHCC continues to be in a state of transition due to the realignment under DHA in February 2016, shortly after the previous realignment from Navy to Army was completed. • Constantly shifting leadership expectations and guidance as DHCC has transitioned from Navy to MRMC to DHA while DCoE leadership was changing has made it impossible to execute a timely name change. • DHCC expects to change its name to align with other centers of excellence across DoD and within DCoE in the near future.
2013 Current name implies DHCC's focus is broader deployment health issues.	DHCC should consider changing its name to align better with mission to coincide with its psychological health focus.	Concur. • Together with DCoE, the Director of DHCC is concluding a review of the component center's organization, structure, strategic objectives, and brand, because the current name is no longer consistent with DHCC's psychological health responsibilities.	• DHCC has attempted over the last three years to change its name; however, DHCC continues to be in a state of transition due to the realignment under DHA in February 2016. • DHCC expects to change its name to align with other centers of excellence across DoD and within DCoE in the future.

2012-2013 Findings	2012-2013 Recommendations	DCoE Response	2016-2017 Status Update Since Last Report
2012 In 2008 DHCC repositioned as component of DCoE. DCoE has since experienced changes in structure and leadership and will be realigned within US Army's MRMC by October 2012.	DHB recommends DoD carefully monitor transition to ensure that DCoE is able to completely monitor DHCC and ensure adequate oversight of component center budgets.	Concur. • DCoE's Office of Strategy Management is in the process of revising the organization's strategic plan to serve both the headquarters and the Component Centers, which includes the development of strategic measures and performance goals to align with its strategic objectives. • Additional measures will be cascaded to the business and support units and will be subject to a more detailed review through directorate and management reviews. • Collectively these new formalized processes, along with existing resource management processes, provide management and senior leadership with proper oversight of and accountability for the headquarters and Component Centers.	Realignment under DHA: • Since this recommendation in 2013, DHCC and DCoE realigned to another DoD Agency and currently reside in the DHA J-3. This move occurred in February 2016. • In addition, DCoE no longer has an Office of Strategy Management. Rather, DCoE (and DHCC) align strategic initiatives and projects directly to the goals and objectives of DHA strategy. • DHCC continues to work closely and collaboratively with DCoE Headquarters to align strategy with DHA and is a voting member of the DCoE Executive Steering Committee. Financial management: • DHCC is required to manage its own budget in support of the overall DCoE budget. In order to ensure DHCC stays within its allocated spend plan and in support of financial transparency across DHCC, every Associate Director has received basic training in budget management and updates their budgets regularly. • Associate Directors also actively participate in the Review and Analysis executive meeting where DCoE and Center leadership examine budgets.

From DHCC, 2016.

PROCESS

A previous recommendation from the DHB mentioned the importance of greater inclusion of representation from all Services in the staffing model, improving joint operability and coordination.[8] DHCC has since successfully worked to recruit military leadership, as well as

Public Health Commissioned Corps officers. The DHA J-3 conducted a manpower review in 2016 using DHCC's Function and Manpower Alignment Prioritization Tool. This analysis mapped out the needs based on level of priority set by the DHA J-3. Currently, DHCC staff includes three active duty personnel—one from each Service. There are five more authorized military billets assigned to the Center by the DHA J-3, which the Center aims to fill (see C.4, People and Culture for more information about the Center's staffing).[56]

Another recommendation put forth by the DHB was to ensure that DHCC staff is located in a central office to better coordinate communication and streamline work across the Center.[8] In the summer of 2015, this occurred. The space has been consolidated, and all staff is now located in a single Silver Spring, Maryland office alongside DCoE.[56]

A major development for DHCC is the Concept Approval and Project Review (CAPR) initiative, which includes mechanisms to ensure proper project selection based on priorities, development, and monitoring of results. This initiative has improved project management approaches for the Center and particularly addressed the DHB's concern about DHCC collecting outcome data pertaining to educational outreach activities, clinical programs, and research projects.[7,59] The CAPR initiative ensures project officers are including metrics and monitoring systems in their project plans to measure performance, effectiveness, and impact.[56] These metrics are also being established to measure the cost-effectiveness of DHCC programs within the agency. The teams have made strides in establishing baseline metrics, defining constructs, identifying targets, and developing models of cost-effectiveness measures. Table 23 includes the previous DHB recommendations related to processes, as well as a current status update from DHCC.[7,8,59]

Table 23. 2012-2013 DHB Findings and Recommendations and 2016-2017 Status Update[7,8,59]

2012-2013 Findings	2012-2013 Recommendations	DCoE Response	2016-2017 Status Update Since Last Report
2013 DHCC has expanded collaboration with the Services; in lieu of dedicated Service billets, DHCC leveraging the Public Health Service Commissioned Corps to obtain Public Health Service Officers.	DCoE and DHCC should continue striving to include greater Service representation in staffing to improve coordination with the Services.	Concur. - Last year, DCoE and its three Component Centers transitioned to the U.S. Army, with the Secretary of the Army serving as DCoE's Executive Agent. The transition included a review of the staffing requirements of DCoE and its Component Centers that involved a functional analysis and the development of a Table of Distribution and Allowances. - We have requested a requirement for 10 military officers and, if validated, will be	• DHCC continues to recruit military leadership and Public Health Service Commissioned Corps officers for open positions; however, DHCC continues to experience limitations in hiring capabilities brought on by limited Service manning commitments and support, as well as recurrent reorganizations of DCoE structure as well as external governance.

2012-2013 Findings	2012-2013 Recommendations	DCoE Response	2016-2017 Status Update Since Last Report
		working closely with the Services to fill these positions with highly qualified medical personnel so we are representative of the DoD at large.	
2013 DCoE reorganization and the realignment of several former DCoE directorates under DHCC resulted in DHCC staff members being physically located at 3 locations, which poses communication challenges and hampers effectiveness.	Department should take necessary actions to enable DHCC staff to be located within the same office space as quickly as possible, to maintain the momentum established by the recruitment of new leadership and strategic focus.	Concur. • DHCC currently has personnel operating from three separate locations within a five-mile radius of DCoE headquarters, which presents challenges to effective coordination, teamwork, and command and control. • DCoE is transitioning the operation of its Component Centers to have all three organizations and DCoE headquarters collocated in the Silver Spring, Maryland office building. This process involves the approval of a floor plan and renovation of the currently acquired space. This action is currently being reviewed by our Executive Agent (MRMC), and it is anticipated that the physical move will occur in FY 2015.	• DHCC consolidated office space and co-located with DCoE during the summer of 2015.

2012-2013 Findings	2012-2013 Recommendations	DCoE Response	2016-2017 Status Update Since Last Report
2012 DHCC collects many output data pertaining to activities; staff provided limited outcomes data relating to DHCC's educational outreach activities, clinical programs, and research projects. DHCC was unable to provide any data on cost effectiveness of its projects/programs.	DHB recommends that formal processes for assessing projects be developed and followed. It is essential that cost effectiveness and scalability studies be conducted.	Concur. • As DCoE aligns as an Executive Agency under the Army, leadership is looking closely to ensure the organization maintains a DoD focus and continues to include all Services. • In addition, DCoE will continue to review its own projects and programs to ensure they're cost effective, particularly in light of looming budget constraints.	• Since the DHB's last visit, DHCC has developed and instituted the CAPR initiative to support project selection, development, and monitoring. The CAPR initiative is comprised of seven, gated phases that ensure project management approaches are incorporated into project planning, development, and execution. • CAPR ensures that Center leadership maintains visibility of projects' progress towards established goals and objectives.

From DHCC, 2016.

PEOPLE AND CULTURE

During the previous review, the DHB recommended that more military personnel be placed in leadership roles at DHCC.[8] The team acted upon this, and DHCC has been able to secure a qualified senior military leader as the Director of the Center. Furthermore, DHCC has been able to successfully transition leadership positions that were previously held by contracting staff to government staff positions. All of the Associate Director positions have been filled by government personnel who maintain institutional knowledge and continuity in project implementation ([Figure 21]).[56]

There have been numerous improvements in the leadership style and organizational culture at DHCC. DHCC understands and appreciates the importance of strong leadership given the many changes the Center has undergone over the years; DHCC leadership described an effective leader as someone who:
• understands the political dynamics of external stakeholders and influencers;
• has flexibility in times of change;
• is engaged but also able to change direction, if needed;
• maintains the focus on Service members, veterans, and their families and ensures the staff is focused on the same priorities; and
• possesses effective and transparent management skills.[62]

Table 24 includes the previous DHB recommendations related to people and culture, as well as a current status update from DHCC.

Table 24. 2012-2013 DHB Findings and Recommendations and 2016-2017 Status Update[8,59]

	2012-2013 Findings	2012-2013 Recommendations	DCoE Response	2016-2017 Status Update Since Last Report
2013	There are 6 separate contracts now supporting DHCC, making it more likely DHCC is getting a better rate due to diversity of companies. Staff composition more closely aligns with mission. DCoE and DHCC are making efforts to convert contract positions to civilian and Service positions.	DCoE and DHCC should secure permanent billets for military leadership positions at DHCC and convert positions to civilian personnel.	Concur. • DCoE has presented a staffing guide and a proposed Table of Distribution and Allowances that converts the majority of the current contract positions to government service personnel. • Additionally, DHCC, in partnership with DCoE, has identified key leadership positions to be filled by Service members, which is consistent with DCoE's goal of having a targeted number of uniformed personnel assigned to DCoE and Component Centers. This staffing request is currently being reviewed by the U.S. Army.	• DHCC has a senior military leader in an established senior military position. • DHCC has successfully transitioned leadership positions that were previously held by contractors to government billets and have filled all associate director level positions with government personnel.

From DHCC, 2016.

STRUCTURE AND PROGRAMS

DHCC has maintained a structure that is program-based, as recommended by the DHB, to enhance its capabilities and capitalize on its significant strengths and expertise across the organization. DHCC has worked to enhance this structure by strengthening cross-directorate and cross-agency collaboration.[8,59] Examples of collaboration between DHCC and the other two DHCs have also become more evident in recent years. For instance, DHCC works with the Armed Forces Health Surveillance Branch to standardize mental health disorder case definitions, epidemiological methods and procedures, and routine mental health reporting.[60] The Armed Forces Health Surveillance Branch also provides data to DHCC on mental health conditions, such as PTSD and major depressive disorder, for DHCC researchers to analyze. Additionally, DHCC collaborates with the Naval Health Research Center on DoD's Women's Health Workgroup, as well as the DoD Psychological Health Council Sexual Assault Advisory Group.[60] DHCC also consults Naval Health Research Center on research studies pertaining to specific mental health issues—providing feedback and input.[60]

In 2013, the DHB recommended that DHCC create a department dedicated to program monitoring and evaluation.[8] The Psychological Health Performance Analytics Directorate is responsible for overseeing and improving program effectiveness through the CAPR process. This monitoring and evaluation mechanism is particularly effective since it promotes:

- transparency through a structured approval process for proposed concepts and clear performance evaluation criteria for executed projects;
- uniformity with DCoE's project management approach, tools, and templates;
- accountability by documenting, monitoring, and evaluating projects; and
- organizational impact by promoting alignment with DCoE's Strategic Objectives and enhancing project relevance and effectiveness.[56]

Table 25 includes the previous DHB recommendations related to structure and programs, as well as a current status update from DHCC.

Table 25. 2012-2013 DHB Findings and Recommendations and 2016-2017 Status Update[8,59]

	2012-2013 Findings	2012-2013 Recommendation	DCoE Response	2016-2017 Status Update Since Last Report
2013	DHCC has made significant progress in meeting recommendations from 2012 assessment. Reorganization enhances DHCC's capabilities, capitalizing on strengths of population-based care support and coordination, and system-level initiatives. The organizational structure was previously project-based; however, it is now program-based under new model with departments overseeing concurrent complimentary projects.	This should be maintained.	No response.	• DHCC has maintained this structure and has enhanced its cross-directorate-and cross-agency collaboration.
2013	DHCC established a department designed solely to enhance, improve, and promote program effectiveness to monitor program evaluation efforts for all DHCC research projects.	This should be maintained.	No response.	• The Psychological Health Performance and Analytics Directorate accomplishes this specifically through its CAPR process. • The CAPR process is designed to provide administrative oversight to review, approve, manage, and evaluate DHCC projects from concept through completion.

From DHCC, 2016.

C.3 SUCCESSES AND ACHIEVEMENTS

Since the DHB's 2012 and 2013 reports, DHCC has made significant progress improving its organizational focus as well developing and executing various initiatives, described below. DHCC is positioned to provide subject matter expertise within DHA and across the Department to help inform policy and drive improvements in psychological health outcomes for Service members and beneficiaries. Aligning with MHS goals, DHCC has been able to provide DoD with the following:

- **Increased Readiness**, by ensuring Service members are psychologically ready to deploy and military providers have the tools necessary to provide psychological health care anytime, anywhere.
- **Better Health**, by reducing barriers to care and providing prevention and early intervention methods that are effective in reducing psychological health disorders.
- **Better Care**, by providing evidenced-based tools and techniques that are Service driven and usable in the field.
- **Lower Cost**, by providing oversight to Service level programs (for example, Substance Use Disorders and Combat & Operational Stress Control) and facilitating DoD/VA standardization of research, clinical, and education methods.[56]

DHCC has identified some of its major successes in recent years, including:

- increasing access to MHS datasets and increasing capacity to conduct psychological health surveillance activities;
- establishing an implementation collaborative with the National Capital Region Medical Directorate Patient Centered Medical Home-Behavioral Health program;
- launching of the CAPR process;
- establishing the VA/DoD Practice Based Network;
- developing and disseminating resources and training for providers to use in both primary care and specialty care settings for PTSD, suicide risk management, sexual assault response, depression, and opioid abuse;
- expanding partnerships with external stakeholders and Services;
- demonstrating expertise for capabilities to synthesize and analyze evidence-based practices; and
- creating outreach products, to include journal articles, posters, educational and training products, communications materials such as flyers, and social media content, to support providers and DoD beneficiaries.[56]

DCoE has also recently obtained laboratory designation to streamline and enhance its administrative processes related to research. DHCC's laboratory designation provides many benefits, such as:

- facilitating the establishment of collaboration tools, such as cooperative agreements and CRADAs;
- establishing the basis for DHCC to receive non-government funding, such as private foundation grants;
- establishing the basis for DHCC and its researchers to receive financial compensation for its products, such as patent royalties; and

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- providing flexibility to rapidly address emerging health care requirements.[61]

Table 26 outlines some impactful customer-targeted products that DHCC has developed.

Table 26. Examples of Products Developed by DHCC[56]

Product	Description
Clinical Practice Guidelines and Clinical Support Tools	• DHCC provides expert guidance and leadership to the VA/DoD Evidence Based Work Group, which develops Clinical Practice Guidelines (CPGs) for psychological health treatment. DHCC supports the development of new CPGs and participates in revisions every five years. • In addition, DHCC develops tools to translate lengthy CPGs to help providers, patients, and their families more easily understand the guidelines. • In 2016, DHCC provided expertise to the revision of the CPG for PTSD. • In partnership with the VA and U. S. Army Medical Command, DHCC developed three clinical support tools to promote provider and line leader compliance with the VA/DoD CPG for the Management of Substance Use Disorders (2015) and to inform military family members about substance use disorder treatment. • In response to the newly revised VA/DoD CPG for the Management of Major Depressive Disorders (2016), DHCC, in partnership with the VA and U.S. Army Medical Command, developed two clinical support tools, *Depression: Facts for Families* and *Understanding Depression: A Resource for Patients,* to provide treatment education based on the CPG, and will be available to order or to download in FY 2017.
Real Warriors Campaign	• The Real Warriors Campaign is a multimedia public health awareness initiative designed to reduce barriers to care, encourage Service members, veterans, and military families to seek care for psychological health concerns, and promote psychological health. • Under direction of DHCC, the campaign strives to increase health literacy, educate and reduce misperceptions about psychological health conditions and care, foster a culture of support for psychological health, improve support systems and empower behavioral changes. • DHCC has fulfilled 285 orders for over 197 thousand materials for various organizations and distributed of over 9.5 thousand pieces of material at 17 events nationwide. Products can be found here: http://www.realwarriors.net/materials
Quarterly Internal Behavioral Health Consultant (IBHC) Performance Monitoring Reports	• DHCC provides reports targeted to Primary Care Behavioral Health service leads and aimed at guiding program assessment and management. The collection, analysis, and reporting of enterprise data is directly aligned with the DHCC mission to improve psychological health care across the system.
Psychological Health Webinar Series	• DHCC offered 10 webinars in fiscal year 2016 to provide information and to facilitate discussion on a variety of topics related to psychological health. The target audience is health care providers. Total webinar attendance in 2016 was 3,127 and total certificates of attendance issued were 381.
PCBH Education and Training	• DHCC supports the tri-Service PCBH program, serving to create and deliver trainings and other implementation support for PCBH staff in multiple venues. FY 2016 highlights include training for 156 PCBH staff new to their roles in the DoD. • DHCC also collaboratively developed and implemented recommendations for changes to PCBH electronic health record documentation practices.

Product	Description
IBHC Sustainment Training	• This training series, developed and implemented by DHCC, is for members of the patient-centered medical home Behavioral Health team who serve as IBHCs. The organization revamped the training for IBHCs new to DoD by developing a three week orientation training, increasing the emphasis on standardized role play and mastery of the model during the four-day in-residence training, and executing a contract which provides mentorship and site-visit support for new IBHCs after they return to their clinics. • Tools include an Introductory Script, Core Competency Tool, Peer Review Form, and Patient Handouts. They also conduct training webinars throughout the year.
Health Care Provider Training: Sexual Assault Response	• DHCC developed training for all health care providers to provide compassionate, gender-responsive, evidence based care for patients who disclose sexual assault. An implementation pilot study will be conducted at the Uniformed Services University of the Health Sciences Nursing Graduate School in FY 2017.
Early Intervention Training PowerPoint Slides	• DHCC has developed master training slides for nonmedical providers in DoD on select psychological health topics. • The content of the training slides is derived from a current review of the literature on topics related to early intervention and prevention of mental illness, and of relevance to suicide prevention strategies. These scientific efforts support the identification and dissemination of evidence-informed prevention strategies.
Chaplains Working Group	• This program provided DoD and VA chaplains information and resources regarding psychological health and traumatic brain injury to enhance collaboration across disciplines. • Participants discussed needs, concerns, and suggestions for supporting our Nation's Service members and veterans. In FY 2016, DHCC conducted five webinars to train 367 participants in this area.
RAND Corporation Studies	• DHCC oversaw numerous RAND studies on multiple topics. Studies included assessing the mental health needs of rural and remote Service members and their families and the mental health needs of minorities. • RAND developed a quality framework to assess psychological health care delivery and fidelity to evidence-based practices in the MHS, and it evaluated complementary and alternative medicine psychological health practices. • RAND also evaluated DoD and VA mental health campaigns and is developing an item bank to measure barriers to care and stigma in the military.

From DHCC, 2016.

Additionally, the DHB was informed that several of the departments within DHCC have achieved impressive successes recently. For example:

- **Administration and Operations:** Has successfully implemented the DHA Function and Manpower Alignment Prioritization tool—prioritizing DHCC's work, products, resources, and manpower optimally. The Administration and Operations team has developed a financial management training program for key personnel to better develop common understanding of financial processes and improve fiscal accountability within the command.[62]

- **Psychological Health Research**: Is delving more into using big data and conducting systematic reviews for initiatives to synthesize evidence-based practices. Some of their accomplishments this past year include publications, conference presentations, and multiple collaborations; one example is the literature reviews and expertise Psychological Health

Research has provided on the Women's Mental Health Initiative. They have also established an annual gap identification process for psychological health research.[62]

- **Psychological Health Performance and Analytics**: Provides information for decision-making through a recursive process through which they receive feedback from clients based on the value of data the group provides for operational purposes. The main source of data that Psychological Health Performance and Analytics uses is the Health Services Data Warehouse. The team has improved the process for ensuring quality data analysis, with analysts pulling data based on requests from clients with the added benefit of receiving mentorship from subject matter experts, in order to fully comprehend data requests accurately. The team has also leveraged resources, such as analysts, from the Armed Forces Health Surveillance Branch and DCoE, to more efficiently complete requests in a timely manner. Psychological Health Performance and Analytics also implemented their robust CAPR process, which supports project implementation, monitoring, and evaluation.[62] The team also had the opportunity to present the CAPR development and roll-out process at the American Evaluation Association.[57]

- **Psychological Health Clinical Care**: Has developed a Practice-Based Implementation (PBI) model, and they are evaluating its implementation at 31 clinic sites across DoD. The team is developing implementation plans, models of care and delivery, and evidence-based practice change. Between the DoD and VA, a PBI network has been established, with the goals of: 1) the development and implementation of the PBI Network infrastructure that enables the VA and DoD to have both the staffing and information technology (IT) platform for ongoing implementation of practice change initiatives; 2) the deployment of the PBI network infrastructure to catalyze implementation of outcomes monitoring to support high quality PTSD care; and 3) the implementation of a PBI Network sustainment plan to institutionalize the Network as an essential resource to facilitate best practices in PTSD or other psychological health care.[91] The Network aims to bridge the gap between research, practice, and policy by addressing barriers related to behavioral change, economic, or management factors to provide successful implementation of psychological health programs.[91] The group has worked with a health care economist to determine if this model is sustainable and provides a return on investment. They are waiting on provider feedback on the gaps to implementation and will determine the feasibility and scalability of this approach.[62]

- **Psychological Health Promotion (PHP):** Focuses on prevention, access issues, and streamlined practices between the Services and the broader medical community. PHP worked with the RAND Corporation to develop an item bank on addressing stigma and other barriers to behavioral health care and measured these regularly. The draft was submitted to DoD in December 2016.[57,62]

- **PCBH**: Provides leadership in translational psychological and behavioral health services in primary care, including program fidelity and inter-Service dissemination of best practices across the Department. One of their accomplishments includes the completion of developing a curriculum and regular training programs for IBHCs, behavioral health care facilitators, external behavioral health consultants, and patient-centered medical home (PCMH) leaders.[62]

C.4 CURRENT CHALLENGES

STRATEGY

As described in C.2., DHCC has been challenged to develop a comprehensive strategy because of its frequent organizational transitions and changes in leadership.[59] Most recently, DHCC has been realigned under the DHA, which has not specifically provided overarching DHC strategic guidance to the two centers it oversees, DHCC and the Armed Forces Health Surveillance Branch. These frequent changes in realignment have also made it difficult to receive consistent strategic direction and guidance from leadership.[59] Leadership at the DoD level has not provided direction to help them understand their current role as DHCs.[56] The reorganization and changing governance impair the Center's ability to organize, execute, and function with a clear vision and strategy. DHCC requires a constant, enduring home and governance structure to continue to strengthen DHCC's cohesive team and fully execute their mission.[61]

PROCESS

The hiring process overall has also been slow and difficult given the limited Service manning commitments and support, as well as the recent and frequent organizational changes and realignment.[59] With the restructuring, there are also some uncertainties in terms of titles for staff, and some positions have been eliminated.[62] The need for an updated Joint Manning Document could help clarify many of these issues for leadership moving forward; however, this is currently still being developed and finalized by DHA. DHCC leadership would like to ensure that staff is also professionally diverse and not solely psychologists. It was stated to the DHB that the teams at DHCC have a high workload due to being understaffed, compacted by the issue of hiring delays with the transition under the DHA.[59,62]

While under MRMC, DCoE was designated as an Executive Agency; DCoE has lost this designation with the realignment under DHA J-3.[60] DCoE now reports to the DHA J-3 first, then to DHA, as well as to the Office of the Assistant Secretary of Defense for Health Affairs.[60] The Centers of Excellence Oversight Board continues to oversee the work of DCoE and DHCC. Because of the additional layers of reporting with its realignment under DHA, DHCC has struggled with timely approvals for survey requests and Institutional Review Board approvals.[56]

DHCC has also been moving towards expanding education and training opportunities for staff in acquisition and financial processes, providing opportunities to better and more formally train contract representatives on DoD acquisition regulations.[62] Furthermore, although research is part of DHCC's scope of work, the funding provided is strictly through Defense Health Program operation and maintenance funds and not designated through research development test and evaluation funds. This poses a challenge in that all operation and maintenance funds are only available for obligation for the period of one FY,[63] which is not conducive to the timelines of long-term research projects.[62]

DHCC has gradually become more data driven and systematic in its research approaches and has taken on several initiatives to actively maintain the psychological health of military personnel.[60] However, as stated above, due to the frequent and recent organizational realignments, DHCC has

been unable to change its name to better align with its current mission as recommended by the DHB. The name change has been an ongoing challenge that the leadership team and staff have faced.[56,59,60] Given the improvements in developing a clear strategic plan, mission, and vision, DHA and DCoE can now work with DHCC to establish a name that reflects the level of expertise and scope of the Center, while also ensuring the name properly reflects the new alignment within the agency.[62]

Another current challenge is a lack of sufficient metrics to demonstrate the effectiveness of DHCC. Such metrics could better demonstrate cost effectiveness, performance, and the value added of the individual projects and initiatives supported by the staff. Despite this challenge, DHCC has become more data driven overall with their processes and outcome metrics.[60]

The current IT system also poses challenges to DHCC. DHCC's IT network still operates on the Army's server and creates communication problems with the DHA. The DHB was informed that the Center is scheduled to eventually become fully incorporated into DHA's health IT system.[62]

PEOPLE AND CULTURE

While there have been many successes at DHCC, there are several challenges that remain. Staffing challenges are still an area of concern for DHCC leadership; while there is difficulty attaining enough government and military staff, there is also a maximum number of contractors allowed. Although the team relies heavily on contractors, it is understood that this is not a sustainable staffing model to build capacity and ensure the continuity of institutional knowledge. Although a functional analysis conducted in December 2015 on staffing requirements for DCoE identified a requirement of 150 government positions, DCoE was only granted approval to hire up to 89 civilians.[56]

Additionally, while the Joint Table for Distribution (JTD), a manpower document that identifies the positions and number of spaces approved for each organizational element of a joint activity for a specific fiscal year,[64] lists DCoE's military personnel requirements, the Services have not authorized personnel to fill the available positions; the Services currently provide personnel at their own discretion, as filling a DCoE or DHCC position means another authorized position goes unfilled.[56] The December 2015 functional analysis demonstrated a need for 20 military personnel in DCoE and its Centers, with DHCC specifically to fill 8 of those positions. Table 27 shows the gap between current staffing (as of May 2017) and what is authorized by the JTD.[56,61]

Table 27. Staffing Composition of DHCC Compared to JTD Staffing Requirements[56,61]

Position Categories	Current Staffing (As of May 2017)	Staffing According to JTD Requirement
Military	3 (1 Army, 1 Navy, 1 Air Force)	8
Public Health Service	3	0
Government Civilian	10	38
Contractors	78	0

From DHCC, 2017.

As shown in Table 27, DHCC has 3 Public Health Service officers on staff. DHCC has chosen to have Public Health Service officers on staff as they are easier to hire; DHCC has had historic difficulties hiring civilian personnel into vacant positions and securing additional military personnel.[59] Further, Public Health Service officers help fulfill important government functions.[61] As for contract positions, DCoE does not have the authority to convert these to government positions.[56] Contractor positions are determined depending on the number of civilian positions filled and the gap in needs required to adequately and efficiently complete activities.[56] As of May 2017, DHCC had yet to staff 28 civilian and 5 military positions.[61]

STRUCTURE AND PROGRAMS

Teams within DHCC have expressed challenges with implementation of specific programs and initiatives. For example:

- **PCBH**: Engages in research and development, analysis, knowledge translation, education and training, implementation support, and the integration of effective PCBH programs to ensure that Service members and their beneficiaries are psychologically healthy. However, the full implementation of the integrated program has faced some difficulties, such as:
  - o The implementation process of the integrated primary and behavioral health program was not initially effective, and the team is revamping it to ensure primary care providers and leaders are more involved and invested in the program.
  - o Clinics are owned by the Services.
  - o There is high turnover of staff in clinics, which entails subsequently training and educating that new staff on the integrated model of behavioral care with primary care.
  - o There are difficulties with primary care and specialty care staff working more effectively together; however, an industrial organizational psychologist has been hired and will be working with the health care teams to address this issue. The IBHCs are not being utilized to their full potential—although they have a broad-range of expertise in self-management issues in general, they are mostly asked to work on cases of depression and anxiety only.[62]
- **Psychological Health Research:** Has developed an annual gap identification process for psychological health research across DoD.[56,60] However, this process is not comprehensive since there is no aggregated system through which information on psychological studies funded by DoD is accessible.[56] A platform that aggregates information on psychological studies across the Services and within DoD would significantly improve this process for DHCC. The Psychological Health Research team has been compiling information from resources to which they have access;[56] however, the effort should be collaborated across other psychological health stakeholders in order to minimize redundancies.[62]
- **Psychological Health Clinical Care:** Implements the DoD PBI Network;[60] however, there are challenges of trying to standardize implementation practices from one environment to the other. It is difficult to standardize methodology and approaches across the Services; however, the proposed changes in the FY 2017 National Defense Authorization Act may bring more standardization in the future. Another level of complexity comes from the unintended consequences that the relative value unit generation has had on the military health care delivery system, sometimes causing a barrier to quality improvement and receiving feedback.[62]

C.5 WAY FORWARD AND FUTURE OPPORTUNITIES

There are many benefits to synergizing efforts between DHCC and other entities within DoD and DHA that perform similar functions, such as the other Centers of Excellence. The resources of these centers could be shared, and there is potential for increased utilization of products the Centers of Excellence develop, as well as opportunities for developing robust, standardized, and streamlined metrics to measure impact. The realignment has resulted in a more data driven organization with an increased emphasis on partnerships across the entities. Additionally, DHCC is better positioned to collaborate across DoD and with the VA.[62]

Through the CAPR process, DHCC leverages the expertise of its staff to develop a monitoring and evaluation approach that assesses the alignment and effectiveness of some of its programs.[60] However, the strategic measures for the Center are currently in development and will continue to be in a preliminary phase throughout FY 2017. On a quarterly basis, the strategic alignment of projects are reviewed as new activities come forth, leading to more refined metrics for measurement of effectiveness. The team is working on both project level as well as portfolio level metrics to guide the Center overall.[60]

Furthermore, leadership at DHCC expressed the goal of being able to better capture and collect cost data, in particular, to fulfill requests from DHA and demonstrate the cost-effectiveness of the studies the Center conducts.[62] A challenge with conducting cost analyses is that financial data are not easily available or captured within the MHS. Although DHCC does not measure the cost-effectiveness of its programs on a continuous basis, the Center has begun weekly accounting for its resources, which are aligned with portfolio initiatives, as part of the CAPR process.[60] This process is continuously evolving and improving. As a result, there is an opportunity for analyzing and presenting data to monitor cost-effectiveness of DHCC.[60] Moreover, DHCC is leveraging the skills of a health economist, based at DCoE, to better understand and present the added value of its research.[62]

In terms of upcoming activities and projects for DHCC, the team will be focusing on three areas of implementation: combat and operational stress control, suicide prevention, and substance use disorders.[60] New assignments will also undergo the CAPR process review to ensure they align with the mission to improve the psychological health and prevent psychological health disorders for Service members, veterans, and their families. Other projected activities include establishing a working group to enhance provider utilization of DoD mental health technicians and a variety of health services studies and health services research projects that will use big data for analysis and research.[60]

Within the DHA, DHCC is positioned to be a leader in psychological health research and could assist with analyses related to the Mental Health Assessment portion of the Periodic Health Assessments. It will be important going forward to determine the effectiveness of these assessments to adequately evaluate the psychological health of Service members, particularly deployed personnel. Analyses of Periodic Health Assessments could help lead to the development of predictive indicators for the long-term impact of repeated deployments as well as other psychological health challenges experienced by Service members. DHCC could be the

portal for determining which emerging therapies, both medical and nonmedical, can be considered for piloted study in the military.

UNDER SECRETARY OF DEFENSE
4000 DEFENSE PENTAGON
WASHINGTON, DC 20301-4000

JAN 2 2 2013

PERSONNEL AND
READINESS

MEMORANDUM FOR PRESIDENT, DEFENSE HEALTH BOARD

SUBJECT: Request to the Defense Health Board to Conduct External Reviews of the
Department of Defense Deployment Health Centers

Recognizing that the Board's previous periodic reviews of the Department of Defense
Research and Clinical Centers for Deployment Health yielded valuable recommendations, I
request that the Board continue these reviews. Given the nature and magnitude of the
recommendations pertaining to the Deployment Health Clinical Center (DHCC), I request that
the Board revisit the DHCC in 2013, to assess progress and perform a follow-up review. After
this review, I request that the Board conduct reviews of the DHCC, Deployment Health Research
Center, and Armed Forces Health Surveillance Center every 3 years, for the next 6 years.
Please provide the first requested performance review to the Assistant Secretary of Defense for
Health Affairs as soon as possible.

Jessica Wright
Acting

APPENDIX E. TERMS OF REFERENCE

These terms of reference establish the objectives for an independent program review of ongoing research and clinical efforts at the Deployment Health Centers (DHCs).

Mission Statement: The mission of the Defense Health Board (DHB) is to provide independent advice and recommendations to maximize the safety and quality of, as well as access to, health care for members of the Armed Forces and other Department of Defense (DoD) health care beneficiaries.

Issue Statement: On September 30, 1999, the DoD DHCs were established and endorsed by the Assistant Secretary of Defense for Health Affairs (ASD(HA)) Policy Memorandum on the Establishment of Department of Defense (DoD) Centers for Deployment Health, as authorized by Section 743 of the Strom Thurmond National Defense Authorization Act. These centers represented a key public health initiative for the DoD. The goal of the centers was to "improve [the] ability to identify, treat, and minimize or eliminate the short and long-term adverse effects of military service on the physical and mental health of veterans" by expanding on current clinical, surveillance, and research efforts.[1]

In 2002, the Assistant Secretary of Defense for Health Affairs (ASD(HA)) requested that the DHB's predecessor, the Armed Forces Epidemiological Board (AFEB), "serve as a public health advisory body and provide a forum for program review and coordination of ongoing research and clinical efforts."[1] Between 2003 and 2012, the AFEB, and later the DHB were tasked with and conducted several rounds of reviews and submitted recommendations to the Department. In 2013, the Acting Under Secretary of Defense for Personnel and Readiness requested the Board to revisit the Deployment Health Clinical Center (DHCC), to assess progress and perform a follow-up review and to conduct reviews of all three centers every three years for the next six years. In 2013, the Board conducted the follow-up review of DHCC and submitted recommendations to the Department.

The DHCs include DHCC; the Armed Forces Health Surveillance Branch (AFHSB), formerly the Armed Forces Health Surveillance Center; and the Naval Health Research Center (NHRC). Since the last review in 2013, DHCC and AFHSB have been realigned under the DHA. NHRC remains under the Navy Bureau of Medicine and Surgery (BUMED).

Objectives and Scope: The Board's Subset will review the DHCs and address the following specific objectives:
- Evaluating whether the DHCs are meeting the goal of improving the ability to "identify, treat, and minimize or eliminate the short and long-term adverse effects of military service on the physical and mental health of veterans."[1]
- Examining how the current mission of each DHC aligns with its intended mission as described in the September 1999 Memorandum, "Policy - Establishment of DoD Centers for Deployment Health."
- Examining how the realignment of DHCC and AFHSB under the DHA has affected the centers' missions and activities, given the DHA's strategy map, goals, and focus areas.

- Examining how NHRC aligns with the Navy Medicine's mission, vision, and strategic priorities.
- Examining how the DHCs support DoD as a whole.
- Reviewing the responses to the DHB's previous findings and recommendations and their continued applicability.

The Subset shall develop findings and recommendations on the above topics for consideration by the DHB under the open-meeting provisions of the Federal Advisory Committee Act (FACA). The DHB, in consultation with the Under Secretary of Defense for Personnel and Readiness or designated representative, may consider other matters deemed pertinent to a programmatic review of the DHCs.

Methodology:
1. The Board and Subset's assessment will be conducted in compliance with FACA, DoD Instruction 5101.04, and the DHB Charter.
2. The Subset's assessment will focus on providing a programmatic review of ongoing research and clinical efforts, building on the format of previous assessments.
3. The Subset will recommend specific actions in order to improve the DHC's ability to identify, treat, and minimize or eliminate the short and long-term adverse effects of military service on the physical and mental health of veterans.
4. The Subset may conduct interviews and site visits as appropriate.
5. As appropriate, the Subset may seek input from other sources with pertinent knowledge or experience.

The Subset will review organizational performance of the DHCs related to strategy, process, people and culture, and structure and programs. As needed, members will receive briefings from subject matter experts; Military Health System (MHS), Defense Health Agency, and Navy leadership; and other staff at the DHCs. The Subset will review the literature and information received from briefings, conduct site visits as needed, and present findings and recommendations to the DHB for consideration and deliberation. The DHB will deliberate the findings and recommendations, during which time members may propose changes, and vote on final findings and recommendations in a properly noticed and open public session.

Deliverables: The Subset will complete its work within one year and report to the DHB in a public forum. The DHB will, in accordance with its Charter, report to the ASD(HA), who has been delegated the authority to evaluate the independent advice and recommendations received from the DHB and evaluate, in consultation with the Under Secretary of Defense for Personnel and Readiness, what actions or policy adjustments should be made by DoD in response. The Subset will provide progress updates to the Board at each DHB meeting before then.

Required Support:
1. The DHB office will provide any necessary research, analytical, administrative and logistical support for the Subset and Board.
2. Funding for this review is included in the DHB operating budget.

APPENDIX F. MEETINGS AND PRESENTATIONS

July 26, 2016
On this teleconference, members reviewed the tasking and its history, a potential way forward, and prepared for a discussion with Defense Health Agency (DHA) leadership on the tasking. There were no briefings on this teleconference.

August 10, 2016
San Antonio, Texas

During this meeting, members discussed the way forward, including scheduling briefings, site visits, and collecting information needed to conduct their review. There were no briefings at this meeting.

October 3, 2016
On this teleconference, members reviewed a gap analysis of the previous Defense Health Board (DHB) Deployment Health Centers (DHC) reviews against DHA's and Navy Medicine's strategies and objectives. Members also reviewed the draft Terms of Reference, briefing slides for a discussion with DHA and Navy Medicine leadership, and the Subset's timeline. There were no briefings on this teleconference.

October 24, 2016
On this teleconference, members held a discussion with DHA leadership on the tasking. Members also reviewed a draft questionnaire for DHC site visits.

Subject matter experts in attendance:
- VADM Raquel Bono, Director, DHA
- MG Jeffrey Clark, Director, DHA Operations (J-3)
- Mr. Chris Priest, Chief of Staff, DHA J-3

November 15, 2016
On this teleconference, members received a briefing from Navy Medicine leadership on its strategy and objectives, as well as current challenges faced by the Navy Medicine West and the Naval Health Research Center (NHRC).

Subject matter experts in attendance:
- RADM Elaine Wagner, Deputy Chief, Wounded Ill and Injured, U.S. Navy Bureau of Medicine and Surgery
- RDML Bruce Gillingham, Commander, Navy Medicine West
- CAPT Jacqueline Rychnovsky, Commanding Officer, Naval Medical Research Center

November 29, 2016
San Diego, California

At this meeting, members met with NHRC leadership to discuss its role as a DHC and challenges and opportunities to meet that mission.

Subject matter experts in attendance:
- Dr. William Becker, Institutional Review Board, NHRC
- Dr. Ken Earhart, Science Director, NHRC
- CDR Dennis Faix, Preventive Medicine/Infectious Diseases, Military Population Health Director, NHRC
- Mr. Mike Galarneau, Modeling and Simulation, Operational Readiness Director, NHRC
- Dr. Edward Gorham, Science Acquisition Support Director, NHRC
- CAPT Matthew Hebert, Executive Officer, NHRC
- Ms. Regena Kowitz, Public Affairs, NHRC
- Ms. Dina Montenegro, Comptroller, Resource Management Director, NHRC
- Dr. Christ Myers, Operational Infectious Diseases Director, NHRC
- CAPT Rita Simmons, Commanding Officer, NHRC
- Dr. Cynthia Thomsen, Behavioral Health Department Head, NHRC

December 5, 2016
Silver Spring, Maryland

Members met with Armed Forces Health Surveillance Branch (AFHSB) leadership to discuss its role as a DHC and challenges and opportunities to meet that mission.

Subject matter experts in attendance:
- COL Douglas Badzik, Branch Chief, AFHSB
- Dr. Jose Sanchez, Deputy Director, AFHSB
- Mr. Robert Welsh, III, Chief, Operations and Administration, AFHSB
- Col Dana Dane, Chief, Epidemiology and Analysis, AFHSB
- LTC(P) P. Ann Loveless, Epidemiology and Analysis, AFHSB
- CDR Franca Jones, Chief, Global Emerging Infections Surveillance (GEIS), AFHSB
- LTC Barbara Cloutier, Focus Area Lead, GEIS, AFHSB
- Mr. Juan Ubiera, Chief, Integrated Biosurveillance, AFHSB
- Lt Col Paul Lewis, Lead, Innovation and Evaluation, Integrated Biosurveillance, AFHSB
- Dr. Stic Harris, Chief, Alert and Response Operations, Integrated Biosurveillance, AFHSB
- Dr. Mark Rubertone, Chief, Data Management and Technical Support, AFHSB
- Dr. Angelina Cost, Senior Managing Epidemiologist, Epidemiology and Analysis, AFHSB
- Dr. Terrence Lee, Senior Managing Epidemiologist, Epidemiology and Analysis, AFHSB

December 6, 2016
Silver Spring, Maryland

Members met with Deployment Health Clinical Center (DHCC) leadership to discuss its role as a DHC and challenges and opportunities to meet that mission.

Subject matter experts in attendance:
- Dr. Mark Bates, Associate Director, Psychological Health Promotion, DHCC
- Dr. Jennifer Bell, Associate Director, Primary Care Behavioral Health, DHCC

- Mr. Dennis Brown, Acting Associate Director, Administration and Operations, DHCC
- Dr. Marjorie Campbell, Associate Director, Research, DHCC
- CAPT Mike Colston, Director, Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury (DCoE)
- Dr. Justin Curry, Associate Director, Performance and Analytics, DHCC
- CAPT Carrie Kennedy, Director, DHCC
- Dr. Kate McGraw, Deputy Director, DHCC
- Dr. Richard Stoltz, Deputy Director, DCoE

January 17, 2017

On this teleconference, members reviewed observations from DHC site visits and discussed preliminary findings and recommendations. There were no briefings on this teleconference.

February 6, 2017

On this teleconference, members reviewed preliminary findings and recommendations. There were no briefings on this teleconference.

March 20, 2017

On this teleconference, members reviewed the draft report. There were no briefings on this teleconference.

April 17, 2017

On this teleconference, members reviewed the draft report and received an update on Navy Medicine West from RDML Paul Pearigen.

May 1, 2017

On this teleconference, members reviewed the draft report. There were no briefings on this teleconference.

May 18, 2017

On this teleconference, members reviewed the draft report. There were no briefings on this teleconference.

June 1, 2017

On this teleconference, members reviewed the draft report. Members also received a briefing from DHA Operations Directorate (J-3) representatives on the legacy mission of the Deployment Health Clinical Center and an overview of the Deployment Health Branch.

June 7, 2017

On this teleconference, members reviewed the draft report. There were no briefings on this teleconference.

June 13, 2017

On this teleconference, members reviewed the draft report. There were no briefings on this teleconference.

June 26, 2017
Defense Health Board Meeting
Falls Church, Virginia

Dr. George Anderson, on behalf of the Subset chair, presented the deliberative pre-decisional draft of the report. The Board unanimously approved the findings and recommendations with no revisions.

APPENDIX G. ACRONYMS AND GLOSSARY

Acronyms	
AFHSB	Armed Forces Health Surveillance Branch
AFHSC	Armed Forces Health Surveillance Center
ASD(HA)	Assistant Secretary of Defense for Health Affairs
BUMED	Navy Bureau of Medicine and Surgery
CAPR	Concept Approval and Project Review
CAREN	Computer Assisted Rehabilitation Environment
CCWG	Coordination & Collaboration Working Group
CHAMPS	Career History Archival Medical and Personnel System
CPG	Clinical Practice Guideline
DCoE	Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury
DHA	Defense Health Agency
DHB	Defense Health Board
DHC	Deployment Health Center
DHCC	Deployment Health Clinical Center
DHP	Defense Health Program
DMED	Defense Medical Epidemiology Database
DMSS	Defense Medical Surveillance System
DoD	Department of Defense
DoDSR	Department of Defense Serum Repository
DTRA	Defense Threat Reduction Agency
E&A	Epidemiology and Analysis
FY	Fiscal Year
GEIS	Global Emerging Infections Surveillance
IB	Integrated Biosurveillance
IBHC	Internal Behavioral Health Consultant
IPA	Intergovernmental Personnel Act
IT	Information technology
MBA	Master of Business Administration
MD	Medical Doctor
MHS	Military Health System
MPH	Master of Public Health
MRMC	U.S. Army Medical Research and Materiel Command
MS/MA	Master of Science/Master of Arts
MSMR	*Medical Surveillance Monthly Report*
NHRC	Naval Health Research Center
O&M	Operations and maintenance

Acronyms	
OMB	Office of Management and Budget
PCBH	Primary Care Behavioral Health
PhD	Doctor of Philosophy
PTSD	Posttraumatic stress disorder
RDT&E	Research, development, test, and evaluation
SIPRNet	Secret Internet Protocol Router Network
TRAC2ES	TRANSCOM Regulating and Command & Control Evaluation System
VA	Department of Veterans Affairs
Glossary	
Intergovernmental Personnel Act	The Intergovernmental Personnel Act (IPA) of 1970 authorized the IPA Mobility Program, a personnel mechanism that allows the temporary assignment of skilled personnel between federal and non-federal entities
Joint Manning Document	A document that reflects an activity's tasks, functions, organization, current and projected manpower needs, and, when applicable, its required mobilization augmentation.
Joint Table of Distribution	A manpower document that identifies the positions and enumerates the spaces that have been approved for each organizational element of a joint activity for a specific fiscal year.

APPENDIX H. DEFENSE HEALTH BOARD SUPPORT STAFF

Juliann Althoff, CAPT, MC (FS), USN
Executive Director (Acting) and Designated Federal Officer, Defense Health Board (Beginning August 2016)

Camille Gaviola, MBA
Deputy Director, Defense Health Board

Christine Bader, MS, BSN, RN-BC
Executive Director and Designated Federal Officer, Defense Health Board (Until August 2016)

Douglas Rouse, Col, USAF, MC, SFS
Executive Secretary, Defense Health Board (Until August 2016)

Sara Higgins, MPH, CSSGB
Report Lead/Analyst, Grant Thornton LLP

Katharine Austin, MPA, MPH
Analyst, Grant Thornton LLP

Lisa Austin, MSHA, MBA, PMP
Task Lead, Grant Thornton LLP

Reem Ghoneim, MPH
Report Lead/Analyst, Grant Thornton LLP (Until March 2017)

Kendal Brown, MBA
Management Analyst, Information Innovators, Inc.

Aamir Syed, MHA
Project Director, Grant Thornton LLP

Margaret Welsh
Management Analyst, Grant Thornton LLP

Jean Ward
Defense Health Board Staff Assistant

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Defense Health Board
Defense Health Headquarters
7700 Arlington Boulevard, Suite 5101
Falls Church, VA 22042
Email: dha.ncr.dhb.mbx.defense-health-board@mail.mil