Pediatric Health Care Services

A Report by the Defense Health Board

December 18, 2017

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DEFENSE
HEALTH
BOARD

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
HEALTH AFFAIRS
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December 18, 2017

FOR: TOM MCCAFFERY, ACTING ASSISTANT SECRETARY OF DEFENSE FOR HEALTH AFFAIRS

SUBJECT: Pediatric Health Care Services

The Defense Health Board is pleased to submit its report summarizing the findings and recommendations from its independent review of Pediatric Health Care Services.

On October 21, 2015, the Under Secretary of Defense (Personnel & Readiness) requested that the DHB provide recommendations to improve the monitoring and provision of pediatric clinical preventive services in military dependents to better promote the health of this beneficiary population and potentially realize cost savings for the Military Health System (MHS). Then, on July 26, 2016, the Acting Assistant Secretary of Defense for Health Affairs requested the Board examine opportunities to improve the overall provision of health care and related services for children of members of the Armed Forces. This request replaced the October 21, 2015 request regarding pediatric clinical preventive services.

Specifically, the Acting Assistant Secretary of Defense for Health Affairs requested the Board:

- Identify the extent to which children receive developmentally appropriate and age appropriate health care services, including clinical preventive services, in both the direct care and purchased care components.

- Identify the degree to which the MHS delivers clinical preventive services that align with standards, guidelines, and recommendations established by the Patient Protection and Affordable Care Act; the Early and Periodic Screening, Diagnosis, and Treatment program; and organizations that specialize in pediatrics, such as the American Academy of Pediatrics and the American Pediatric Surgical Association.

- Determine what policies, practices, and capabilities the Department of Defense (DoD) should implement to improve monitoring of compliance with pediatric clinical preventive services and immunizations in military dependents.

- Determine what approaches DoD should take to increase compliance with recommended pediatric clinical preventive services and immunizations in military dependents.

- Evaluate whether children have ready access to primary and specialty pediatric care.

- Address any issues associated with the TRICARE definition of "medical necessity" as it might specifically pertain to children and determine if the requirement for TRICARE to comply with Medicare standards disadvantages children from receiving needed health care.

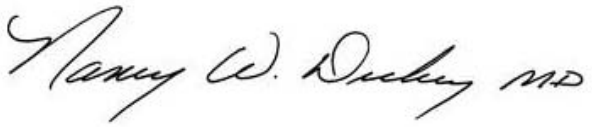
- Measure the impact of permanent changes of station and other service-related relocations on the continuity of health care services received by children who have special medical or behavioral health needs.

- Assess certification requirements for residential treatment centers of the Department to expand the access of children of members of the Armed Forces to services at such centers.

- Evaluate the quality of and access to behavioral health care under the TRICARE program for children, including intensive outpatient and partial hospitalization services.

- Assess other issues related to the evaluation and general improvement of health care for children within the MHS, including data collection, data utilization, and data analysis that could improve pediatric care and related services, including the availability and maturity of pediatric specific outcome measures and best practices for coordination of pediatric care.

The Board conducted literature reviews on key topics; received briefings from pediatric health care subject matter experts from within the MHS and from the civilian sector; analyzed access, satisfaction, and quality data; reviewed current policies and practices related to pediatric health care services both at the enterprise-wide and Service levels; and received public commentary from DoD beneficiaries, advocacy groups, and the general public. Following public deliberation of the findings and recommendations, the attached report was finalized. On behalf of the Board, I appreciate the opportunity to provide the Department with this independent review and hope that it provides useful information to promote and improve pediatric health care services for beneficiaries across the MHS.



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

Attachment:
As stated

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HEALTH AFFAIRS

JUL 2 6 2016

MEMORANDUM FOR PRESIDENT, DEFENSE HEALTH BOARD

SUBJECT: Request to Expand the Defense Health Board Review of "Pediatric Clinical Preventive Services" to "Pediatric Health Care Services"

Pursuant to the attached Terms of Reference (TOR) on "Pediatric Health Care Services," I request the Defense Health Board (DHB) examine opportunities to improve the overall provision of health care and related services for children of members of the Armed Forces to better promote the health of this beneficiary population and potentially realize cost savings for the Military Health System (MHS). This new TOR replaces and expands the scope of the original request beyond just identifying opportunities to improve the monitoring and provision of clinical preventive services as tasked in the October 21, 2015, memorandum. Specifically, I request that the DHB develop findings and recommendations on the following:

- Identify the extent to which children receive developmentally appropriate and age-appropriate health care services, including clinical preventive services, in both the direct care and purchased care components.
- Identify the degree to which the MHS delivers clinical preventive services that align with standards, guidelines, and recommendations established by the Patient Protection and Affordable Care Act; the Early and Periodic Screening, Diagnosis, and Treatment program; and organizations that specialize in pediatrics, such as the American Academy of Pediatrics and the American Pediatric Surgical Association.
- Determine what policies, practices, and capabilities the Department of Defense (DoD) should implement to improve monitoring of compliance with pediatric clinical preventive services and immunizations in military dependents.
- Determine what approaches DoD should take to increase compliance with recommended pediatric clinical preventive services and immunizations in military dependents.
- Evaluate whether children have ready access to primary and specialty pediatric care.
- Address any issues associated with the TRICARE definition of "medical necessity" as it might specifically pertain to children and determine if the requirement for TRICARE to comply with Medicare standards disadvantages children from receiving needed health care.
- Measure the impact of permanent changes of station and other service-related relocations on the continuity of health care services received by children who have special medical or behavioral health needs.

- Assess certification requirements for residential treatment centers of the Department to expand the access of children of members of the Armed Forces to services at such centers.
- Evaluate the quality of and access to behavioral health care under the TRICARE program for children, including intensive outpatient and partial hospitalization services.
- Assess other issues related to the evaluation and general improvement of health care for children within the MHS, including:
    - Data collection, data utilization, and data analysis that could improve pediatric care and related services, including the availability and maturity of pediatric specific outcome measures.
    - Best practices for coordination of pediatric care.

The attached TOR titled "Pediatric Health Care Services" replaces the October 21, 2015, "Pediatric Clinical Preventive Services" TOR and provides a detailed description and updated scope for the tasking. The point of contact for this action is Ms. Christine Bader. She may be reached at (703) 681-6653, or christine.e.bader.civ@mail.mil. Thank you for your continued support and commitment to optimizing the health and force-readiness of the military.

Karen S. Guice, M.D., M.P.P.
Acting

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PEDIATRIC HEALTH CARE SERVICES

"We've asked a lot of our men and women in uniform and they've never failed to answer the call. Their commitment to the mission and willingness to put themselves in harm's way is based, in large part, on how well the Nation cares for them and their families."

General Joseph F. Dunford
Chairman of the Joint Chiefs of Staff
July 24, 2017[1]

The Military Health System (MHS) must deliver quality health care to all beneficiaries to ensure a military ready force. Infants, children, and adolescents (see Appendix B.3 for a definition of the pediatric population) need a variety of personal, social, economic, and environmental factors, all working in concert, to ensure their well-being and to learn, grow, and play to their full potential. Safe physical environments set a stable foundation for families to access important social and economic needs, such as quality education and employment. Children and families can then learn and establish healthy behaviors, including diet and exercise, and practice other age-appropriate, health-promoting activities.[2] These healthy behaviors help children navigate adversity and build a sense of self-efficacy and resilience to life's physical and mental obstacles.[3] Access to quality health care supplements these environmental, social, and behavioral factors to ensure a healthy and high-functioning childhood. Dependent children of members of the Armed Forces, the uniformed services, reservists, and retirees rely on the Department of Defense (DoD) and the MHS for pediatric health care services, and it is DoD's duty and statutory obligation to provide them.[4]

DoD's medical mission is to "enhance DoD and our Nation's security by providing health support for the full range of military operations and sustaining the health of all those entrusted to our care."[5] As the responsible party, DoD must provide the full spectrum of pediatric health care services to children in the MHS and assure that preventive, primary, specialty, and behavioral health care needs are met. In addition to ensuring that standards of civilian care are met, the MHS has an additional responsibility to investigate, understand, and address military-specific pediatric environmental, lifestyle, and other risks that may be unique to military children and their families and may impact care.

IMPORTANCE OF PEDIATRIC CARE IN THE MILITARY HEALTH SYSTEM

When the quality of life, including physical and mental health, of families of Service members is compromised, DoD's military mission is compromised. Pediatric care in the MHS is a readiness issue and, as such, the MHS needs to be proactive in ensuring the health of these beneficiaries. At its core, pediatric care in the MHS should be rooted in prevention, focused on wellness, and committed to patient satisfaction. All pediatric beneficiaries should have access to preventive, primary, specialty, and behavioral health care services, including care tailored to the needs of children with complex, chronic, or other special conditions.

The MHS must deliver quality health care to ensure a military ready force in the context of its global military presence, frequent deployments, and permanent changes of station (PCS).

Beneficiaries, including children, are located in all 50 states, the District of Columbia, and U.S. territories and at military installations around the world. Active duty Service members and their families may relocate every two to three years, and, with each PCS, families must reestablish care networks and begin to build relationships with a new set of providers. Additionally, military providers may relocate every two to three years, also threatening continuity of care.[6]

The MHS is challenged to ensure as smooth a transition as possible for families, particularly for those with children with special or complex needs. Civilian families of children with special or complex needs may choose to live near extended family members for additional support, or they can set down roots and build support networks by living in one place for a long time. Due to the nature of military service, military families who PCS every few years do not have the same opportunity to create social support networks that can be sustained throughout a childhood. DoD must work with families to identify areas in which they need support and then fill those gaps. Parents who are well supported are better able to care for their children, particularly for those who have special or complex needs.[8]

> "Military family members are an important part of the readiness and well-being of the military force. The care and support of military families is considered a top national security policy priority in recognition of the integral role family members have in supporting service members and, therefore, the mission of the military."[7]
>
> Committee on the Assessment of the Readjustment Needs of Military Personnel, Veterans, and Their Families; Board on the Health of Select Populations; Institute of Medicine

By supporting parents, the MHS helps ensure their children are healthy. Beyond force readiness, having healthy children is in DoD's best interest because many offspring of Service members go on to join the military themselves. Over 75 percent of veterans would recommend a career in the military to a young person close to them, and youth with a parent who served in the military are twice as likely to consider military service than children of parents with no history of military service.[9,10]

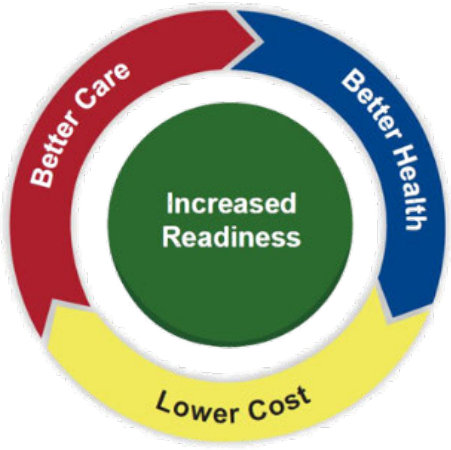


Figure 1. MHS Quadruple Aim

The military has long been a leader in many areas of health care, including for example, pioneering telemedicine technologies, developing new procedures in trauma, and advancing the world's understanding of amputee care.[11,12] Within the field of pediatrics, military providers and researchers led developments in poison control and accident prevention, as well as the study of pediatric infectious disease.[13] The MHS is working to maintain this momentum, while responding to mission needs, and has transitioned to an enterprise management structure, implementing the MHS Quadruple Aim as an overarching strategy system-wide.[14] The MHS Quadruple Aim (Figure 1) builds upon the Institute for Healthcare Improvement Triple Aim framework, an approach to optimizing health system performance by simultaneously pursuing

three dimensions: improve the patient experience of care, improve the health of populations, and reduce the per capita cost of health care.[15] The MHS adapted this approach to better reflect the military context and, in 2009, adopted the MHS Quadruple Aim with a central focus of increased readiness. The MHS Quadruple Aim is especially important in an era of increasing health care costs.[16]

National Defense Authorization Act 2017: Opportunity for Transformation

DoD leadership recognizes that transformative changes in the practice of medicine require new approaches to ensure medical readiness and that the expectations of the beneficiaries are met.[14] The establishment of the Defense Health Agency (DHA) in 2013 supported the MHS reorganization through the establishment of shared services and common clinical and business functions; the DHA is designated a Combat Support Agency.[18] As of the date of this report, the environment surrounding the MHS is once again one of change and transition. Through the National Defense Authorization Act (NDAA) of 2017, Congress mandated transformational reorganizations in the administration of the DHA and military treatment facilities (MTFs), TRICARE reform, and an increased focus on standardization, cost-controlling measures, and value metrics. In January 2018, the TRICARE regions will be reorganized, reducing the number of Managed Care Support Contractors from three to two regions, and the health benefit will transition from TRICARE Standard and TRICARE Extra to TRICARE Select (see Appendix B for more details).[19] In addition, the MHS is currently rolling out MHS GENESIS, the commercial off-the-shelf electronic health record, which will replace various legacy outpatient and inpatient systems.[20]

> "This is historic because we have the opportunity here to redesign our system of health. At the heart of it, I believe, is a growing recognition, both in the military health system and the commercial and private health care system, that our patients truly need to be co-designers."[17]
>
> Vice Admiral Raquel Bono
> Director, Defense Health Agency

The combined effect of these changes has created an atmosphere of opportunity, and MHS leadership understands the important potential during this era of transition. DHA Director Vice Admiral Raquel Bono noted, "this is historic because we have the opportunity here to redesign our system of health. At the heart of it, I believe, is a growing recognition, both in the military health system and the commercial and private health care system, that our patients truly need to be co-designers."[17]

The Board's recommendations strongly support several sections of the fiscal year (FY) 2017 NDAA (see Appendix B.2 for more information about the NDAA).

The Military Health System

There are several characteristics of the MHS that influence how DoD delivers care and how beneficiaries experience care. Understanding the history of TRICARE, the complexity of the system, and the variability in care experience helps to provide context for the Board's findings and recommendations to improve pediatric health care services.

HISTORY OF TRICARE

Established in 1995, the TRICARE program was developed to provide a uniform program of medical, dental, and pharmacy benefits to active duty, guard, and reserve members; their families; and retirees and their families.[4,22] TRICARE currently serves 9.4 million eligible beneficiaries around the world and consists of several benefit plans, including TRICARE Standard, TRICARE Extra, and TRICARE Prime.[18,23] Starting January 2018, TRICARE Standard and TRICARE Extra will be replaced with TRICARE Select (see "National Defense Authorization Act" for more information).[19]

MHS Statistics[16,21]

- 2.3 million pediatric beneficiaries*
- Direct Care Component
  - 54 hospitals
  - 627 clinics
  - 147,165 military and civilian personnel
- Purchased Care Component
  - Managed by Managed Care Support Contractors in three regions in the United States (two regions starting in 2018), plus Overseas
  - 47 percent of all health care providers in the U.S. are TRICARE approved
  - 80 percent of all non-mental health providers in the U.S. are TRICARE approved
- The majority of care provided to DoD pediatric beneficiaries is delivered in the TRICARE network.

*See Appendix B.3 for pediatric definition

TRICARE followed the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS), which extended and improved the CHAMPUS Reform Initiative to allow beneficiaries to receive care from civilian physicians through cost-sharing. The CHAMPUS Reform Initiative originated in California and Hawaii as a congressionally-directed demonstration to reduce health care costs for families and the government and relieve some of the bureaucratic complexity of the health care delivery system of the time.[24] Challenges in securing timely pediatric health care services added to the need for the demonstration.

As stipulated by Congress, CHAMPUS payment structures and reimbursement policy followed Medicare guidelines, as does TRICARE today.[4] Because TRICARE is aligned to Medicare payment guidelines, it is difficult for TRICARE to adapt to the nuances of pediatric care, and it is not designed to account for the role that the family plays in pediatric care.[21] Within pediatrics, the family serves as the primary source of strength and support for a child and is integral in helping children meet developmental goals and achieve optimal well-being. The family is vital in executing high-quality decision-making, and family-centered care is associated with reduced emergency department visits for children, reduced anxiety for children, and faster recovery and discharge after certain procedures. Furthermore, parent-to-parent support groups have been shown to increase parents' confidence and have positive effects on the mental health status of mothers of children with chronic illness.[8]

It is also important to note that, when CHAMPUS was being legislated, the program was developed with a specific medical focus, as opposed to a population health perspective, out of necessity and political feasibility of the time.[25] The result for TRICARE is a framework that is decidedly clinical and very much civilian health plan oriented, without the population health foundation needed to comprehensively track and integrate the social determinants of health into medical care. Social determinants of health influence an individual's or a population's health and result from the powerful and complex relationships that exist between health and biology,

individual behavior, socioeconomic status, racism, and legislative policies, among other factors.[26] It is important to acknowledge these complex relationships, as well as health disparities that may arise in relation to certain demographic factors, and track population health measures accordingly. For example, health care systems that are not designed to consider race and ethnicity may be at risk of providing health care inconsistently across racial and ethnic groups, leading to disparate health outcomes even in populations that are universally insured, like active duty Service members and their families under TRICARE.[27] The population health approach is particularly applicable to pediatrics, as the majority of children, including TRICARE beneficiaries, are generally healthy, and other factors in the life of a child, particularly the social and economic status of the family, have a larger impact on well-being than clinical care.[28]

Complexity of the System

DoD operates a global system of fixed and deployable clinics, hospitals, and health teams to meet the health needs of the military force and their families.[14] With approximately 9.4 million total beneficiaries and 150,000 military and civilian providers disbursed across the globe, the MHS is arguably the Nation's largest and most complex health care system.[18] In 2016, approximately 2.3 million eligible pediatric beneficiaries were entrusted to the DoD for care.[29] The complexity of the MHS is related to its dual role as both the payer and provider of health care services, as well as challenges stemming from the nature of military service and DoD's organizational structure, which is undergoing significant changes due to the FY 2017 NDAA reforms.

Care is provided through the direct care component, which is the collective health care resources of the uniformed services organized into clinics or MTFs, and is supplemented by TRICARE services in the purchased care component, "the network and non-network participating civilian health care professionals, institutions, pharmacies, and suppliers."[18] Command of each individual MTF currently rests with its respective Service (Army, Navy, or Air Force) or the DHA, and most MTFs fall within one of six enhanced Multi-Service Markets, which represent joint geographic regions with high concentrations of military personnel. For the purchased care component, Managed Care Support Contractors develop provider networks in designated regions under proprietary contracts with DoD. More than half of the care provided to DoD beneficiaries is delivered through the TRICARE network due to the wide range of conditions and needs of beneficiaries and the global reach of the system.[30]

Processes to modify, update, or expand the TRICARE benefit are complex due to statutory and regulatory constraints. Each year, Congress may mandate changes to the MHS through the annual NDAA legislation. DoD must then interpret the statute, propose updates to regulatory guidance and administrative rules included in the Code of Federal Regulations, and receive and respond to public commentary on the proposed change before its implementation. Once regulatory guidance is final, TRICARE manuals, which govern the operations, policy, reimbursement, and systems of the Managed Care Support Contractors, must be updated, and contracts must be modified accordingly. Each step of this process is lengthy in its implementation, and the governmental, administrative, and contractual approvals needed to comply with the law delay substantive changes.[31]

As evidenced by the FY 2017 NDAA, Congress may choose to mandate a complete re-orientation of the management, administration, and delivery of health care in the MHS. This type of broad, sweeping change requires buy-in from front-line employees and sustained focus from leadership to realign the organizational culture to the new paradigm. Organizational change is slow, and, within the MHS, it is made even more complex due to distinct cultures across the Services and DHA. However, during the wars of the past two decades, when enhanced integration was mission essential and driven by a shared culture, military medicine demonstrated excellence in adopting a shared culture and, as a result, achieved historically low battlefield mortality rates.[32] This same urgency and passion for success can be harnessed in a unified culture to transform health care operations and achieve the MHS Quadruple Aim at all times. Within the DHA, the Director is developing several initiatives to facilitate this cultural transformation.[33]

Variability in Care Experience

Due to the complexity and enormity of the care delivery system outlined above, the Board concluded that care experience varies tremendously for beneficiaries across the MHS. Because health needs of children are wide-ranging, much of how families and children experience care within the MHS depends on their specific needs in the system. For example, a family who utilizes routine care for well-child visits, supplemented by occasional urgent care visits for acute needs, will likely have a very different experience than a family of a child with complex medical needs who must regularly see five or more specialists to maintain stability and functionality for daily living.

The Board saw these differences demonstrated during their review of MHS satisfaction data and in receiving public commentary. Parental responses to the Joint Outpatient Experience Survey showed 92 percent of parents were somewhat or strongly satisfied with care on a particular visit within the direct care component;[34] however, this is based on an 8 percent survey response rate.[35] The same survey tool showed 72 percent of parents/guardians stated the ease of making an outpatient appointment in the direct care component was very good or excellent.[34] Conversely, the Board received numerous public comments that voiced the challenges of navigating the MHS with a child with complex needs, securing referrals, and reestablishing care after a PCS.

To take into consideration beneficiaries' varied needs and to reconcile the disconnect in care experience, the Board mapped pediatric needs into four broad categories: routine, chronic, urgent, and complex. These categories can provide context for the differences in patient and family experience across the MHS (Figure 2).

Figure 2. Categories of Care[A,36-38]

Routine

- Routine care is care designed to maintain the well-being of children, track developmental milestones, and provide clinical preventive services. This includes prenatal care, newborn care, immunizations, well child care, annual physicals, and adolescent care.
- Within the MHS, a child's primary care manager, who may be a pediatrician, family medicine physician, nurse practitioner, or physician assistant, typically provides routine care.

Chronic

- Chronic care addresses a pre-existing or long-term illnesses, as opposed to an urgent or acute need, which is concerned with illnesses of brief duration. Children with chronic conditions typically need their care coordinated through several specialists and require ongoing adjustments in care and regular interaction with the health care system.

Urgent

- Urgent care provides immediate medical care for the treatment of acute and chronic illness and injury.
- Urgent care does not replace a primary care physician; it is a convenient option for families when a child falls ill or is injured outside of office hours, and is a preferable alternative to utilizing a hospital emergency room.

Complex

- Complex care provides care to children who have multiple chronic and severe conditions, a congenital or acquired multisystem disease, major functional limitations, need for medical technology for daily activities, high health care utilization, or substantial family-identified service needs.
- Children requiring complex care need extra time, expertise, and resources to achieve optimal health outcomes. This includes substantial family-identified needs which have a significant impact on the family, specifically time devoted to care, frequent provider visits, care coordination, and financial burden.
- The nature, intensity, and consistency of a child's complex care needs may change over the life of the child depending on a variety of medical, psychosocial, and community factors.

MHS access standards for routine and urgent care are more stringent than comparable private and state government health plans, though opportunities exist to improve specialty care access standards.[39] Within the direct care component, the MHS as a whole performs well against the established access standards. For example, for routine care, beneficiaries must be offered an appointment within seven calendar days, and the average days to future routine appointment was under five days in FY 2014, 2015, and 2016.[40] However, it is important to note that, when looking at individual MTF performance, 33 percent of facilities failed to meet the routine appointment access standards in 2016.[41]

[A] The definitions and order of the categories of care were developed by the Board for the purposes of this report.

In addition to categories of care, sources of variability in care experience may also stem from such things as:

- military and civilian provider shortages in certain geographic locations that mirror nation-wide shortages, particularly for developmental pediatricians and child psychiatrists (see Appendix D.2 and E.3);
- the definition of medical necessity (see Appendix B.2);
- the range of services available in the direct versus purchased care components (see Appendix B.2);
- policies that vary across MTFs, though efforts are underway to standardize primary and specialty care services across the MHS (see Appendix D.2 and E.3);
- challenges navigating the Extended Care Health Option (ECHO) and Exceptional Family Member Program (EFMP) (see Appendix D.2);
- long waitlists for specialists following a PCS due to the number of families attempting to access the same care, which is exacerbated by a shortage of specialists (see Appendix F.2);
- TRICARE benefit level (see Appendix B.2 and C.1);
- the duty status of the sponsor (see Appendix D.2); and
- variation in the interpretation of the TRICARE Policy Manual by the Managed Care Support Contractors (see Appendix B.2).

Through public commentary and advocate testimony, the Board concluded that variability in the MHS is a source of dissatisfaction that often promulgates a sense of frustration and unfairness among families, all of which is exacerbated for families with children with complex needs.

This variability leads to differences in care experience between families and between assignments. Through public commentary and advocate testimony, the Board concluded that beneficiaries expect the collective services provided in the direct care component will be the same as those received in the purchased care component, although the benefit may differ for a variety of reasons. This variability is a source of dissatisfaction that often promulgates a sense of frustration and unfairness among families, all of which is exacerbated for families with children with complex needs.

FINDINGS AND RECOMMENDATIONS

To answer its charge and to provide recommendations for improved health care delivery and improved patient experience, the Board interviewed many stakeholders and reviewed a wide range of materials. The comprehensive review included: literature reviews on key topics; briefings from pediatric health care subject matter experts from within the MHS and from the civilian sector; access, satisfaction, and quality data; current policies and practices related to pediatric health care services both on the enterprise-wide and Service levels; and public commentary from DoD beneficiaries, advocacy groups, and the general public (see Appendix H for more details).

From its review, the Board noted many opportunities for improving clinical preventive services, primary and specialty care, behavioral health care, and care coordination, especially for children with complex needs and their families.

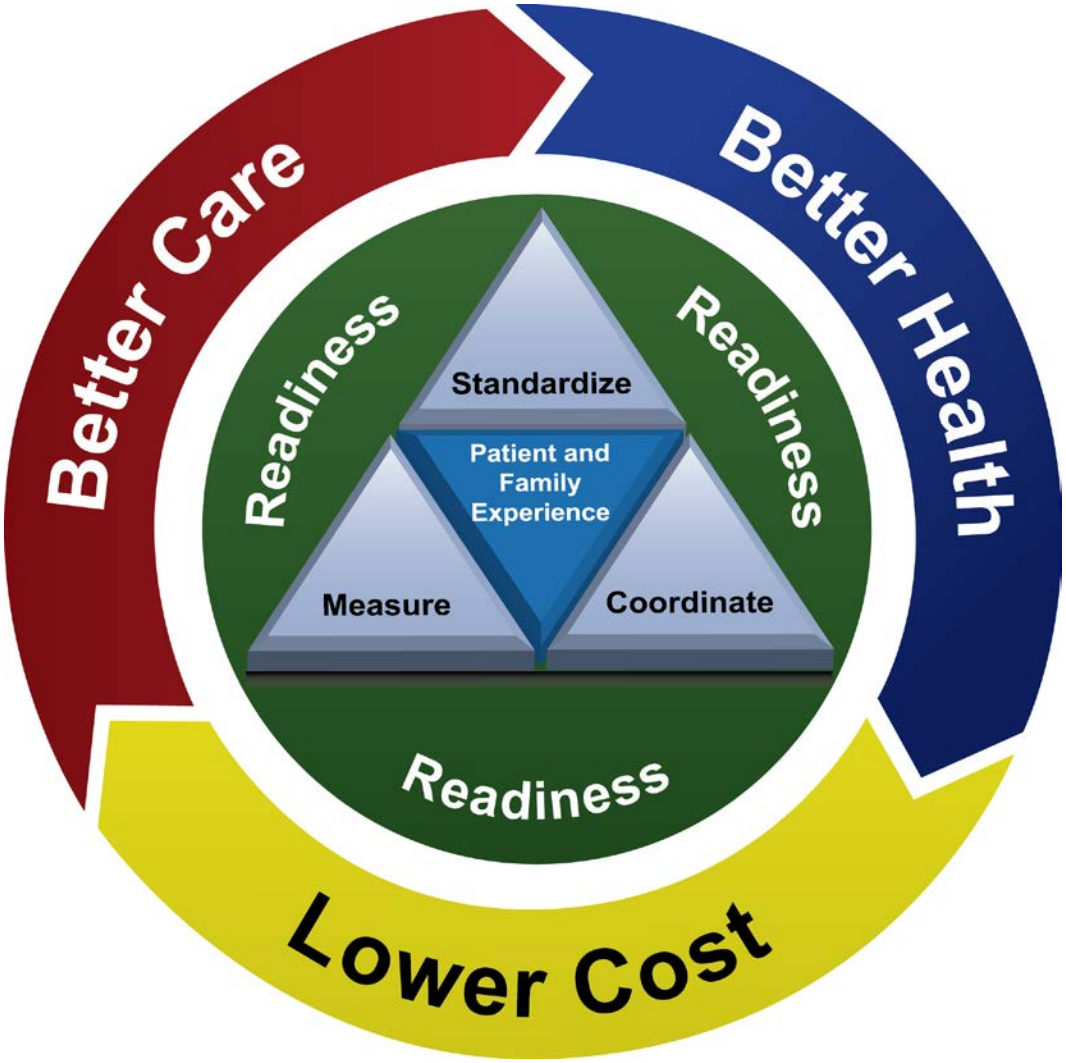
Four foundational themes were used to organize the Board's findings and recommendations (Figure 3). The first is a lack of primary focus on the patient and family experience, which was central to the Board's findings and framed its overall findings and recommendations. Every interaction with the MHS is an opportunity to shape patient experience, either positively or negatively, and this opportunity exists no matter what the child or family needs from the system (routine, chronic, urgent, or complex care), the location at which the child receives care (direct or purchased care component), or the child's TRICARE benefit level (Prime, Standard, or Extra).

> "Parents go off to war . . . [and] we know that if a child of a deployed service member experiences health care issues, that service member thousands of miles away also has trouble. Our duty in the Military Health System is to provide peace of mind by guaranteeing health care for children."[42]
>
> Dr. Terry Adirim
> Deputy Assistant Secretary of Defense for Health Services Policy and Oversight
> April 4, 2017

In addition, the **patient and family experience** and overall performance of the MHS is heavily influenced by challenges related to: **measurement, collection, and reporting of data** (see Appendix B.3, C.2, D.2, and E.3 for more information); **standardization of care** (see Appendix B.2, C.2, C.3, D.2, E.2, and E.3, for more information); and **care coordination** (see Appendix F for more information). Because pediatric health care services indeed affect readiness, pursuing improvements according to these four foundational themes is essential to the MHS achieving the MHS Quadruple Aim.

The Board was tasked with 10 specific charges related to pediatric health care services in the MHS (see Charge to the Defense Health Board and Appendix G), and the Board believes that addressing these four themes, supplemented by data and research included in the appendices, will address all of those charges (Figure 3). The Board was also tasked to examine opportunities to "potentially realize cost savings for the Military Health System."[43] Because of a dearth of meaningful pediatric cost data, the Board was unable to fully examine opportunities for cost savings.

Figure 3. Foundational Themes for Pediatric Health Care Services Findings and Recommendations



By refocusing its efforts to center on the patient and family experience and improve data measurement and collection, standardization, and care coordination, the Board believes the MHS can transform care delivery and continue to be a leader in pediatric health care services. As previously mentioned, the current environment is primed for bold change, and the Board supports the mandates included in the FY 2017 NDAA to shift the paradigm of the MHS. Due to the complexity of the system, change will take time to implement and filter down to patients. Success will require sustained focus and a commitment from leadership across DoD to work together to assure children of members of the Armed Forces receive high-quality care.

PATIENT AND FAMILY EXPERIENCE

Within the MHS, patients and providers are all working toward the same goal—improving well-being across the MHS to assure readiness. In the Board's review of pediatric health care

services, it found passionate providers and staff in all of the Services and the DHA working to improve children's health. Despite these intentions and efforts, the Board received numerous public comments from families expressing frustration due to barriers to accessing care, dissatisfaction with the care they received, or both.

There is a conceptual disconnect between families and those providing care to or purchasing care on behalf of DoD beneficiaries, which stems from a fundamental difference in understanding health care delivery as an "entitled benefit" versus "health insurance coverage." The former strives to ensure easily understandable, accessible, and seamless patient- and family-centered care, whereas the latter (health insurance coverage) is a means of offsetting some or most health care expenses through a shared risk structure that uses performance measures based on networks, claims paid (discounts, cycle time, etc.), and occasional customer satisfaction surveys.

Families and patients served by the MHS expect the delivery of health care as a benefit, earned through service to and sacrifice for the country. They expect to receive top quality health care with freedom from complex access and payment processes. In a survey of active duty spouses, "access to quality health care" was considered to be the most important benefit, over such benefits as "secure employment for my spouse" and "a good retirement plan."[44] Difficulties voiced by beneficiaries often involve access and payment issues similar to those experienced in private sector insurance plans. While it appears that the care provided to children within the MHS is developmentally and age appropriate, the Board understands that the process of scheduling appointments, obtaining referrals, and navigating the complexities of the system frustrates parents and proves detrimental to the care experience for many families, especially for those with children with complex needs. In some cases, the administrative and bureaucratic hurdles faced by families may be worse than their civilian counterparts due to a well-intentioned but additional "layer" of purchasing care through the Managed Care Support Contractors (see Appendix C.2 and D.2 for more information). While the Board noted the Services' and DHA's commitment to the patients, the implementation of TRICARE too often resembles the health insurance model for "satisfaction" and "access" rather than an earned benefit designed to assure greater support of military-specific needs.

The health care industry has transitioned in recent years toward patient-centered care delivery, operationalized in the MHS through models such as the patient-centered medical home, among others. A new approach for the MHS to consider is a mutually accountable partnership model, where patients are co-creators and co-designers of their care. Within this approach, providers and patients are both participants in the health care system and coproduce strategies to achieve patient goals. This constitutes a paradigm shift, away from the more narrow focus of meeting patient needs, toward a broader goal in which the provider and the patient communicate effectively, have a shared understanding of the problem, and generate a mutually acceptable management and evaluation plan for the care.[45] For pediatric patients, parents and families are an important additional stakeholder in this relationship, and they typically hold the majority of the responsibility in making health care decisions regarding their children.

The DHA's National Capital Region is working towards making patient experience a priority and expanding patient representation throughout the MTF, to include the creation of patient experience officers. For example, the Walter Reed National Military Medical Center has

established a Directorate for Quality and Experience. This new Directorate aims to break down silos that exist between staff and the Patient Experience and Quality Department. Patient and family representatives will be included on various policy and experience boards and committees, in order to ensure that they help design the processes of care that shape their overall care experience. In addition, patient and family volunteers will serve on the National Capital Region Multi-Service Market Board, with the ultimate goal of including patients on many hospital committees, even those involved in patient risk reviews. This will be an innovative process for patients and families, and it will also incorporate providers as key stakeholders in this new patient experience model, recognizing that staff buy-in to improving patient experience is vital to both patient and provider satisfaction.

By fully incorporating the importance of patient experience into the health care system, the Directorate hopes to establish a sustainable model that delivers safe and effective quality care. Regarding this new initiative, Rear Admiral David Lane, Director of the DHA National Capital Region Medical Directorate, states that it is "critically important to create a truly reliable culture of successful health care delivery and infuse the patients into the process of co-designing their own care experience."[46] In addition, the Walter Reed National Military Medical Center is hosting a workshop in November 2017, the Regional Quality Summit, during which military family advocacy groups will be invited to share their insights and input on this new patient experience model. This patient experience model may prove to be a promising practice for the MHS as it moves forward.[B,46] The DHA and its Tri-Service Patient Experience Working group are also developing a standardized approach to improve patient engagement across the direct care component, in accordance with Section 731 of the FY 2017 NDAA.[47]

While in their infancy, these innovations represent important and necessary first steps for the MHS toward improving patient experience. Within the MHS more broadly, the complexity, fragmentation, and bureaucracy of the system negatively affect the patient and family experience, despite the motivation, hard work, and positive intentions of the providers. For instance:

- Families face many challenges navigating the MHS, which they characterize as a difficult system in which there are differences between direct care and purchased care and across MTFs. It is especially challenging for young military families to monitor clinical preventive service needs and for families who have children with complex needs.
- Families and providers often do not learn of changes to the TRICARE benefit in a timely manner. Advocacy group leaders noted that it is very difficult to be knowledgeable about the MHS, even for experienced parents (see Appendix B.2, and F.2 for more information).[48]
- The current MHS functional governance structure includes various groups concerned with improving pediatric care, including the Tri-Service Specialty Care Advisory Board, the Tri-Service Patient Centered Care Integration Board, the Clinical Quality Integration Board, and

> "It is very difficult to be knowledgeable about the military health care system, even for experienced parents."
>
> A military spouse and parent

[B] Patient satisfaction surveys are one piece of a comprehensive strategy to improve patient and family experience. For the purposes of clarity, the Board chose to reference survey tools and methods in Finding and Recommendation 2, "Measure."

the Medical Operations Group. Military pediatric providers can access these governing bodies through their respective Service representatives; however, the Board was unable to identify a consistent communications channel to provide feedback and guidance. Furthermore, families do not have a channel through the current governance structure to provide feedback or influence consensus regarding tri-Service policy. Instead, patient concerns are expressed directly to the Director of the DHA, their congressional representative, or through advocacy groups. The DHA has implemented a quarterly Pediatrics Advocacy Forum to share information and receive input from leading pediatric advocacy groups within the MHS (see Appendix B.2 for more information).

- Primary caregivers of children with complex needs are in need of respite care. Respite care is provided by ECHO and EFMP, which are only available to active duty families. The ECHO benefit closely aligns with the state Medicaid Home and Community-based Services (HCBS) waiver, which certain states use to develop new services and extend the Medicaid benefit beyond the traditional group of beneficiaries. Almost all states and the District of Columbia offer services through HCBS waivers. States can operate multiple HCBS waivers, with currently more than 300 HCBS Waiver programs active nationwide.[49] Waitlists for state Medicaid waiver programs can exceed the amount of time that an active duty family would stay in one location. The January 2015 Military Compensation and Retirement Modernization Commission (MCRMC) Final Report found that respite care is one of the services military family members often need and demand and calculated an average maximum number of respite hours provided by Medicaid, based on a state-by-state analysis of various respite care waiver programs. The Commission recommended increasing ECHO services for respite care to more closely align with state Medicaid waiver programs. Family members do not understand why the amount of respite care available to them differs from the hours that would be available under a state Medicaid waiver program. This difference between the ECHO respite benefit and a given state's Medicaid waiver program benefits further promulgates the sense of unfairness experienced by families (see Appendix D.2 for more information).[50]

Finding 1:

A. There is a conceptual disconnect between families and those providing care to or purchasing care on behalf of Department of Defense beneficiaries, which stems from a fundamental difference in understanding health care delivery as an "entitled benefit" versus "health insurance coverage."
B. The Military Health System can be extremely difficult for beneficiaries to navigate. This is exacerbated in certain geographic locations and by differences in the direct care and purchased care components.
C. Although the Board has been unable to quantify the magnitude of the problem, there are families of children with complex and chronic needs who report that the Department of Defense does not assure access to high-quality, coordinated care for their children.

Recommendation 1:

The Military Health System should commit to assuring a positive patient and family experience and high-quality, coordinated care for all pediatric beneficiaries, irrespective of geographic location, age, sex, sexual orientation, gender identity, race, health status, socioeconomic status, or Service status of the sponsor. Specifically, the Military Health System should:

A. Create a mutually accountable partnership model between families and Military Health System providers to assure the optimal health of Department of Defense pediatric beneficiaries. Proof of adherence to recommended pediatric clinical preventive services would be early evidence of such a partnership.
B. Create new methods of communication with pediatric patients and families, including notifying them of changes in health benefits and alerting them to opportunities to provide input into the system.
C. Enhance opportunities for patient and family feedback with the goal of improving response rates, providing the feedback to health care providers, and, in the spirit of trust and partnership, increasing the transparency of that feedback data for the broader community of patients and families to be able to access.
D. Require inclusion of parents in working and policy groups at all levels. These groups are empowered to guide TRICARE implementation in ways that are meaningful to pediatric patients and their families.
E. Establish an enterprise-wide Patient Experience Office within the Defense Health Agency. This office would have linkages to military treatment facilities to align the Military Health System with industry best practices for patient-centered care. This office should promote activities that allow insight into how pediatric patients and families navigate the system. This could include shadowing activities, or "a day in the life."
F. Ensure that Military Health System GENESIS provides the pediatric patient or their family access to their personal health information as has come to be expected by patients in the civilian health care system.
G. Analyze manpower requirements for pediatric primary care practitioners and subspecialists. In the context of providing health care and assuring readiness, the Military Health System should support training programs and other innovative solutions that would meet those requirements.

MEASURE

The lack of outcome data and quality and cost measures for both direct care and purchased care has hindered the Board's ability to systematically assess access to and quality of pediatric care throughout the MHS. There is no single reporting system across DoD for health data that captures clinical services. A lack of system-wide measures for both access to and quality of care received within the MHS makes it difficult to determine if ready access to the four types of care (routine, urgent, chronic, and complex) is being delivered successfully to patients. Specifically:

- As of September 2015, the MHS is monitoring 30 measures via an enterprise-wide dashboard, Partnership for Improvement (P4I).[51] None of these measures are directly related to pediatric health care services, though some are composite measures that include pediatric care.[51]
- There is a paucity of pediatric quality measures in the health care field; however, the DHA does track two pediatric quality measures related to behavioral health care in the MHS.[52] The DHA has the opportunity to lead in the field of pediatric quality measures through the development of its dedicated Pediatric Quality Dashboard (see Appendix B.3 for more information).
- Due to the lack of consistent tracking and reporting across the MHS, the Board was not able to adequately assess what types of disparities in health care delivery may exist in the system,

particularly along racial, ethnic, and socioeconomic lines. These types of data are not collected or tracked among pediatric beneficiaries in a way that allows for either qualitative or quantitative analysis (see Appendix D.2 and E.3 for more information on the types of access and quality measures requested by the Board).

- The data collected by the MHS on pediatric immunizations and other clinical preventive services are fragmented and incomplete due to the use of non-interoperable information systems, both within and between the direct care and purchased care components. These information systems include the Armed Forces Health Longitudinal Technology Application, the Aeromedical Services Information Management System, the Pharmacy Data Transaction Service, and TRICARE Encounter Data Records. This fragmentation may worsen during the period of transition to the new electronic health record, which will add another non-interoperable information system (see Appendix C).
- Access, quality, and cost metrics that are tracked for adult populations in the MHS do not have corollary pediatric measures. For example, data regarding appeals to TRICARE are not broken down by age, so it is not possible to track the most common appeals for pediatric patients.[53]
- Patient satisfaction surveys provide an invaluable data and feedback channel for patients and their families and can be implemented as part of a comprehensive strategy to improve the patient-centered culture of a health care system. Representative sampling and strong response rates ensure that a broad range of patient voices are heard when providing direct feedback to providers and administrators.[54] Net promoter scores, which are a commonly used survey tool in business to assess customer loyalty, is a promising practice in the health care sector to assess satisfaction and willingness of patients to recommend a specific health care facility to their friends or family.[55] Other tools, such as those administered by the firm Press Ganey, provide health care organizations access to a robust and well-established database of patient satisfaction scores for physicians, which enables comparisons across peer groups.[54] Of the current survey tools used within the MHS to track patient satisfaction, only one (the Joint Outpatient Experience Survey) tracks the pediatric population, and that tool only captures patients up to age 10.[34] Because of differences in state laws regarding access to care and consent to treatment, the MHS cannot mail surveys to minor patients and ensure Health Insurance Portability and Accountability Act of 1996 (HIPAA) compliance. This is particularly true for adolescents seeking mental health or reproductive health services, and, as such, the MHS issued a memorandum to restrict event-based surveying of patients 11-17 years old.[56] It is vital to include the adolescent population in this tracking (ages 11-21). Health metrics for this group are not being collected consistently, making it difficult to assess if this type of care is being optimally delivered and utilized (see Appendix B.3 for more information on the MHS pediatric population and Appendix D.2 for types of survey tools currently being implemented).
- Applied Behavior Analysis (ABA) is available to all beneficiaries through the TRICARE Comprehensive Autism Care Demonstration, which is scheduled to end December 31, 2018. However, the MHS has only recently begun to collect data to assess progress and outcomes of the demonstration and, as a result, is unable to determine the scope and effectiveness of the demonstration since its inception.[53] Section 716 of the FY 2017 NDAA requires an analysis of the program to determine whether the use of ABA therapy improves outcomes for beneficiaries with autism spectrum disorder (see Appendix B.2 for more information on the

FY 2017 NDAA and Appendix E.1 for more information about the TRICARE Comprehensive Autism Care Demonstration).[19]

The MHS rollout of the new, commercial, off-the-shelf electronic health record system, MHS GENESIS, in February 2017 is an important step in updating the way health information is tracked and reported in a more secure and efficient manner. MHS GENESIS and its new Patient Portal capability have the potential to improve the way providers share health information with other providers and with patients and their families in a mutually accountable partnership. While it is still too early to measure the effectiveness of this new system, it will be important to standardize this tool and its use across the MHS and monitor how MHS GENESIS can be used to improve the tracking, reporting, and metrics capacity of the MHS.

The care received by patients and families in the MHS should be systemically and uniformly measured wherever possible to ensure accessible, equitable, and high-quality care.

Finding 2:
The Military Health System does not have an enterprise-wide system to accurately and consistently track and measure pediatric outcomes and other metrics related to quality, cost, and experience of care.

Recommendation 2:
The Military Health System should commit to accurate and consistent tracking and reporting of metrics across the system to ensure delivery of cost effective, quality care to all pediatric beneficiaries. Specifically, the Military Health System should:

A. Prioritize the collection of outcome and quality measures using the proposed Pediatric Quality Dashboard as a foundation (see Appendix B.3 for more information).
B. Utilize these data and metrics to optimize system cost effectiveness and efficiency.
C. Establish a mechanism to accurately monitor compliance with pediatric immunizations and other clinical preventive services, at an individual and population level, for services received in both the direct care and purchased care components.
D. Ensure that the new electronic health record has the capability to merge its data with purchased care and legacy systems.
E. Require all TRICARE beneficiaries to be enrolled (Prime and Select), as noted in Section 701 of the fiscal year 2017 National Defense Authorization Act, in order to accurately track and report on services delivered to pediatric beneficiaries.
F. Improve pediatric metrics data by including a representative sample of the entire pediatric population from birth to age 21. Updating and simplifying the Joint Outpatient Experience Survey tool would be part of this endeavor.
G. Collect and utilize pediatric health equity information, such as race, ethnicity, sexual orientation, gender identity, and other socioeconomic factors, in order to identify and address any health disparities that may exist within the Military Health System.
H. Conduct an analysis of the TRICARE Comprehensive Autism Care Demonstration to assess its effectiveness, whether outcomes improved with the provision of Applied Behavior Analysis, and the appropriate duration of treatment for patients. This analysis would comply with Section 716 of the fiscal year 2017 National Defense Authorization Act and may help refine the optimal delivery of the service.

STANDARDIZE

The MHS is not designed to optimally provide health care that is patient- and family-centered, timely, efficient, and equitable. The Board agrees with the Institute of Medicine's (now known as the National Academy of Medicine) tenets to achieve these goals:

> Systems must be designed to serve the needs of the patients, and to ensure that they are fully informed, retain control and participate in care delivery whenever possible, and receive care that is respectful of their values and preferences. Such systems must facilitate the application of scientific knowledge to practice, and provide clinicians with the tools and supports necessary to deliver evidence-based care consistently and safely.[57]

Currently, the MHS lacks standardization, and best practices are not implemented enterprise wide. For instance:

- A lack of standardization affects the care experience and the services that pediatric patients receive, and there are multiple sources of variation and differences in care.
- Pediatric patients who receive care in the purchased care component may not receive the same services as those patients who receive care in the direct care component due to the MHS's definition of medical necessity and the hierarchy of reliable evidence, which only apply to purchased care (see Appendix B.2 for more information on medical necessity).[58] The nature of pediatric clinical research precludes some pediatric services and treatments from ever meeting the hierarchy of reliable evidence threshold outlined in 32 Code of Federal Regulations 199.2.
- The current definition of medical necessity disadvantages children from receiving some needed services, such as those who would benefit from the short-term use of ABA therapies.
- There are currently three TRICARE regions in the United States, which will be consolidated into two on January 1, 2018, with a distinct Managed Care Support Contractor responsible for purchased care in each region. The TRICARE benefit is detailed in four program manuals (operations, policy, reimbursement, and systems), and the Managed Care Support Contractors interpret and implement the requirements in the manuals differently in each region.[59]
- The availability of pediatric services depends on geographic location due to differences in the availability of providers in different regions. Between FY 2014 and 2016, approximately 30 percent of the pediatric population in the MHS lived in a zip code designated as a mental health professional shortage area.[40]
- ECHO, a TRICARE benefit that provides supplemental services for qualifying mental or physical health conditions, is only available to active duty family members, as opposed to family members of reservists or retirees.[60]
- Data shows that there is high variability across MTFs with regard to quality of and access to care.[41] The FY 2017 NDAA includes several sections that provide the opportunity to enhance standardization. Section 702 assigns the DHA responsibility for the administration of all MTFs, centralizing management functions for all facilities. Section 704 directs the MHS to remedy access to urgent and primary care in the MTFs and the purchased care component by expanding business hours at MTFs, revising referral requirements, and increasing utilization of the Nurse Advice Line. Section 709 instructs the Secretary of Defense to implement an appointing system that is standardized across all MTFs and that

includes telephone, online, and in-person scheduling options. Sections 726 and 728 are explicitly intended to eliminate variability in health outcomes and improve quality of health care services at MTFs by establishing best practices and adopting core quality performance metrics (see Appendix B.2, D.2, and E.2 for more information on the FY 2017 NDAA and access and quality data for primary care and behavioral health).[61]

- The publication of the TRICARE Mental Health and Substance Use Disorder Treatment Final Rule in September 2016 was designed to assure mental health parity and improve access to residential treatment centers; all elements of the Final Rule have just recently been implemented (in June 2017) due to lengthy regulatory and contractual constraints.[62] Minimal communication by the MHS regarding implementation status and delays has caused confusion and frustration among patients and provider groups (see Appendix E.2 for more information about certification requirements for residential treatment centers and Appendix B.2 for more information about how a TRICARE benefit is added).

Finding 3:
Military Health System care for pediatric beneficiaries, whether delivered in the direct care or purchased care components, is variable and not always aligned with accepted best practices. The system is not designed to optimally provide patient- and family-centered, timely, efficient, and equitable care to all of its pediatric beneficiaries.

Recommendation 3:
The Military Health System should commit to standardizing care and adopting accepted best practices to provide patient- and family-centered, timely, efficient, and equitable care to all of its pediatric beneficiaries, whether in the direct or purchased care components. Specifically, the Military Health System should:

A. Develop an enterprise-wide solution to identify, test, and continuously assess the effectiveness of the implementation of models of care, designed around best practices.
B. Identify military treatment facilities that are not achieving access standards and concentrate efforts to improve compliance.
C. Modify the administrative interpretation of the regulatory language in 32 Code of Federal Regulations 199.2 to broaden the use of the "hierarchy of reliable evidence" for the benefit of pediatric beneficiaries. Exclusions to the hierarchy described under "reliable evidence" in 32 Code of Federal Regulations 199.2 should not preclude pediatric services (a) meeting definitions of medical necessity used broadly in civilian practice or (b) recommended by recognized medical organizations (see Table 3 in Appendix B.2 for example organizations).
D. Continue to ensure that the Department of Defense supports the principles of mental health parity as part of the TRICARE benefit to maintain coverage for mental health and substance use services.

COORDINATE

Families of children with special health care needs, such as chronic or complex conditions, require access to high-quality care coordination and integration. The Maternal and Child Health Bureau of the Department of Health and Human Services defines children and youth with special health care needs as "those who have or are at increased risk for chronic physical,

developmental, behavioral, or emotional conditions, and who also require health and related services of a type or amount beyond that required by children generally."[63]

Families and patients served by the MHS expect health care as a benefit, not merely services provided as part of an insurance plan. DoD beneficiaries should expect to receive top quality health care that is easily accessible and patient- and family-centered. Integrated care systems are an approach to care delivery that address primary care, specialty care, and social support needs in a continuous manner. Care coordination is a system in which primary care providers, case managers, and behavioral health professionals work together to provide care.[64] Additionally, many care coordination models have been shown to lower long-term costs and yield cost savings by decreasing hospital utilization (see Table 27 for more information).[65]

Care coordination for children with special, complex, or chronic health needs is well received by both providers and patients; however, there is currently the absence of a readily scalable and successfully implemented model of care coordination in a large civilian health care system. This could be an opportunity for DoD to work creatively and proactively to develop a care coordination system that addresses the top pediatric complex and chronic conditions within the MHS and can be seen as a model of care coordination that can be implemented on a large scale.

Currently, the MHS does not always support optimal care coordination or integration of primary and specialty care, which may lead to a lack of continuity of care. Specifically:

- A PCS can prove to be a challenge for military families of children with complex health needs. There is little uniformity in the hand-off process for complex cases during a PCS, which may disrupt continuity of care that is vital for children and youth with chronic and/or complex medical and behavioral health needs. This can lead to a significant gap in care (see Appendix F.2 for more information on the impact of PCS and other Service-related relocations).[66]
- The MHS should be able to provide long-term, seamless care that is not interrupted by multiple geographic relocations.[67] Reestablishing care after each relocation can be a lengthy, costly process for families. There are efforts in the MHS to begin to standardize and streamline care management across the direct care and purchased care components.[21] Section 701 of the FY 2017 NDAA removes the need for a preauthorization from a primary care manager for specialty care for care within the network, though a referral is still required.[19]
- Telehealth is not used to its full potential in the MHS to help address the shortage of specialists, particularly in the field of behavioral health. This issue should be partially addressed by Section 718 of the FY 2017 NDAA, which requires the MHS to incorporate the use of telehealth services across the MHS to improve access, improve health outcomes, and reduce health care costs (see Appendix D.2 for more information about telehealth and E.1 for more information about telemental health specifically).[19]
- Families need to receive adequate information and education regarding complex care plans, medications, and specialist services when transitioning to new geographic locations. Through public testimony, the Board heard from parents of children with complex or chronic needs who are active and engaged advocates for their child's health care. While they embrace this role, many parents expressed that there are challenges accessing resources to

smoothly navigate relocations and quickly reestablish care (see Appendix F.2 for more information on the impact of PCS and other Service-related relocations).

Section 718 of the FY 2017 NDAA requires the Secretary of Defense to incorporate the use of telehealth services throughout the military.[19] Implementation of this has the potential to improve access to care, improve communication between patients and families and providers, and monitor individual health outcomes for beneficiaries with chronic disease or conditions. Two examples of successful implementation of pediatric telehealth in the military are the Pacific Asynchronous Telehealth (PATH) system and Health Experts onLine for Providers (HELP). These programs consist of provider-to-provider teleconsultation platforms, facilitate access to subspecialists, and reduce both patient and provider travel. Two military pediatricians will be discussing these telehealth efforts and sharing lessons learned with other pediatric experts at the American Academy of Pediatrics National Conference in September 2017.[68]

Finding 4:
The Military Health System does not consistently provide high-quality, coordinated care for pediatric patients with chronic and complex health care needs who require integrated health care services. Disruption of care is often reported during times of permanent changes in station, deployments, or other geographic relocations.

Recommendation 4:
The Military Health System should commit to tracking and consistently providing patient- and family-centered care coordination that assures delivery of integrated and continuous care for all pediatric beneficiaries. Specifically, the Military Health System should:

A. Further integrate behavioral health care and primary care to ensure improved care coordination. This is particularly important for children with complex needs and their families.
B. Establish a pediatric strategic initiative aimed at complying with Section 718 of the fiscal year 2017 National Defense Authorization Act to incorporate the use of telehealth technologies and services uniformly across the Military Health System to: (1) improve access and health outcomes; (2) diminish the disruption of care that can occur during permanent changes of station or other geographic relocations through health assessments; and (3) provide diagnoses, treatments, interventions, and supervision that can address potential gaps in care coordination (see Appendix B.2 for more information regarding the fiscal year 2017 National Defense Authorization Act).
C. Utilize telehealth technologies and strategies to mitigate the shortage of some pediatric specialists within the Military Health System by facilitating provider-to-provider consultations. This would allow children to continue care with a trusted primary care provider, especially while receiving needed services from behavioral health or other specialists in another geographic area.[C]

[C] Telehealth and telemental health technologies are an important aspect of care coordination, as well as care standardization. For the purposes of clarity, the Board chose to reference telehealth in Finding and Recommendation 4, "Coordinate."

ADDITIONAL OBSERVATIONS AND EMERGING FACTORS

Over the course of its review of pediatric health care services, the Board identified a number of areas of interest that it believes DoD should address, including:

PEDIATRIC OBESITY

Children who are overweight or obese are at increased risk for a host of chronic diseases. Even though the rate of childhood obesity among children of military families is generally less than the national average, it is still an important concern that the Board would like to see be continually monitored.[10] In its 2013 report, *Fit to Fight, Fit For Life: Implications and Trends in Obesity and Overweight for the Department of Defense*, the Board commended the efforts of the DoD to address pediatric obesity through the implementation of several evidence-based interventions, as well as adopting best practices from civilian childhood obesity programs. In order to continue being a leader in this area, the Board feels that DoD and the MHS should explore the possibility of using a demonstration program that would address the continuing issue of pediatric obesity among military children. The MHS could leverage the platform of the Millennium Cohort Family Study (as noted in the Board's report, *Deployment Health Centers Review, 2016-2017)* in order to aid the implementation of a potential demonstration project.

Additionally, DoD launched the 5210 Healthy Military Children campaign, a collaboration between DoD's Office for Military Community and Family Policy and the Clearinghouse for Military Family Readiness at Penn State University, to encourage a healthy lifestyle among military children. The program encourages children to incorporate healthy activities and lifestyle changes into their day, such as limited television/screen time, zero sugary drinks, and eating more fruits and vegetables. Since implementing the campaign, DoD officials have seen the most success in reducing screen time, noting parents are much more aware of the difference between productive and non-productive screen time (e.g. using computer screens for math homework versus using computer screens for videogames). A goal of the 5210 campaign is to help children self-regulate between productive and non-productive activities as they enter their teen years.[69] Officials are promoting education efforts where military families live, work, and play, including doctor offices, recreation centers, and schools on base, with the goal of making 5210 part of every family's lifestyle. The Board would like the MHS to continue to build off its accomplishments in this area to ensure that military parents and children are well educated regarding obesity and its numerous potential health implications and that the rates of pediatric obesity among military children continues to decline (see Appendix D.1 for more information about pediatric obesity).

ADVERSE CHILDHOOD EXPERIENCES

Adverse Childhood Experiences (ACEs) are related to both the development and prevalence of a wide range of health problems that can emerge in adolescence and adulthood. This area has received significant research demonstrating the relationship between ACEs and an increased risk for disease, disability, and early mortality. Both prevention and early identification of ACEs can have a tremendous positive impact on health issues that children and youth may face later in life. Additionally, despite the fact that the relationship between ACEs and military personnel has not yet been well established, emerging research is now demonstrating that ACEs among military

populations may increase vulnerability, and not resilience, to post deployment posttraumatic stress disorder, even after adjusting for combat and deployment related stressors.[70] The Board feels that further study of the impact of ACEs on military pediatric beneficiaries is important, given that youth with a parent who served in the military are twice as likely to consider military service than children of parents with no history of military service.[9] The Millennium Cohort Family Study, which is currently being conducted, could be leveraged for further study and research on this area of pediatric health in order to address the issue of ACEs and their impact on children, youth, and adults (see Appendix E.1 for more information about ACEs).

Transgender Youth Health

The understanding and treatment of gender dysphoria, including gender reassignment surgery, is an emerging area within pediatrics. Many major health insurance carriers have worked to eliminate transgender and transsexual exclusions from their policies in order to provide accessible and affordable coverage for all patients. Increasingly, both surgical and non-surgical therapies are being covered in civilian health care for pediatric patients. The MHS has been working to improve mental health care access for children and youth, including the expansion of non-surgical treatments for gender dysphoria to be better aligned with available treatments in the civilian sector. The Board supports these preliminary changes, as well as the potential in the future to include surgical treatments for pediatric patients, and feels that this is an area of pediatric health that needs increased research in order to assess the quality of and access to these types of services for MHS pediatric beneficiaries (see Appendix E.1 for more information about gender dysphoria and health services for transgender youth).

Substance Use Disorders

While the Board did not examine the issue of substance use in pediatric populations, it acknowledges that these disorders can significantly affect children and youth, in both civilian and military populations. In FY 2014 through FY 2016, among females ages 13-17, the top Medicare Severity Diagnosis-Related Group for inpatient admissions was "poisoning & toxic effects of drugs age 0-17."[40] The Board feels substance use disorders are an important area that warrants further research and assessment.

Care Delivery Across the Military Health System

The scope of the analysis presented in this report is limited to MHS pediatric beneficiaries. However, the Board believes that the four foundational themes highlighted in the report (patient and family experience; measurement, collection, and reporting of data; standardization of care; and care coordination) may apply to care delivery in the MHS as a whole. Pediatric care, as presented in this report, can serve as a microcosm for challenges faced broadly across the system, and many of the Board's specific recommendations highlight opportunities to improve care for beneficiaries of all ages.

SUPPORTING APPENDICES

APPENDIX A. CROSSWALK BETWEEN TERMS OF REFERENCE OBJECTIVES AND REPORT RECOMMENDATIONS

Terms of Reference		Board Recommendations
I	Identify the extent to which children receive developmentally appropriate and age appropriate health care services, including clinical preventive services, in both the direct care and purchased care components.	1. The Military Health System should commit to assuring a positive patient and family experience and high-quality, coordinated care for all pediatric beneficiaries, irrespective of geographic location, age, sex, sexual orientation, gender identity, race, health status, socioeconomic status, or Service status of the sponsor.
		1A. Create a mutually accountable partnership model between families and Military Health System providers to assure the optimal health of Department of Defense pediatric beneficiaries. Proof of adherence to recommended pediatric clinical preventive services would be early evidence of such a partnership.
		2. The Military Health System should commit to accurate and consistent tracking and reporting of metrics across the system to ensure delivery of cost effective, quality care to all pediatric beneficiaries.
		2F. Improve pediatric metrics data by including a representative sample of the entire pediatric population from birth to age 21. Updating and simplifying the Joint Outpatient Experience Survey tool would be part of this endeavor.
		2G. Collect and utilize pediatric health equity information, such as race, ethnicity, sexual orientation, gender identity, and other socioeconomic factors, in order to identify and address any health disparities that may exist within the MHS.
		3. The Military Health System should commit to standardizing care and adopting accepted best practices to provide patient- and family-centered, timely, efficient, and equitable care to all of its pediatric beneficiaries, whether in the direct or purchased care components.
		4. The Military Health System should commit to tracking and consistently providing patient- and family-centered care coordination that assures delivery of integrated and continuous care for all pediatric beneficiaries.
		4B. Establish a pediatric strategic initiative aimed at complying with Section 718 of the fiscal year 2017 National Defense Authorization Act to incorporate the use of telehealth technologies and services uniformly across the Military Health System to: (1) improve access and health outcomes; (2) diminish the disruption of care that can occur during permanent changes of station or other geographic relocations through health assessments; and (3) provide diagnoses, treatments, interventions, and supervision that can address potential gaps in care coordination (see Appendix B.2 for more information regarding the fiscal year 2017 National Defense Authorization Act).
		4C. Utilize telehealth technologies and strategies to mitigate the shortage of some pediatric specialists within the Military Health System by facilitating provider-to-provider consultations. This would allow children to continue care with a trusted primary care provider, especially while receiving needed services from behavioral health or other specialists in another geographic area.

Terms of Reference		Board Recommendations
II	Identify the degree to which the Military Health System delivers clinical preventive services that align with standards, guidelines, and recommendations established by the Patient Protection and Affordable Care Act; the Early and Periodic Screening, Diagnosis, and Treatment program; and organizations that specialize in pediatrics, such as the American Academy of Pediatrics and the American Pediatric Surgical Association.	1B. Create new methods of communication with pediatric patients and families, including notifying them of changes in health benefits and alerting them to opportunities to provide input into the system.
		2. The Military Health System should commit to accurate and consistent tracking and reporting of metrics across the system to ensure delivery of cost effective, quality care to all pediatric beneficiaries.
III	Determine what policies, practices, and capabilities the Department of Defense (DoD) should implement to improve monitoring of compliance with pediatric clinical preventive services and immunizations in military dependents.	2A. Prioritize the collection of outcome and quality measures using the proposed Pediatric Quality Dashboard as a foundation (see Appendix A.3 for more information).
		2C. Establish a mechanism to accurately monitor compliance with pediatric immunizations and other clinical preventive services, at an individual and population level, for services received in both the direct care and purchased care components.
IV	Determine what approaches DoD should take to increase	1A. Create a mutually accountable partnership model between families and Military Health System providers to assure the optimal health of Department of Defense pediatric beneficiaries. Proof of adherence to recommended pediatric clinical preventive services would be early evidence of such a partnership.

Terms of Reference		Board Recommendations
	compliance with recommended pediatric clinical preventive services and immunizations in military dependents.	1B. Create new methods of communication with pediatric patients and families, including notifying them of changes in health benefits and alerting them to opportunities to provide input into the system.
		1C. Enhance opportunities for patient and family feedback with the goal of improving response rates, providing the feedback to health care providers, and, in the spirit of trust and partnership, increasing the transparency of that feedback data for the broader community of patients and families to be able to access.
V	Evaluate whether children have ready access to primary and specialty pediatric care.	1A. Create a mutually accountable partnership model between families and Military Health System providers to assure the optimal health of Department of Defense pediatric beneficiaries. Proof of adherence to recommended pediatric clinical preventive services would be early evidence of such a partnership.
		1B. Create new methods of communication with pediatric patients and families, including notifying them of changes in health benefits and alerting them to opportunities to provide input into the system.
		1C. Enhance opportunities for patient and family feedback with the goal of improving response rates, providing the feedback to health care providers, and, in the spirit of trust and partnership, increasing the transparency of that feedback data for the broader community of patients and families to be able to access.
		1G. Analyze manpower requirements for pediatric primary care practitioners and subspecialists. In the context of providing health care and assuring readiness, the Military Health System should support training programs and other innovative solutions that would meet those requirements.
		2A. Prioritize the collection of outcome and quality measures using the proposed Pediatric Quality Dashboard as a foundation (see Appendix A.3 for more information).
		2F. Improve pediatric metrics data by including a representative sample of the entire pediatric population from birth to age 21. Updating and simplifying the Joint Outpatient Experience Survey tool would be part of this endeavor.
		3B. Identify military treatment facilities that are not achieving access standards and concentrate efforts to improve compliance.
		4A. Further integrate behavioral health care and primary care to ensure improved care coordination. This is particularly important for children with complex needs and their families.

Terms of Reference		Board Recommendations
		4B. Establish a pediatric strategic initiative aimed at complying with Section 718 of the fiscal year 2017 National Defense Authorization Act to incorporate the use of telehealth technologies and services uniformly across the Military Health System to: (1) improve access and health outcomes; (2) diminish the disruption of care that can occur during permanent changes of station or other geographic relocations through health assessments; and (3) provide diagnoses, treatments, interventions, and supervision that can address potential gaps in care coordination (see Appendix B.2 for more information regarding the fiscal year 2017 National Defense Authorization Act).
		4C. Utilize telehealth technologies and strategies to mitigate the shortage of some pediatric specialists within the Military Health System by facilitating provider-to-provider consultations. This would allow children to continue care with a trusted primary care provider, especially while receiving needed services from behavioral health or other specialists in another geographic area.
VI	Address any issues associated with the TRICARE definition of "medical necessity" as it might specifically pertain to children and determine if the requirement for TRICARE to comply with Medicare standards disadvantages children from receiving needed health care.	3C. Modify the administrative interpretation of the regulatory language in 32 Code of Federal Regulations 199.2 to broaden the use of the "hierarchy of reliable evidence" for the benefit of pediatric beneficiaries. Exclusions to the hierarchy described under "reliable evidence" in 32 Code of Federal Regulations 199.2 should not preclude pediatric services (a) meeting definitions of medical necessity used broadly in civilian practice or (b) recommended by recognized medical organizations (see Table 3 in Appendix B.2 for example organizations).
VII	Measure the impact of permanent changes of station and other service-related relocations on the continuity of health care services received by children who have special medical or behavioral health needs.	1E. Establish an enterprise-wide Patient Experience Office within the Defense Health Agency. This office would have linkages to military treatment facilities to align the Military Health System with industry best practices for patient-centered care. This office should promote activities that allow insight into how pediatric patients and families navigate the system. This could include shadowing activities, or "a day in the life."
		4. The Military Health System should commit to tracking and consistently providing patient- and family-centered care coordination that assures delivery of integrated and continuous care for all pediatric beneficiaries.
		4A. Further integrate behavioral health care and primary care to ensure improved care coordination. This is particularly important for children with complex needs and their families.

Terms of Reference		Board Recommendations
		4B. Establish a pediatric strategic initiative aimed at complying with Section 718 of the fiscal year 2017 National Defense Authorization Act to incorporate the use of telehealth technologies and services uniformly across the Military Health System to: (1) improve access and health outcomes; (2) diminish the disruption of care that can occur during permanent changes of station or other geographic relocations through health assessments; and (3) provide diagnoses, treatments, interventions, and supervision that can address potential gaps in care coordination (see Appendix B.2 for more information regarding the fiscal year 2017 National Defense Authorization Act).
VIII	Assess certification requirements for residential treatment centers of the Department to expand the access of children of members of the Armed Forces to services at such centers.	See Appendix D.2 for information about how this issue has been resolved with the implementation of the September 2016 TRICARE Mental Health and Substance Use Disorder Treatment Final Rule.
IX	Evaluate the quality of and access to behavioral health care under the TRICARE program for children, including intensive outpatient and partial hospitalization services.	1A. Create a mutually accountable partnership model between families and Military Health System providers to assure the optimal health of Department of Defense pediatric beneficiaries. Proof of adherence to recommended pediatric clinical preventive services would be early evidence of such a partnership.
		1D. Require inclusion of parents in working and policy groups at all levels. These groups are empowered to guide TRICARE implementation in ways that are meaningful to pediatric patients and their families.
		1G. Analyze manpower requirements for pediatric primary care practitioners and subspecialists. In the context of providing health care and assuring readiness, the Military Health System should support training programs and other innovative solutions that would meet those requirements.
		2A. Prioritize the collection of outcome and quality measures using the proposed Pediatric Quality Dashboard as a foundation (see Appendix A.3 for more information).
		2F. Improve pediatric metrics data by including a representative sample of the entire pediatric population from birth to age 21. Updating and simplifying the Joint Outpatient Experience Survey tool would be part of this endeavor.

Terms of Reference		Board Recommendations
		2H. Conduct an analysis of the TRICARE Comprehensive Autism Care Demonstration to assess its effectiveness, whether outcomes improved with the provision of Applied Behavior Analysis, and the appropriate duration of treatment for patients. This analysis would comply with Section 716 of the fiscal year 2017 National Defense Authorization Act and may help refine the optimal delivery of the service.
		3D. Continue to ensure that the Department of Defense supports the principles of mental health parity as part of the TRICARE benefit to maintain coverage for mental health and substance use services.
		4A. Further integrate behavioral health care and primary care to ensure improved care coordination. This is particularly important for children with complex needs and their families.
		4B. Establish a pediatric strategic initiative aimed at complying with Section 718 of the fiscal year 2017 National Defense Authorization Act to incorporate the use of telehealth technologies and services uniformly across the Military Health System to: (1) improve access and health outcomes; (2) diminish the disruption of care that can occur during permanent changes of station or other geographic relocations through health assessments; and (3) provide diagnoses, treatments, interventions, and supervision that can address potential gaps in care coordination (see Appendix B.2 for more information regarding the fiscal year 2017 National Defense Authorization Act).
		4C. Utilize telehealth technologies and strategies to mitigate the shortage of some pediatric specialists within the Military Health System by facilitating provider-to-provider consultations. This would allow children to continue care with a trusted primary care provider, especially while receiving needed services from behavioral health or other specialists in another geographic area.
X	Assess other issues related to the evaluation and general improvement of health care for children within the MHS, including:	2. The Military Health System should commit to accurate and consistent tracking and reporting of metrics across the system to ensure delivery of cost effective, quality care to all pediatric beneficiaries.
	o Data collection, data utilization, and data analysis	2A. Prioritize the collection of outcome and quality measures using the proposed Pediatric Quality Dashboard as a foundation (see Appendix A.3 for more information).

Terms of Reference		Board Recommendations
	that could improve pediatric care and related services, including the availability and maturity of pediatric specific outcome measures.	2B. Utilize these data and metrics to optimize system cost effectiveness and efficiency.
		2C. Establish a mechanism to accurately monitor compliance with pediatric immunizations and other clinical preventive services, at an individual and population level, for services received in both the direct care and purchased care components.
		2D. Ensure that the new electronic health record has the capability to merge its data with purchased care and legacy systems.
		2E. Require all TRICARE beneficiaries to be enrolled (Prime and Select), as noted in Section 701 of the fiscal year 2017 National Defense Authorization Act, in order to accurately track and report on services delivered to pediatric beneficiaries.
		2F. Improve pediatric metrics data by including a representative sample of the entire pediatric population from birth to age 21. Updating and simplifying the Joint Outpatient Experience Survey tool would be part of this endeavor.
		2G. Collect and utilize pediatric health equity information, such as race, ethnicity, sexual orientation, gender identity, and other socioeconomic factors, in order to identify and address any health disparities that may exist within the Military Health System.
	o Best practices for coordination of pediatric care.	1B. Create new methods of communication with pediatric patients and families, including notifying them of changes in health benefits and alerting them to opportunities to provide input into the system.
		1C. Enhance opportunities for patient and family feedback with the goal of improving response rates, providing the feedback to health care providers, and, in the spirit of trust and partnership, increasing the transparency of that feedback data for the broader community of patients and families to be able to access.
		1D. Require inclusion of parents in working and policy groups at all levels. These groups are empowered to guide TRICARE implementation in ways that are meaningful to pediatric patients and their families.
		1E. Establish an enterprise-wide Patient Experience Office within the Defense Health Agency. This office would have linkages to military treatment facilities to align the Military Health System with industry best practices for patient-centered care. This office should promote activities that allow insight into how pediatric patients and families navigate the system. This could include shadowing activities, or "a day in the life."
		3A. Develop an enterprise-wide solution to identify, test, and continuously assess the effectiveness of the implementation of models of care, designed around best practices.

Terms of Reference		Board Recommendations
		4A. Further integrate behavioral health care and primary care to ensure improved care coordination. This is particularly important for children with complex needs and their families.
		4B. Establish a pediatric strategic initiative aimed at complying with Section 718 of the fiscal year 2017 National Defense Authorization Act to incorporate the use of telehealth technologies and services uniformly across the Military Health System to: (1) improve access and health outcomes; (2) diminish the disruption of care that can occur during PCS or other geographic relocations through health assessments; and (3) provide diagnoses, treatments, interventions, and supervision that can address potential gaps in care coordination (see Appendix B.2 for more information regarding the fiscal year 2017 National Defense Authorization Act).

APPENDIX B. BACKGROUND AND INTRODUCTION

B.1 INTRODUCTION

REQUEST TO THE DEFENSE HEALTH BOARD

On October 21, 2015, the Under Secretary of Defense (Personnel & Readiness) requested that the Defense Health Board (Board) provide recommendations to improve the monitoring and provision of pediatric clinical preventive services in military dependents "to better promote the health of this beneficiary population and potentially realize cost savings for the military health system."[71] Then, on July 26, 2016, the Acting Assistant Secretary of Defense for Health Affairs expanded this tasking and requested the Board "examine opportunities to improve the overall provision of health care and related services for children of members of the Armed Forces."[43] This request replaced the October 21, 2015 request regarding pediatric clinical preventive services.

Specifically, the Acting Assistant Secretary of Defense for Health Affairs requested the Board:

- Identify the extent to which children receive developmentally appropriate and age appropriate health care services, including clinical preventive services, in both the direct care and purchased care components.
- Identify the degree to which the Military Health System (MHS) delivers clinical preventive services that align with standards, guidelines, and recommendations established by the Patient Protection and Affordable Care Act; the Early and Periodic Screening, Diagnosis, and Treatment program; and organizations that specialize in pediatrics, such as the American Academy of Pediatrics and the American Pediatric Surgical Association.
- Determine what policies, practices, and capabilities the Department of Defense (DoD) should implement to improve monitoring of compliance with pediatric clinical preventive services and immunizations in military dependents.
- Determine what approaches DoD should take to increase compliance with recommended pediatric clinical preventive services and immunizations in military dependents.
- Evaluate whether children have ready access to primary and specialty pediatric care.
- Address any issues associated with the TRICARE definition of "medical necessity" as it might specifically pertain to children and determine if the requirement for TRICARE to comply with Medicare standards disadvantages children from receiving needed health care.
- Measure the impact of permanent changes of station and other service-related relocations on the continuity of health care services received by children who have special medical or behavioral health needs.
- Assess certification requirements for residential treatment centers of the Department to expand the access of children of members of the Armed Forces to services at such centers.
- Evaluate the quality of and access to behavioral health care under the TRICARE program for children, including intensive outpatient and partial hospitalization services.
- Assess other issues related to the evaluation and general improvement of health care for children within the MHS, including:
    - Data collection, data utilization, and data analysis that could improve pediatric care and related services, including the availability and maturity of pediatric specific outcome measures.

- Best practices for coordination of pediatric care.

This appendix will introduce the reader to the Board's tasking, provide relevant background information, and address the TRICARE definition of medical necessity.

Guiding Principles

The Board adopted the following guiding principles as a foundation for its review (Figure 4).

Figure 4. Guiding Principles

Overarching Principle: It is the duty of the DoD to ensure all pediatric family members entrusted to their care receive the best possible health care and access to evidence-based services, including the full spectrum of recommended immunizations, primary, and specialty care, including behavioral health care, whether through the direct care or purchased care components.

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

1. Consider current DoD initiatives and their strategic directions;
2. Acknowledge that effective, evidence-based health promotion and disease prevention are integral components of high-performing health care systems;[72,73]
3. Recognize that effective provision of immunizations and other pediatric health care services is a readiness and public health issue;
4. Provide an actionable strategy to improve monitoring of and compliance with pediatric preventive services and pediatric health care services more broadly;
5. Reflect best practices in the government and private sectors, while balancing technological innovation and affordability;
6. Address technological gaps that limit the Department's ability to ensure pediatric dependents receive timely, appropriate care, including the recommended clinical preventive services and immunizations;
7. Support development and implementation of robust, standardized policies and procedures;
8. Better promote the health of the pediatric beneficiary population and potentially realize cost savings for the MHS; and
9. Promote the use of meaningful metrics by MHS, Service, and military treatment facility (MTF) leadership and clinicians, which will lead to enhanced accountability and continuous improvement of individual and population health within DoD.

Methodology

In order to perform a comprehensive review of pediatric health care services and formulate findings and recommendations, the Board used several different sources to guide analysis. The Board:

- Conducted literature reviews on key topics;
- Received briefings from pediatric health care subject matter experts from within the MHS and from the civilian sector;
- Requested, analyzed, and interpreted access, satisfaction, cost, and quality data;

- Reviewed current policies and practices related to pediatric health care services both at the enterprise-wide and Service levels; and
- Incorporated public commentary from DoD beneficiaries, advocacy groups, and the general public into this report.

For the purposes of this report, the Board developed a specific definition of the pediatric population to facilitate uniform datasets (see Appendix B.3). This definition follows the criteria outlined in the Terms of Reference (Appendix G), while maintaining an appropriately broad net to capture an accurate representation of pediatric health care services across the MHS. Notably excluded from this population are dependents of uniformed service members (Public Health Service and National Oceanic and Atmospheric Administration), due to the stipulation in the Terms of Reference that limited the review to dependents of the Armed Forces. However, the Board believes that care should be uniform for all dependents that can access the MHS (see Figure 4), including dependents of members of the uniformed services.

B.2 Background

TRICARE

TRICARE is the health care program for approximately 9.4 million eligible beneficiaries around the world including active duty, National Guard, and reserve members; their families; and retirees and their families.[18,23] TRICARE is a major component of the MHS and:

> …brings together the worldwide health care resources of the Uniformed Services (often referred to as "direct care," usually in military treatment facilities, or MTFs) and supplements this capability with network and non-network participating civilian health care professionals, institutions, pharmacies, and suppliers (often referred to as "purchased care") to provide access to high-quality health care services while maintaining the capability to support military operations.[18]

TRICARE was established in 1995 from the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS), which extended and improved the CHAMPUS Reform Initiative to allow beneficiaries to receive care from civilian physicians through cost-sharing. As stipulated by Congress, CHAMPUS payment structures and reimbursement policy followed Medicare guidelines, as does TRICARE today.[4] Guidance directing all care in the MHS, including pediatric care, is rooted in United States Code, a consolidation and codification of the general and permanent laws of the United States by subject matter, currently divided into 54 titles.[74] Title 10 contains laws relating to the Armed Forces, with provisions specific to military health care codified in Chapter 55 of Title 10. In accordance with its role as a federal administrative agency, DoD interprets the statutory language set forth by Congress and provides detailed guidance in the Code of Federal Regulations (CFR) for the provision and implementation of health care services. Table 1 illustrates the specific statutory and regulatory language:

Table 1. Statutory and Regulatory Guidance for Pediatric Health Care Services in the MHS[4,75]

Guidance	Statutory or Regulatory Language
10 U.S. Code, Chapter 55, Medical and Dental Care	Section 1072 of 10 U.S. Code Chapter 55 defines the TRICARE program as "the managed health care program that is established by the Department of Defense under the authority of this chapter, principally section 1097 of this title, and includes the competitive selection of contractors to financially underwrite the delivery of health care services under the Civilian Health and Medical Program of the Uniformed Services."[76] Section 1073 assigns the Secretary of Defense with the responsibility of administering the medical and dental benefits provided in Chapter 55 of Title 10, including broad authority to implement and administer the TRICARE program.[77]
32 CFR 199, Civilian Health and Medical Program of the Uniformed Services	Following the above statutory authority, the Secretary of Defense has outlined rules and regulations guiding the implementation of TRICARE to pediatric beneficiaries across the MHS. Section 32 CFR 199.17 governs the TRICARE program for the purpose of implementing a comprehensive managed health care program for the delivery and financing of health care services in the MHS. Section 199.17(p)(5) addresses access standards, including specific wait and travel time standards, for TRICARE beneficiaries.

TRICARE currently consists of several health plans, including TRICARE Standard, TRICARE Extra, and TRICARE Prime.[18] However, starting January 2018, TRICARE Standard and TRICARE Extra will be replaced with TRICARE Select (see "National Defense Authorization Act" for more information). TRICARE Select will function like a preferred provider organization. Unlike Standard, Select will require enrollment during an annual "open season." Beneficiaries will not have to reenroll once they enroll, unless they would like to make a change. In addition, beneficiaries who have TRICARE Standard as of January 1, 2018 will automatically be enrolled in Select to avoid risk of loss of coverage.[21] A proactive and effective communication plan will be essential for this transition to be successful.

The majority of TRICARE plans qualify as "minimum essential coverage," as required by the Affordable Care Act (ACA).[18,78] However, TRICARE does not have to adhere to ACA's specific coverage policies and cost-share requirements because it is neither a group health plan nor health insurance issuer.[79,80] Instead, TRICARE operates under separate statutory authority.[75] TRICARE continues to "evaluate statutory authority and benefit alignment with the [ACA] for pediatric well-child and preventive care."[18] Additionally, although the U.S. Mental Health Parity Act of 1996, the Mental Health Parity and Addiction Equity Act of 2008, and the related provisions in the ACA do not apply to the TRICARE program, "DoD fully supports the principles of mental health parity."[81] The Mental Health Parity and Addiction Equity Act of 2008 "prevents group health plans and health insurance issuers that provide mental health or substance use disorder benefits from imposing less favorable benefit limitations on those benefits than on medical/surgical benefits."[82]

The U.S. Family Health Plan is an additional health care option that falls under TRICARE Prime. The U.S. Family Health Plan is a network of community-based, not-for-profit health care systems that are available in six geographic areas of the United States, and this plan meets or

exceeds the requirements for minimum essential coverage under the ACA. Dependents of active duty Service members, retirees, and activated National Guard and reserve members are eligible to enroll in this plan. The U.S. Family Health Plan covers care received in a primary care setting, including prescription drug coverage, from private physicians who belong to the network of providers affiliated with the designated not-for-profit health care system within each geographic area. Beneficiaries enrolled in the U.S. Family Health Plan do not receive their care at an MTF or from a TRICARE-authorized provider.[83]

Despite complexities, change does occur. Recent additions and expansions of TRICARE benefits include:

- The Laboratory-Developed Test Demonstration was launched, which has the authority to determine whether tests not yet approved by the U.S. Food and Drug Administration are safe and effective for use and thus eligible for TRICARE coverage (2012).
- Certified Mental Health Counselors were added as authorized TRICARE providers (2012).
- Day limits for inpatient mental health stays were eliminated (2012).
- Enhancements to preventive services were provided and cost share/copays for some preventive services were eliminated (2016).
- Inpatient mental health hospital services coverage was expanded (2016).
- The Substance Use Disorder (SUD) Treatment Benefit was revised to allow office-based opioid treatment by individual TRICARE-authorized physicians and add coverage of qualified opioid treatment programs as TRICARE-authorized providers (2016).[16]

PROGRAM OVERSIGHT AND RESPONSIBILITIES

DoD Directive 1010.10, "Health Promotion and Disease/Injury Prevention," details the responsibilities of senior DoD leadership as it relates to health and safety. The Under Secretary of Defense (Personnel & Readiness) provides "strategic direction for health promotion, disease prevention, medical aspects of injury prevention, and population health goals and objectives throughout the DoD."[84] The Under Secretary of Defense (Personnel & Readiness) also provides "actionable information and direction to leadership on health promotion and disease prevention programs" and "ensures continuing evaluation and makes recommendations for improvement as necessary."[84]

The Assistant Secretary of Defense for Health Affairs, in consultation with the Surgeons General of the Military Departments, is tasked to periodically review "the status of Service health promotion and disease prevention programs and policies…to measure management effectiveness, and the costs, outcomes and impacts of these programs."[84] The Assistant Secretary of Defense for Health Affairs should provide "strategic guidance, prioritization, oversight, and any legally required exceptions for the incorporation of clinical preventive services as recommended by the U.S. Preventive Services Task Force…and Public Law 111-148…in the routine provision of health care."[84] In addition, the Assistant Secretary of Defense for Health Affairs is to utilize "available military health data systems for TRICARE Prime enrollees and other DoD beneficiary groups, to acquire and manage information in a manner that supports DoD medical programs, including medical readiness" and "provides comparability with current national statistics."[84] The Assistant Secretary of Defense for Health Affairs also has "overall responsibility for implementing policies, programs, and priorities of the military

immunization program, monitoring and evaluating the implementation and adequacy of the program, making appropriate recommendations to the Secretary of Defense, and issuing implementing guidance."[85]

DoD Component heads are responsible for:[D]

1. Assessing the gaps among DoD strategies and priorities, the strategic directives and targeted priorities in *National Prevention Strategy: America's Plan for Better Health and Wellness*, and Healthy People 2020's leading health indicators,
2. Integrating the strategic directives and targeted priorities into the Component's mission, and
3. Integrating the leading health indicators in DoD health promotion and disease prevention programs and practices into the Component's mission.[84]

One of the strategic directions in the *National Prevention Strategy: America's Plan for Better Health and Wellness* is clinical and community preventive services, to "ensure that prevention-focused health care and community prevention efforts are available, integrated, and mutually reinforcing."[86] Clinical preventive services is a topic of interest in Healthy People 2020, which includes as a leading health indicator the percent of children aged 19 to 35 months who have received the recommended doses of seven particular vaccines.[87-90] It is the DoD Component heads' responsibility to "determine measures of effectiveness" for leading health indicators and "distribute the results of these measures to optimize health promotion and preventive programs."[84] It is also their responsibility to, "to the extent allowed by law, incorporate clinical preventive services in the routine provision of health care" as recommended by the U.S. Preventive Services Task Force and Healthy People 2020.[84]

According to DoD Directive 1010.10, the Secretaries of the Military Departments are responsible for using "Service-designated automated immunization tracking systems, contributing to common registries with the Defense Eligibility Enrollment Reporting System and/or a common clinical data repository" and assessing "implementation of immunization policies as indicators of readiness, effectiveness, and safety."[85]

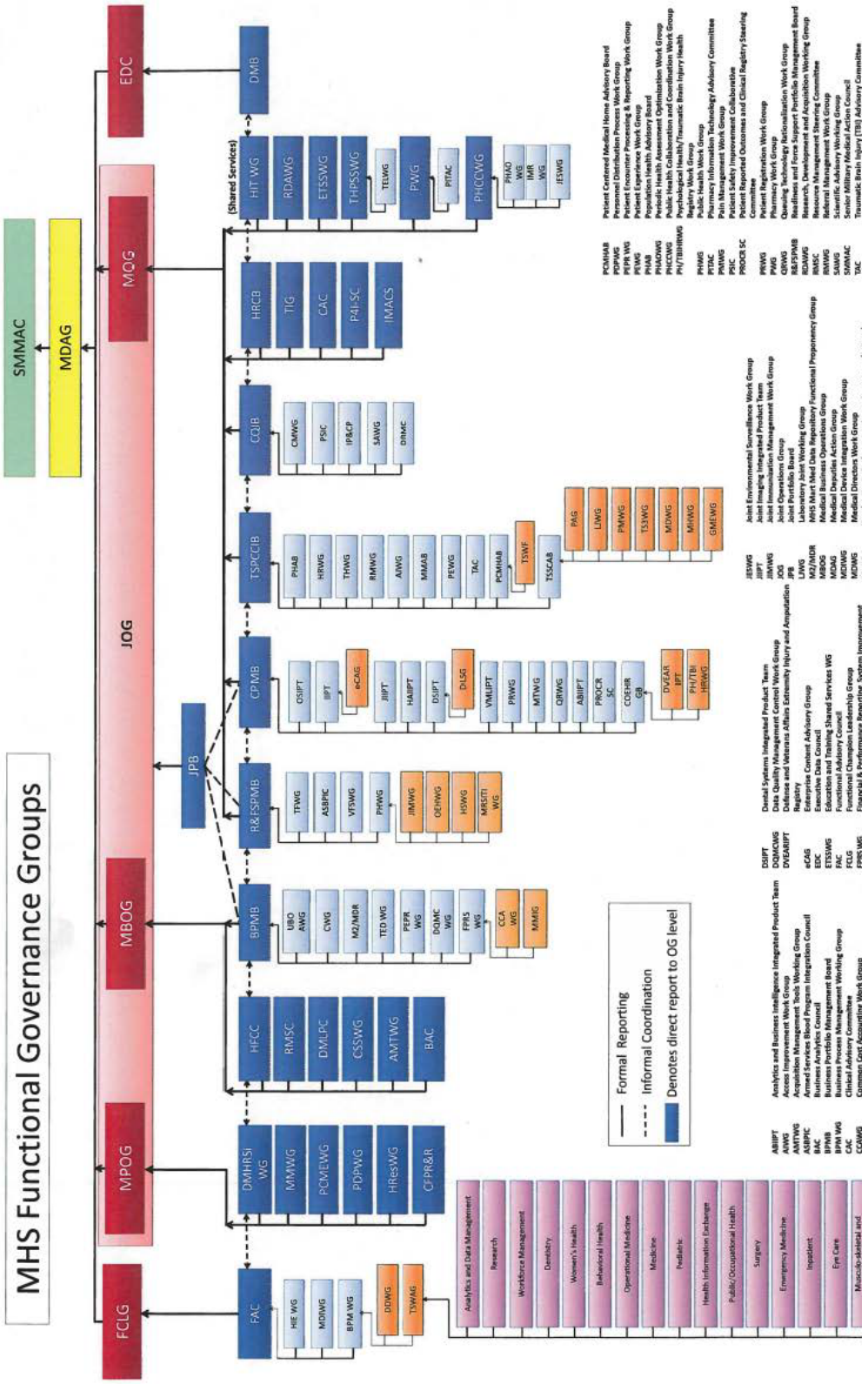
The Defense Health Agency's J-10 (TRICARE Health Plan Directorate) manages TRICARE, including performance analysis, transition, and integration; medical benefits and reimbursement; TRICARE dental care; TRICARE policy and benefits; reserve and Service member support; TRICARE Regional Offices; and the TRICARE Overseas Area Offices. The TRICARE Regional Offices manage the TRICARE contracts in each of three regions, which will become two regions in 2018.[91,92]

Figure 5 describes the MHS's Functional Governance Organization Chart as of May 2017. The current MHS functional group governance structure includes various groups concerned with improving pediatric care, including the Tri-Service Specialty Care Advisory Board, the Tri-

[D] The following are collectively referred to as DoD Components: Office of the Secretary of Defense, the Military Departments, the Office of the Chairman of the Joint Chiefs of Staff and the Joint Staff, the Combatant Commands, the Office of the Inspector General of the Department of Defense, the Defense Agencies, the DoD Field Activities, and all other organizational entities within the DoD.[84]

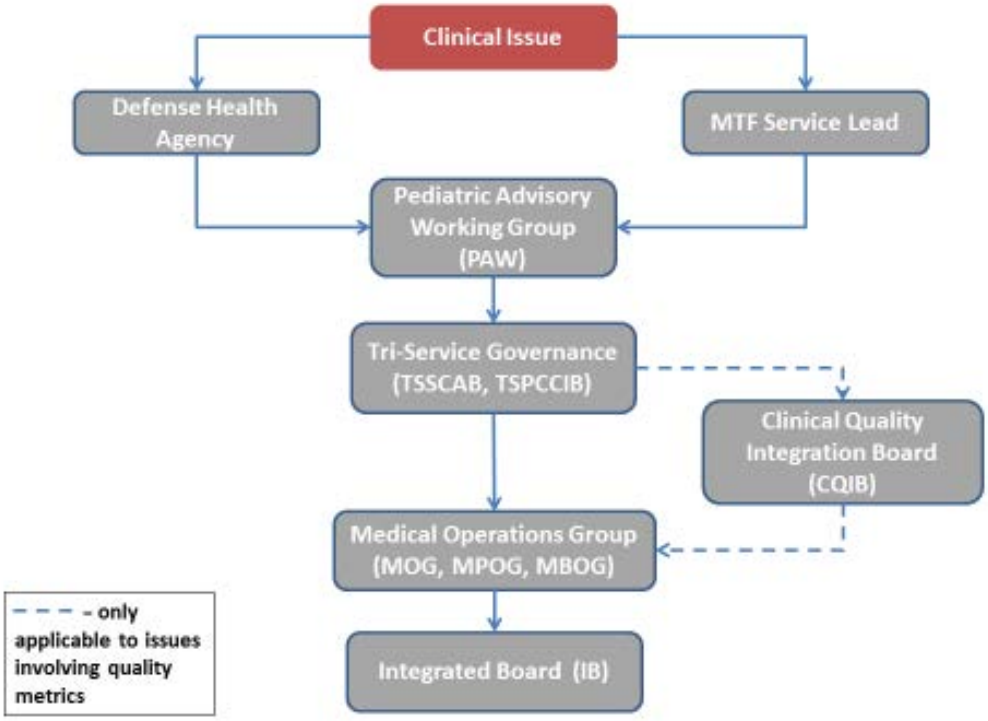
Service Patient Centered Care Integration Board, the Clinical Quality Integration Board, and the Medical Operations Group.[31] Military pediatric providers can access these governing bodies through their respective Service representatives; however, the Board was unable to identify a consistent communications channel to allow providers and beneficiaries to provide feedback and guidance. Figure 6 indicates the MHS pediatric governance flow chart, specifically. Of note, this flow chart does not include the Services' Medical Departments.

Figure 5. MHS Functional Governance Organization Chart[31]



From Phillips and Hart, 2017.

Figure 6. MHS Direct Care Pediatric Governance Flow Chart[93]



From Hart, 2017.

MEDICAL NECESSITY

The definition of "medical necessity" varies across health care systems. Priorities and perspectives of the patient, provider, and payer differ, leading to multiple interpretations of this term throughout the field. Within the MHS, statutory and regulatory definitions of medical necessity determine reimbursement decisions for care provided outside of the MTFs.

TRICARE is required by law to follow the Medicare reimbursement rate schedule for cost sharing.[94] In the U.S. Code (U.S.C.), Congress stipulates that TRICARE may only pay for care provided in the purchased care component that is deemed "medically or psychologically necessary."[58] DoD interprets this statutory language in 32 CFR 199 and provides a definition of "medically necessary" care within the MHS. They determined that medically necessary care would be limited to those treatments and services that have been the subject of "well-controlled studies of clinically meaningful endpoints, which have determined its maximum tolerated dose, its toxicity, its safety, and its efficacy as compared with standard means of treatment or diagnosis."[95]

The CFR provides further guidance on acceptable sources of scientific data and relative weights to inform TRICARE coverage decisions by establishing a "hierarchy of reliable evidence." Notably, the hierarchy of reliable evidence excludes the following sources:

- Reports, articles, or statements by providers or groups of providers containing only abstracts, anecdotal evidence, or personal professional opinions; and
- Personal treatments and procedures of choice, or standards of practice for a provider or a number of providers, to include drugs, devices, or medical treatments.[96]

Please see Table 2 below for specific language defining medical necessity and the hierarchy of reliable evidence.

Table 2. TRICARE Medical Necessity Clause - Statutory and Regulatory Guidance[58,95,97]

Statute / Regulation	Statutory / Regulatory Language
10 U.S.C. § 1079(a)(13) **Contracts for medical care for spouses and children**	a) To assure that medical care is available for dependents, as described in subparagraphs (A), (D), and (I) of section 1072(2) of this title, of members of the uniformed services who are on active duty for a period of more than 30 days, the Secretary of Defense, after consulting with the other administering Secretaries, shall contract, under the authority of this section, for medical care for those persons under such insurance, medical service, or health plans as he considers appropriate. The types of health care authorized under this section shall be the same as those provided under section 1076 of this title, except as follows: (13) Any service or supply which is not *medically or psychologically necessary* to prevent, diagnose, or treat a mental or physical illness, injury, or bodily malfunction as assessed or diagnosed by a physician, dentist, clinical psychologist, certified marriage and family therapist, optometrist, podiatrist, certified nurse-midwife, certified nurse practitioner, or certified clinical social worker, as appropriate, may not be provided, except as authorized in paragraph (4). Pursuant to an agreement with the Secretary of Health and Human Services and under such regulations as the Secretary of Defense may prescribe, the Secretary of Defense may waive the operation of this paragraph in connection with clinical trials sponsored or approved by the National Institutes of Health if the Secretary of Defense determines that such a waiver will promote access by covered beneficiaries to promising new treatments and contribute to the development of such treatments.
32 CFR 199.4 (g)(15)(i) **TRICARE requirement for safety and effectiveness**	(g) Exclusions and limitations. In addition to any definitions, requirements, conditions, or limitations enumerated and described in other sections of this part, the following specifically are excluded from the Basic Program: (15) Unproven drugs, devices, and medical treatments or procedures. By law, CHAMPUS can only cost-share *medically necessary* supplies and services. Any drug, device, or medical treatment or procedure, the safety and efficacy of which have not been established, as described in this paragraph (g)(15), is unproved and cannot be cost-shared by CHAMPUS except as authorized under paragraph 199.4(e)(26) of this part. (i) A drug, device, or medical treatment or procedure is unproven: (C) Unless reliable evidence shows that any medical treatment or procedure has been the subject of well-controlled studies of clinically meaningful endpoints, which have determined its maximum tolerated dose, its toxicity, its safety, and its efficacy as compared with standard means of treatment or diagnosis (see the definition of reliable evidence in § 199.2 of this part for the procedures used in determining if a medical treatment or procedure is unproven).

Statute / Regulation	Statutory / Regulatory Language
	(D) If reliable evidence shows that the consensus among experts regarding the medical treatment or procedure is that further studies or clinical trials are necessary to determine its maximum tolerated doses, its toxicity, its safety, or its effectiveness as compared with the standard means of treatment or diagnosis (see the definition of reliable evidence in § 199.2 for the procedures used in determining if a medical treatment or procedure is unproven).
32 CFR 199.2, **TRICARE Hierarchy of Reliable Evidence**	Reliable evidence. (1) As used in § 199.4(g)(15), the term reliable evidence means only: i. Well controlled studies of clinically meaningful endpoints, published in refereed medical literature. ii. Published formal technology assessments. iii. The published reports of national professional medical associations. iv. Published national medical policy organization positions, and v. The published reports of national expert opinion organizations. (2) The hierarchy of reliable evidence of proven medical effectiveness, established by (1) through (5) of this paragraph, is the order of the relative weight to be given to any particular source. With respect to clinical studies, only those reports and articles containing scientifically valid data and published in the refereed medical and scientific literature shall be considered as meeting the requirements of reliable evidence. Specifically not included in the meaning of reliable evidence are reports, articles, or statements by providers or groups of providers containing only abstracts, anecdotal evidence or personal professional opinions. Also not included in the meaning of reliable evidence is the fact that a provider or a number of providers have elected to adopt a drug, device, or medical treatment or procedure as their personal treatment or procedure of choice or standard of practice.

The tension between cost and coverage inherent to any discussion of medical necessity exists for all third party payers. Concerns around the MHS definition of medical necessity and the real and potential impacts on pediatric health care have received considerable attention from pediatric advocacy groups. The American Academy of Pediatrics (AAP), among other organizations, note that Medicare standards for evidence thresholds were not designed to take into consideration the challenges of pediatric clinical research. It suggests that professional standards of care for children must be considered if the patient-centered or scientific evidence for children is insufficient and propose the following definition of medical necessity:

> Health care interventions that are evidence based, evidence informed, or based on consensus advisory opinion and that are recommended by recognized health care professionals, such as the AAP, to promote optimal growth and development in a child and to prevent, detect, diagnose, treat, ameliorate, or palliate the effects of physical, genetic, congenital, developmental, behavioral, or mental conditions, injuries, or disabilities.[98]

Medical necessity definitions from across the health care sector include:

Table 3. Medical Necessity Definitions[98-102]

Entity	Operating Definition of Medical Necessity
AAP	Health care interventions that are evidence based, evidence informed, or based on consensus advisory opinion and that are recommended by recognized health care professionals, such as the AAP, to promote optimal growth and development in a child and to prevent, detect, diagnose, treat, ameliorate, or palliate the effects of physical, genetic, congenital, developmental, behavioral, or mental conditions, injuries, or disabilities.[98]
American Medical Association	Health care services or products that a prudent physician would provide to a patient for the purpose of preventing, diagnosing, or treating an illness, injury, disease or its symptoms in a manner that is: (a) in accordance with generally accepted standards of medical practice; (b) clinically appropriate in terms of type, frequency, extent, site, and duration; and (c) not primarily for the economic benefit of the health plans and purchasers or for the convenience of the patient, treating physician, or other health care provider. The "prudent physician" standard of medical necessity ensures that physicians are able to use their expertise and exercise discretion, consistent with good medical care, in determining the medical necessity of care provided each individual patient.[99]
Medi-Cal **9 California Code of Regulations §1820.205**	A service is 'medically necessary' or a 'medical necessity' when it is reasonable and necessary to protect life, to prevent significant illness or significant disability, or to alleviate severe pain.[100]
Cigna HealthCare **Definition of Medical Necessity for Physicians**	"Medically Necessary" or "Medical Necessity" shall mean health care services that a Physician, exercising prudent clinical judgment, would provide to a patient for the purpose of evaluating, diagnosing or treating an illness, injury, disease or its symptoms, and that are: a. In accordance with the generally accepted standards of medical practice; b. Clinically appropriate, in terms of type, frequency, extent, site and duration, and considered effective for the patient's illness, injury or disease; and c. Not primarily for the convenience of the patient or Physician, or other Physician, and not more costly than an alternative service or sequence of services at least as likely to produce equivalent therapeutic or diagnostic results as to the diagnosis or treatment of that patient's illness, injury or disease. For these purposes, "generally accepted standards of medical practice" means: • Standards that are based on credible scientific evidence published in peer-reviewed, medical literature generally recognized by the relevant medical community; • Physician Specialty Society recommendations; • The views of Physicians practicing in the relevant clinical area; and • Any other relevant factors. Preventive care may be Medically Necessary but coverage for Medically Necessary preventive care is governed by terms of the applicable Plan Documents.[101]
Aetna	Medical Clinical Policy Bulletins detail the services and procedures Aetna considers medically necessary, cosmetic, or experimental and unproven and also guide coverage decisions. Clinical Policy Bulletins are based on:

Entity	Operating Definition of Med
	• Peer-reviewed, published medical journals; • A review of available studies on a particular • Evidence-based consensus statements; • Expert opinions of health care professionals; and • Guidelines from nationally recognized health care organizations.[102]

The definitions of medical necessity for Aetna, Cigna, the American Medical Association, and the AAP all include the requirement of evidence-based consensus on "best practices" through either peer-reviewed, published medical journals and/or expert opinions of health care professionals. The Medi-Cal definition only requires that a service be medically necessary when it protects life, prevents illness or disability, and/or alleviates pain, and does not explicitly state the need for a consensus or that evidence-based best practices be demonstrated.[98-102]

Implications for Pediatric Care

Requiring services provided in the purchased care component to follow the "hierarchy of reliable evidence" as outlined in 32 CFR 199.2 to qualify for reimbursement may create disconnects in care for TRICARE's pediatric patients. The realities of pediatric clinical research show a dearth of published studies or well-controlled trials for pediatric procedures and interventions. Some conditions only occur in children, or the pathophysiology may be specific to children, meaning research with adult subjects cannot be accurately extrapolated or generalized. Ethical concerns, small sample sizes, and the [103].

Without rigorous evidence, many services do not qualify as medically necessary and thus are not eligible for cost sharing under the purchased care component of TRICARE, which may create a disparity in care provided across components. Because the medical necessity constraints only apply to the purchased care component, clinicians in the direct care component have much more flexibility in the types of services they provide, leading to differences in how clinicians approach care. In the direct care component, providers deliver care guided by standards of practice, within their scope of capabilities and up to the comfort of the commanding officer of each MTF. In contrast, regulatory language restricts cost-sharing for services in the purchased care component, meaning that care provided through this component is slower to include emerging technologies, both in comparison to care provided in the MTFs, as well as care in the civilian sector.[31]

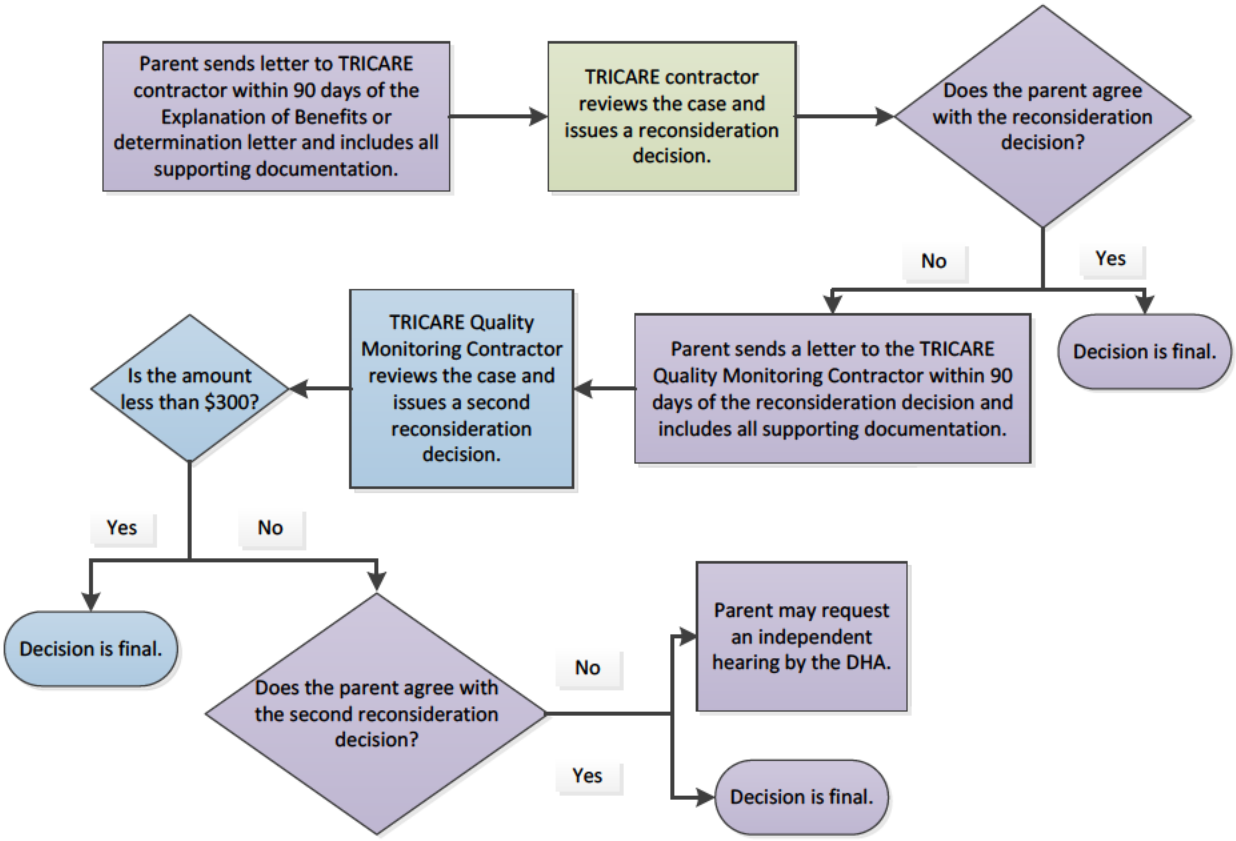
The complexity of medical necessity determinations increases when discussing the needs of children with a pervasive developmental disorder that affects many areas of functioning (i.e., children with complex needs, cerebral palsy, and/or autism). Parents seeking care for their children with autism understandably wish to explore all potentially helpful treatments. To ensure affordability and avoid adverse selection for dependent coverage, insurers have traditionally distinguished between non-medical benefits (e.g., education) and medical benefits, because small changes in expansiveness can give rise to very large changes in cost.[104]

Medical necessity versus educational necessity is an important concept in treating pediatric disorders, as are the nuances between habilitative and rehabilitative care. Currently, in many health plans, health care coverage is limited to rehabilitative services, meaning care to restore a lost function.[105] Habilitative care and devices are designed to address a function or skill not yet acquired or a milestone not yet achieved, as would be the case for speech therapy for a child with autism or physical therapy for a child with hypotonia.[98] Statutory authority prevents inclusion of habilitative care from TRICARE basic, but it is available in TRICARE's Extended Care Health Option (ECHO).[105]

Through public testimony, the Board learned that there are instances of pediatric services being covered in the direct care component, that are not eligible for cost sharing through the purchased care component due to the medical necessity clause. However, the Board was unable to identify any specific services that fall into this category or obtain any data that would track this type of discrepancy in services provided.[53]

TRICARE Managed Care Support Contractors make a determination as to whether to cover specific pediatric services based on the definitions detailed in Table 2. Accordingly, different determinations may be made in each region, as the TRICARE Policy Manual and the definition of medical necessity may be interpreted differently. The Managed Care Support Contractor can deny prior authorization for pediatric care or services if they do not deem the care medically necessary and it does not reach the threshold of reliable evidence.[106] Parents who disagree with the decision made about the benefit can file a medical necessity appeal on a case-by-case basis. As outlined in 32 CFR 199.10, parents must follow the process below to appeal the Managed Care Support Contractor coverage decision.[106]

Figure 7. Medical Necessity Appeal Flowchart[106]



Adapted from TRICARE - Medical Necessity Appeals, 2016.

Data on appeals to TRICARE are not broken down by age, so it is not possible to track the most common appeals for pediatric patients. The process for appeals to TRICARE includes three levels, including at the Managed Care Support Contractor level and the DHA level. As part of the appeals process, all information submitted is considered, including any that is submitted by the provider.[53] While the Board received some data on the number of TRICARE claims for pediatric beneficiaries that were denied, these data only included two of the three regions (West and South). Additionally, only initial denials were included in these data, some of which could eventually be resolved due to administrative issues such as incorrect coding, insufficient documentation at time of submission, etc., potentially making the actual number of final denials much smaller. As a result, data on final denials for pediatric patients were not available for analysis.

If the evidence base for an emerging treatment or service grows and begins to demonstrate effectiveness for pediatric patients, mechanisms exist to expand the TRICARE benefit. Every 18 months, DHA officials conduct medical benefit reviews to gather new data, review newly published literature, and provide revised coverage recommendations. These reviews generally focus on benefits that can be added to the TRICARE plan without the need for congressional action.[59] For those emerging technologies that the DHA believes will have evidence within five

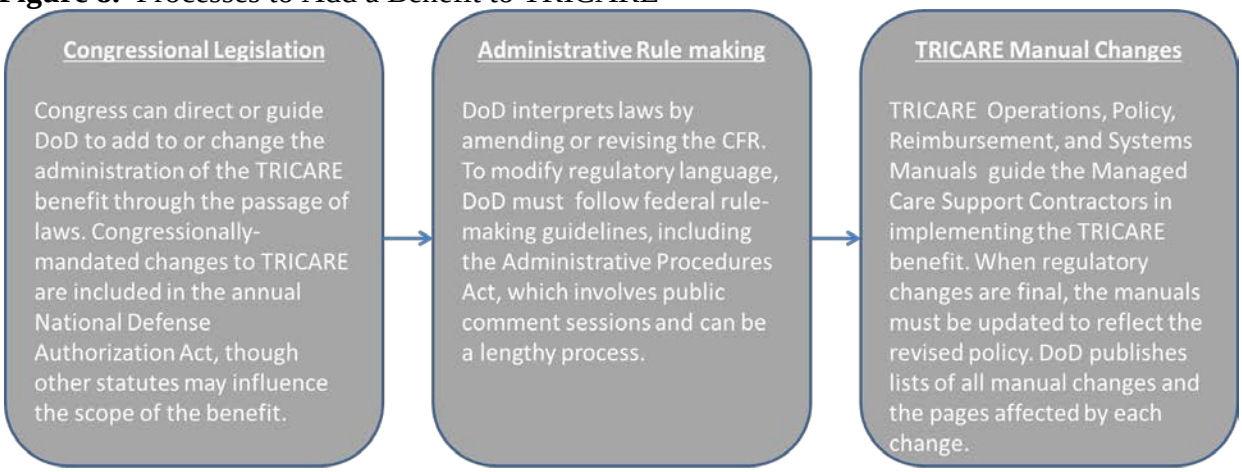
years to satisfy the hierarchy of reliable evidence, services may be provisionally covered for a period of five years.[21]

In addition, Section 1092, Chapter 55, Title 10 of the U.S.C. allows the Secretary of Defense to "conduct studies and demonstration projects on health care delivery system of the uniformed services with a view to improving the quality, efficiency, convenience, and cost effectiveness of providing health care services."[107] One example is the TRICARE Comprehensive Autism Care Demonstration, which since 2014 has provided Applied Behavior Analysis for all TRICARE beneficiaries with autism spectrum disorder.[108]

To add a new service to the TRICARE benefit, the proposed change passes through three sequential processes: congressional legislation, administrative rule making, and TRICARE Manuals. The processes are shown below in Figure 8. Opportunities for stakeholder input and feedback exist at different points throughout each of these processes, making the length of time to fully implement a change variable. A recent example of a change is the September 2016 TRICARE Mental Health and Substance Use Disorder Treatment Final Rule, which passed through the third process, TRICARE manual changes, in June 2017 (see Appendix E.2 for more information).

It is important to note that many changes do not require legislation or rule making. These changes are implemented by means of changes to the TRICARE manuals only. Changes due to new scientific evidence are usually accomplished through the manual change process alone.[21]

Figure 8. Processes to Add a Benefit to TRICARE[31,109]



Adapted from Hart, 2017, and TRICARE Manuals Online, 2017.

Medical benefit determinations are drafted without age limitations and include pediatric populations. Because of this, when medical care is proven safe and effective, it can potentially be covered for both pediatric and adult patients. In addition to the hierarchy of reliable evidence, there are also reviews performed for drugs (both on- and off-label use) and devices (both on- and off-label use). TRICARE also has a separate review process for procedures performed on those with a rare disease, as well as options for coverage of Phase I, Phase II, and Phase III cancer

clinical trials. Coverage options for this type of care can include both adult and pediatric populations.[53]

National Defense Authorization Act

The fiscal year (FY) 2017 National Defense Authorization Act includes several provisions that are relevant to pediatric care (Table 4).

Table 4. FY 2017 National Defense Authorization Act Provisions[19]

FY 2017 National Defense Authorization Act Section	Description
Section 701: TRICARE Select and other TRICARE reform	This reform would establish three health plans for families of both active duty and retired Service members: 1. TRICARE Prime, a managed care option; 2. TRICARE Select, a self-managed plan; and 3. TRICARE Supplemental, for retirees and their families (those not covered by TRICARE-For-Life). Prime would be offered in areas near MTFs, while Select would be offered in other locations. Beneficiaries would be required to enroll during an annual open enrollment period. Only TRICARE Prime would require a referral (but no preauthorization) from a primary care manager for specialty care. TRICARE Select will replace the existing TRICARE Extra and Standard plans. Beneficiaries will need to be enrolled in either TRICARE Prime or Select by January 1, 2018. Existing TRICARE programs that would remain unchanged are as follows: 1. Extended Health Care Option Program 2. TRICARE Reserve Select 3. TRICARE Retired Reserve 4. TRICARE Dental Program 5. The Continued Health Care Benefits Program
Section 702: Reform of administration of Defense Health Agency and military medical treatment facilities	Beginning on October 1, 2018, the Director of the DHA will take responsibility for the administration of each MTF, including all matters with respect to: 1. Budget 2. Information Technology 3. Health Care Administration and Management 4. Administrative Policy and Procedure 5. Military Medical Construction 6. Any other matters the Secretary determines appropriate A professional staff within the DHA will be established to provide policy, oversight, and direction of all matters related to the administration of the MTFs. In addition, the roles and responsibilities of the Services' Surgeons General will be codified. The Secretary will also be required to develop an implementation plan, with submission of an interim plan by March 1, 2017, and a final plan by March 1, 2018.

FY 2017 National Defense Authorization Act Section	Description
Section 704: Access to urgent and primary care under TRICARE program	This amendment requires the Secretary of Defense to improve access to urgent care services in both military MTFs and the private sector. Covered beneficiaries should have access to urgent care services though the provider network, without the need for preauthorization, in areas where no MTFs exist for those specific services. The Nurse Advice Line should also direct beneficiaries seeking access to health care services to the most appropriate level of care, including urgent care. Additionally, the amendment requires the availability of primary care services during expanded business hours on weekdays and on weekends, based on the needs of the MTF to meet access standards and primary care utilization patterns.
Section 709: Standardized system for scheduling medical appointments at military treatment facilities	By January 1, 2018, the Secretary of Defense must implement a system for scheduling medical appointments that is standardized across all MTFs, to ensure timely access to care for all beneficiaries. This will need to include a centralized appointment scheduling process that includes telephone, online, and in person scheduling options. Additionally, each year the Secretary will submit to the House and Senate Armed Services Committees a report on the total number of appointments for which beneficiaries did not appear and did not provide notice, in order to identify reasons for missed appointments, conduct an analysis of costs, and assess strategies to reduce that number.
Section 713: Provision of hearing aids to dependents of retired members	The Secretary of Defense is authorized to sell hearing aids for dependents of retired members. This will be done "at cost" and exclusively through care received at an MTF.
Section 714: Coverage of medically necessary food and vitamins for certain conditions under the TRICARE program	TRICARE program coverage will have to include medically necessary food, including any equipment/supplies required to administer that food, as well as vitamins for digestive and inherited metabolic disorders.
Section 716: Applied Behavior Analysis	Reimbursement rates for Applied Behavior Analysis therapy will be reinstated and preserved throughout the duration of the Comprehensive Autism Care Demonstration program. The Assistant Secretary of Defense for Health Affairs is required to conduct an analysis of the program and submit a report to the Committees on Armed Services of the Senate and House. Additionally, there is a required analysis that includes a determination of whether the use of Applied Behavior Analysis improved outcomes for beneficiaries with autism spectrum disorder.
Section 718: Enhancement of use of telehealth services in military health system	The Secretary of Defense is required, within one year of enactment of the National Defense Authorization Act, to incorporate the use of telehealth services throughout the

FY 2017 National Defense Authorization Act Section	Description
	MHS. The telehealth services would need to address the following: 1. Improve access to primary care, urgent care, behavioral health, and specialty care. 2. Perform health assessments. 3. Provide diagnoses, treatments, interventions, and supervision. 4. Monitor individual health outcomes of covered beneficiaries with chronic diseases or conditions. 5. Improve communication between health care providers and patients. 6. Reduce health care costs for both beneficiaries and DoD. Standardized payment methods for reimbursement of telehealth services should be used to incentivize this provision.
Section 719: Authorization of reimbursement by Department of Defense to entities carrying out state vaccination programs for costs of vaccines provided to covered beneficiaries	The Secretary of Defense is authorized to reimburse an entity carrying out a state vaccination program to covered beneficiaries for the cost of providing vaccines. This amount cannot exceed what the Department would reimburse an entity for providing those vaccines under the TRICARE program.
Section 726: Program to eliminate variability in health outcomes and improve quality of health care services delivered in military medical treatment facilities	The Secretary of Defense is required to conduct a program that: 1. Establishes best practices for the delivery of health care services for certain diseases or conditions at MTFs. 2. Incorporates those best practices into the daily operation of MTFs participating in the program. 3. Eliminates variability in health outcomes and improves the quality of health care services delivered at MTFs. The Secretary would be required to continuously monitor and adjust the health care services delivered at MTFs to ensure a high degree of safety and quality, as well as the delivery of only those health care services critical for maintaining operational medical force readiness.
Section 728: Adoption of core quality performance metrics	The Secretary of Defense would be required to adopt a set of quality performance measures agreed upon by a collaborative group of federal agencies, private sector health insurances plans, national physician organizations, employers, and health care consumers. These measures would be used to evaluate both the direct care and purchased care components of the MHS. These metrics would need to be made publicly available on the DoD website.
Section 729: Improvement of health outcomes and control of costs of health care under TRICARE	This section requires implementation of programs to increase the involvement of beneficiaries in making

FY 2017 National Defense Authorization Act Section	Description
program through programs to involve covered beneficiaries	health care decisions and to encourage them to participate in medical and lifestyle interventions to improve their health outcomes. This would include incentivizing beneficiaries to participate in intervention programs targeting chronic disease and conditions, along with unhealthy lifestyle behaviors. These programs would cover a variety of health conditions such as diabetes, asthma, and depression, as well as lifestyle behaviors such as tobacco use and obesity. Additionally, a fee would be established for any beneficiary who is unable to notify an MTF within 24 hours if they are unable to attend an appointment.
Section 730: Accountability for the performance of the military health system of certain leaders within the system	Performance accountability measures will be incorporated into the annual performance reviews of certain leadership positions in the MHS. Performance bonuses would be prohibited if these measures are not met or exceeded during the period of the annual performance review.
Section 731: Establishment of advisory committees for military treatment facilities	The Secretary will establish an advisory committee for each MTF. At least one member of each committee must not be an active duty Armed Forces Service member or an employee of the MTF. Each committee will provide the commanding officer or director of each MTF advice on the administration and activities of the facility as it relates to care of beneficiaries.
Section 578: Comptroller General of the United States assessment and report on Exceptional Family Member Programs	The Comptroller General of the United States is required to conduct an assessment on the effectiveness of each Exceptional Family Member Program of the Armed Forces. This assessment will be reported to the Armed Services Committees in both the Senate and House.

From National Defense Authorization Act, 2017.

B.3 Pediatric Data

Pediatric Population

The Board defined "pediatric" to include individuals from birth to 21 years of age who are the dependents of members of the Armed Forces (Army, Navy, Marine Corps, Air Force, and Coast Guard), including dependents of active duty, guard/reserve on active duty, retirees (including medical retirees), and inactive guard/reserve, as well as dependent survivors. The Board chose to include individuals from the contiguous United States and outside the contiguous United States and, of note, exclude active duty Service members and active duty spouses. By definition of this tasking, Public Health Service and National Oceanic and Atmospheric Administration beneficiaries are also excluded, as they are not members of the Armed Forces. The Board included individuals from birth to 21 years of age in its definition due to the need for consistency

in the data requests, but members acknowledge that there are cases in which individuals over the age of 21 would be considered pediatric patients.

The Board requested data on MHS pediatric beneficiaries, including:

- The pediatric population by beneficiary category and primary care manager;
- The pediatric population by beneficiary category and other health insurance status;
- The percent of the eligible pediatric population who use TRICARE;
- The pediatric population by beneficiary category, primary care manager, and Provider Requirement Integrated Specialty Model (PRISM) area, a 20 mile geographic radius around an MTF;
- The pediatric population by age and sex; and
- The amount and percent of TRICARE dollars spent on pediatric care.

Beneficiary Category and Primary Care Manager

Between FY 2014 and 2016, there were approximately 2.3 million eligible pediatric beneficiaries, with the majority (56 percent in FY 2016) being dependents of active duty members (Table 5). Approximately two-thirds of pediatric beneficiaries (64 percent in FY 2016) were enrolled in TRICARE Prime, and one-third of pediatric beneficiaries (36 percent in FY 2016) were not enrolled.[29] If a beneficiary is not enrolled in TRICARE Prime, they are considered part of TRICARE Standard. It should be noted that 70 percent of military families live off military installations in the United States,[69] and 56 percent of pediatric beneficiaries receive their care outside of an MTF.

Table 5. Pediatric Population by Beneficiary Category and Primary Care Manager, FY 2014-2016[29]

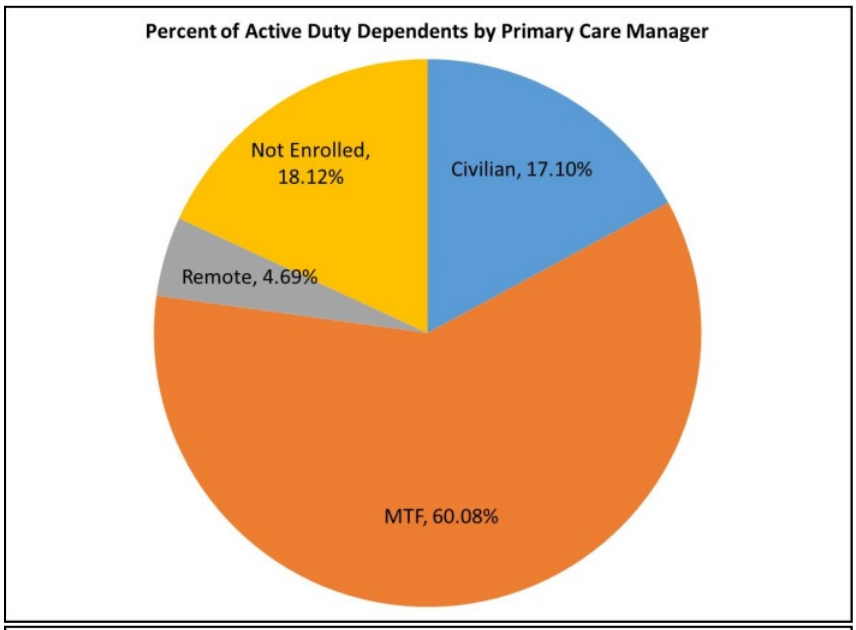
Beneficiary Category and Primary Care Manager	FY 2014		FY 2015		FY 2016	
Active Duty Dependent	**1,383,867**	**60.0%**	**1,303,625**	**57.6%**	**1,262,329**	**56.2%**
Prime Civilian	264,252	11.5%	215,576	9.5%	195,663	8.7%
Prime MTF	813,045	35.2%	791,786	35.0%	768,259	34.2%
Prime Remote	68,768	3.0%	64,117	2.8%	52,454	2.3%
Not Enrolled	237,803	10.3%	232,145	10.3%	245,953	10.9%
Non Active Duty Dependent[E]	**923,308**	**40.0%**	**959,863**	**42.4%**	**984,606**	**43.8%**
Prime Civilian	217,158	9.4%	211,594	9.3%	205,096	9.1%
Prime MTF	195,871	8.5%	214,659	9.5%	226,424	10.1%
Prime Remote	875	0.0%	677	0.0%	811	0.0%
Not Enrolled	509,404	22.1%	532,933	23.5%	552,276	24.6%
Grand Total	**2,307,175**	**100.0%**	**2,263,488**	**100.0%**	**2,246,935**	**100.0%**

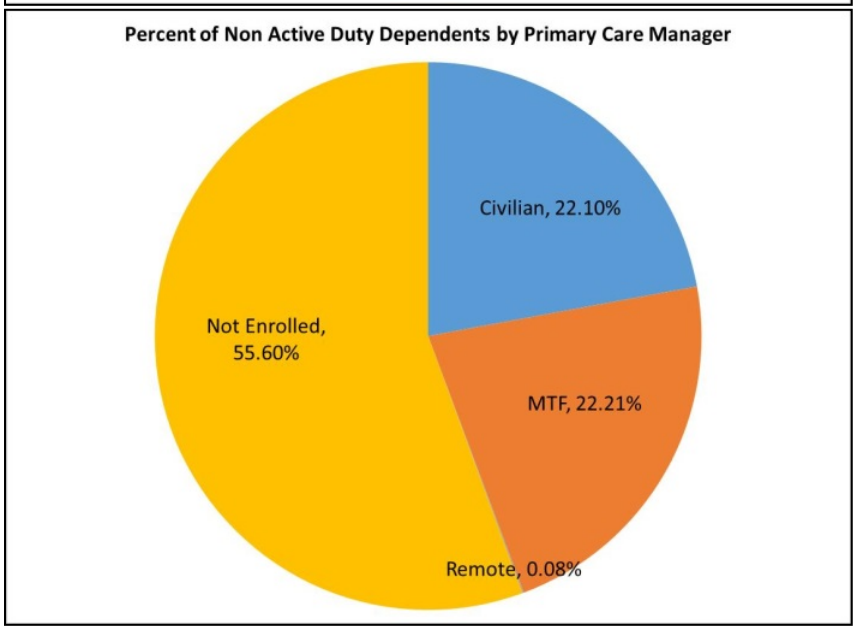
From DHA Clinical Support Division, 2017, using Military Health System Data Repository VM6BEN.

[E] Non active duty includes retirees, inactive guard/reserve, TRICARE Reserve Select, and dependent survivors.

The majority of active duty dependents (60 percent) were enrolled to TRICARE Prime at an MTF, while slightly more than half of non active duty dependents (56 percent) were not enrolled in TRICARE Prime at all (Figure 9).[29] Active duty family members enroll for free into TRICARE Prime, while military retirees, their dependents, and all others pay an annual enrollment fee to participate in Prime.[105] The number of active duty dependents enrolled in Prime at an MTF decreased from 2014 to 2016, and non active duty dependents enrolled in Prime at an MTF increased over the same time period, reflecting trends in the overall population of each group.[29]

Figure 9. Pediatric Population by Beneficiary Category and Primary Care Manager, FY 2014-2016[29]





From DHA Clinical Support Division, 2017, using Military Health System Data Repository VM6BEN.

Beneficiary Category and Other Health Insurance

Between FY 2014 and 2016, approximately 97 percent of active duty dependents did not have health insurance other than TRICARE listed in their medical record, while 89 percent of non active duty dependents did not have health insurance other than TRICARE listed in their record.[29]

Percent of Eligible Population Who Use TRICARE

Approximately 80 percent of eligible TRICARE beneficiaries use TRICARE, with the percentage decreasing as beneficiaries age (Table 6).[40]

Table 6. Percent of Eligible Population Using TRICARE[40]

Age Group	FY 2014	FY 2015	FY 2016
<1	91.9%	98.8%	96.6%
1-4	91.4%	92.0%	92.0%
5-8	82.8%	83.9%	83.8%
9-12	78.7%	79.4%	79.1%
13-17	77.0%	77.7%	77.8%
18-20	58.3%	59.2%	59.5%
Total	**78.9%**	**80.0%**	**79.8%**

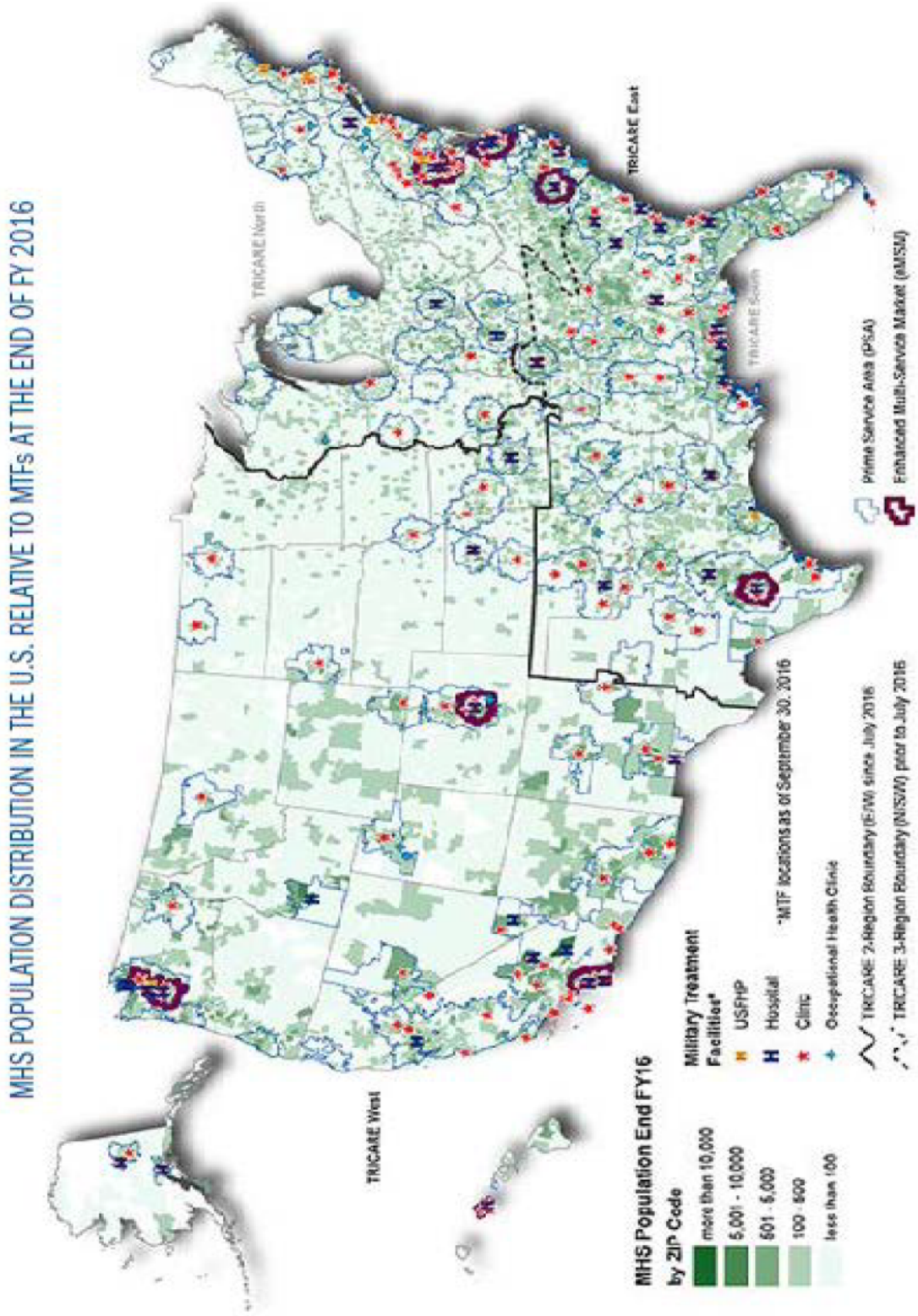
From DHA Clinical Support Division, 2017, using Military Health System Data Repository Defense Enrollment Eligibility Reporting System VM6, Standard Inpatient Data Record, Comprehensive Ambulatory/Professional Encounter Record, TRICARE Encounter Data Institutional, and TRICARE Encounter Data Non-Institutional.

Beneficiary Category, Primary Care Manager, and PRISM Area

In FY 2016, approximately 66 percent of the pediatric population lived in a PRISM area (a 20-mile geographic radius around an MTF). The majority of active duty dependents (77 percent, or approximately 978,000 dependents) lived in a PRISM area, while approximately half of non active duty dependents (52 percent, or approximately 511,000) did not. Of those active duty dependents who lived in a PRISM area, 76 percent were enrolled in TRICARE Prime at an MTF, 16 percent were not enrolled to TRICARE Prime, and 8 percent were enrolled in TRICARE Prime in the purchased care component. Of the non active duty dependents who did not live in a PRISM area, 72 percent of them were not enrolled in TRICARE Prime.[110] Figure 10 illustrates the population distribution of all DoD beneficiaries in the United States relative to MTFs in FY 2016, many of whom live outside of a Prime Service Area.

Between FY 2014 and 2016, approximately 95 percent of pediatric beneficiaries lived in the contiguous United States.[111]

Figure 10. MHS Population Distribution in the United States Relative to MTFs, FY 2016[16]

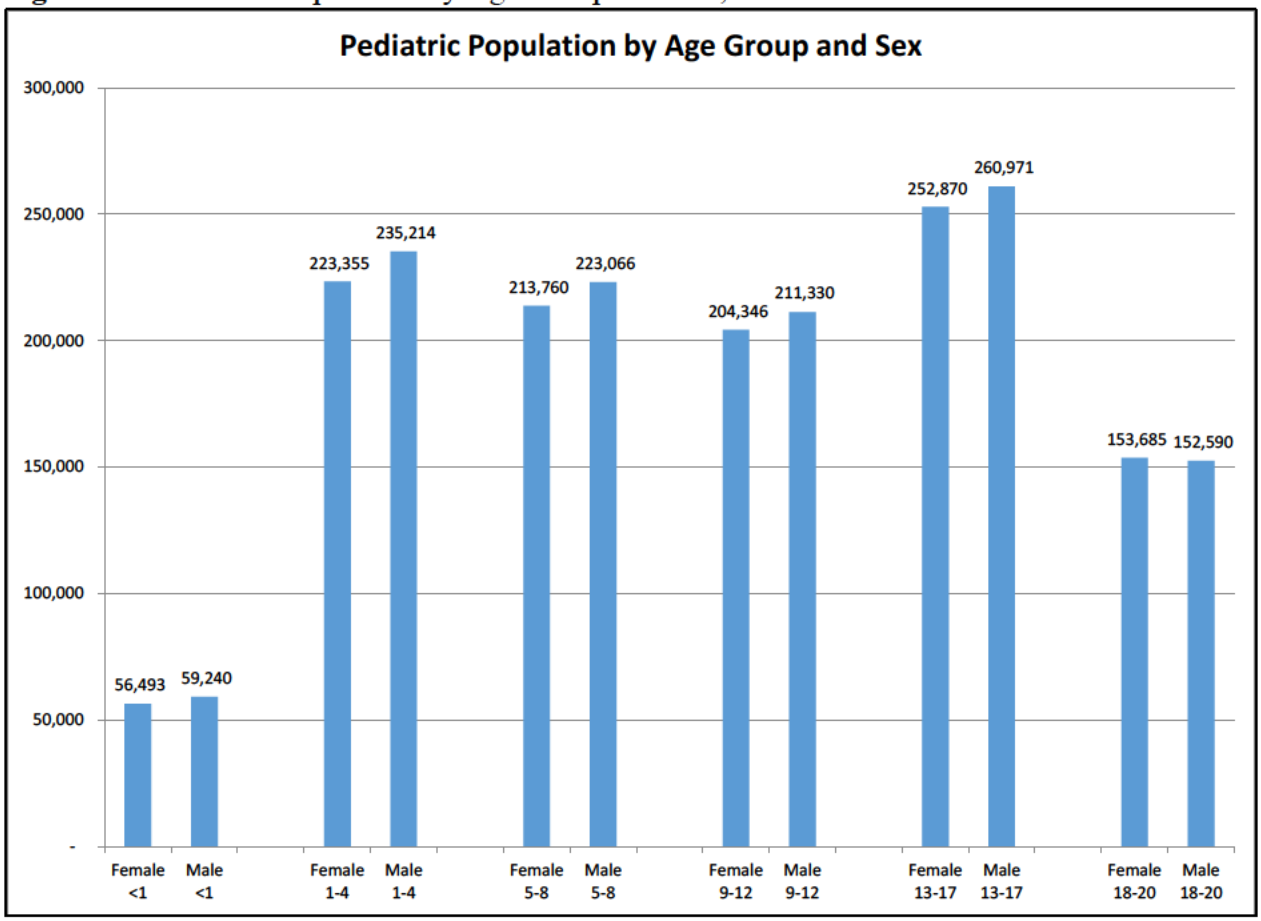


From U.S. Department of Defense, 2017.

Age and Sex

Between FY 2014 and 2016, approximately 51 percent of the pediatric population was male, while 49 percent was female. Figure 11 illustrates the distribution of the population by age grouping and sex in FY 2016.[29] Please note that the 13-17 age group is a five-year cohort compared to the other cohorts.

Figure 11. Pediatric Population by Age Group and Sex, FY 2016[29]



From DHA Clinical Support Division, 2017, using Military Health System Data Repository VM6BEN.

Cost of Pediatric Care in TRICARE

Between FY 2014 and 2016, the total TRICARE costs for the pediatric population were approximately 15 percent of the total TRICARE costs, at $5.6 billion. The majority of costs (54 percent) were for purchased care.[29] For reference, pediatric beneficiaries (as defined in this report) make up roughly 24 percent of the overall TRICARE beneficiary population.[16,29]

Table 7. Total TRICARE Costs for Pediatric Population, FY 2014-2016[29]

Costs		Total Pharmacy Cost	Total Direct Care Cost	Total Purchased Care Cost	Total Cost
FY 2014	Total Pediatric Cost	$755,947,062	$1,749,482,395	$2,766,004,930	$5,271,434,387
	% of Total TRICARE Costs	7%	14%	21%	15%
	% of Total Pediatric Cost	14%	33%	52%	100%
FY 2015	Total Pediatric Cost	$808,846,643	$1,787,869,547	$2,909,822,291	$5,506,538,480
	% of Total TRICARE Costs	7%	14%	21%	15%
	% of Total Pediatric Cost	15%	32%	53%	100%
FY 2016	Total Pediatric Cost	$709,746,622	$1,864,737,033	$3,066,259,534	$5,640,743,190
	% of Total TRICARE Costs	7%	14%	21%	15%
	% of Total Pediatric Cost	13%	33%	54%	100%

From DHA Clinical Support Division, 2017, using Military Health System Management Analysis and Reporting Tool (M2) Standard Inpatient Data Record, Comprehensive Ambulatory/Professional Encounter Record, TRICARE Encounter Data Institutional, TRICARE Encounter Data Non-Institutional, Ancillary Laboratory Detail, Ancillary Radiology, and Pharmacy Data Transaction Service.

Healthcare Effectiveness Data and Information Set

The National Committee for Quality Assurance developed Healthcare Effectiveness Data and Information Set (HEDIS) measures to "measure performance on important dimensions of care and service."[112] Because more than 90 percent of the health plans in the United States use HEDIS data, health plans can identify areas of improvement by comparing their performance to other plans and to national benchmarks.[112,113] For 2017, HEDIS includes 89 measures across 7 domains of care, including effectiveness of care, access and availability of care, experience of care, utilization and risk-adjusted utilization, relative resource use, health plan descriptive information, and measures collected using electronic clinical data systems.[114] Of these 89 measures, 19 relate specifically to the health of children and adolescents:

1. Weight Assessment and Counseling for Nutrition and Physical Activity for Children/Adolescents
2. Child Immunization Status
3. Immunizations for Adolescents
4. Lead Screening in Children
5. Appropriate Testing for Children with Pharyngitis
6. Follow-Up Care for Children Prescribed Attention-Deficit/Hyperactivity Disorder Medication
7. Metabolic Monitoring for Children and Adolescents on Antipsychotics
8. Non-Recommended Cervical Cancer Screening in Adolescent Females
9. Appropriate Treatment for Children with Upper Respiratory Infection
10. Use of Multiple Concurrent Antipsychotics in Children and Adolescents
11. Use of First-Line Psychosocial Care for Children and Adolescents on Antipsychotics

12. Consumer Assessment of Healthcare Providers and Systems Health Plan Survey, Child Version
13. Children with Chronic Conditions
14. Children's and Adolescent's Access to Primary Care Practitioners
15. Well-Child Visits in the First 15 Months of Life
16. Well-Child Visits in the Third, Fourth, Fifth, and Sixth Years of Life
17. Adolescent Well-Care Visits
18. Utilization of the Patient Health Questionnaire-9 to Monitor Depression Symptoms for Adolescents and Adults
19. Depression Remission or Response for Adolescents and Adults

In the 2014 *Military Health System Review: Final Report to the Secretary of Defense*, the MHS compared its performance on 18 measures (of 81 measures in 2014) in the direct care component and 12 measures in the purchased care component to 3 health plans and national HEDIS benchmarks.[115,116] One of these measures directly related to pediatric health care. The report acknowledged that routine data collection for a measure is discontinued if it performs above the 90th percentile for several years.[115,116] Data sources used to calculate HEDIS measures included "DoD's electronic health record (AHLTA), purchased care claims, and other information systems."[116]

Although HEDIS measures provide objective data for comparison, there can be several measurement values for each measure, complicating this comparison. For instance, for diabetes care in the adult population, four values exist: three glucose-related control targets and a testing/screening goal. DoD underperformed on one measure, but outperformed on three.[116] Another issue of importance is the lag between HEDIS performance in the purchased care versus the direct care components due to gaps in data on beneficiaries with "other health insurance." Other health insurance documentation in the Defense Enrollment Eligibility Reporting System (DEERS) is dependent on self-reporting and therefore understates the number of beneficiaries with other health insurance, "resulting in an inflated denominator for various HEDIS measures."[116] Commercial health plans remedy this by using supplemental databases to capture clinical information about their enrolled population, while the MHS only relies on financial claims data. The DHA is making strides toward improving "the fidelity of Other Health Insurance documentation and [allowing] the regional contractors to use supplemental databases."[116]

HEDIS measures are widely accepted,[117] however there are important factors to consider when analyzing HEDIS-related datasets. For instance, "six or more well-child visits in the first 15 months of life" measures the percentage of children who received at least the recommended 6 visits on or before the day the child turned 15 months old. If a child received a sixth visit shortly after turning 15 months old, the sixth visit would not be counted, and the measure would indicate that the child did not receive all 6 visits in the recommended time frame.[118]

As of September 2015, the MHS is monitoring 30 health measures via an enterprise-wide dashboard, Partnership for Improvement (commonly referred to as P4I).[51] None of these measures are directly related to pediatric health care services, though some are composite measures that include pediatric care.[51] However, "the initial measures identified for inclusion in

the Partnership for Improvement are a fraction of the measures Services/MTFs need to manage the complex MHS."[119] Further, "the Services and DHA also may choose to create and monitor additional measures that are either Service-specific or needed to support improvement efforts."[119]

Inpatient hospital and outpatient quality measures are reported publicly on the forward facing MHS website. Of the 11 HEDIS measures tracked for military hospitals and clinics on the MHS website, 3 relate to pediatric care: well-child visits in the first 15 months of life; the number of children age 3 months to 18 years who were given a diagnosis of upper respiratory infection and were not given an antibiotic; and the number of children ages 3 to 18 years who were diagnosed with pharyngitis, were prescribed an antibiotic, and received a strep test. For the fourth quarter of FY 2016, of the 131 hospitals and clinics reporting well-child visits for the first 15 months of life, 80 percent performed equal to or above the average for health plans nationwide.[120] Additionally, on average, 86 percent of beneficiaries in the direct care component received six or more well-child visits in the first 15 months of life, compared to 83 percent of beneficiaries accessing care through the managed care support contracts.[121] MHS is "reviewing administrative processes to support improvement in this measure."[18]

Two pediatric HEDIS measures were documented in the report, *Evaluation of the TRICARE Program: Access, Cost, and Quality - Fiscal Year 2017 Report to Congress*.[16] The measures for well-child visits and children with upper respiratory infection were noted as currently exceeding the National Committee for Quality Assurance 75th percentile and continue to improve.[16]

In June 2017, the MHS launched their Online Transparency Website that aims to have all of the military hospital and clinic quality, safety, and patient satisfaction data in one place to improve transparency and ease of access. Patients will be able to find their hospital or clinic by searching by zip code and pull up an individual page that collects all the health data for each facility. Additionally, this new website will include updated performance measures.[122] However, there are currently no health outcomes that relate exclusively to pediatrics; the only outcomes presently evaluated are number of deliveries, elective deliveries, and complications for surgery being tracked and reported. Additionally, these are not broken out by age, making it difficult to track outcomes for pediatric patients. While this is a positive first step in ensuring transparent access to health metrics data, there is still work to be done in order to assure that pediatric health care metrics are being identified, and accurately and consistently tracked so that outcomes can be assessed.

The MHS reports these metrics to the MHS Clinical Quality Integration Board (MHS-CQIB) through the MHS-CQIB's Clinical Measures Working Group.[123] The MHS-CQIB is sponsored by the Medical Operations Group to have "oversight responsibility for the assessment of clinical quality across the [MHS]"[124] and to maintain and monitor "key quality performance indicators to support the evaluation of the quality of healthcare provided to [DoD] beneficiaries."[124] An important aspect of the MHS-CQIB's role is to "identify the key indicators used to assess the quality of care provided to MHS beneficiaries and utilize clinical quality measures to continually assess the care provided across the system and at each level of the organization."[124]

The MHS-CQIB's Clinical Measures Working Group, formerly called the Tri-Service Clinical Measures Steering Panel, "reviews and communicates the performance of quality measures across the MHS,"[125] "facilitates improvement efforts for measures that are less than the national benchmark,"[125] and "identifies which HEDIS measures to review based on data availability and their relevance to the health plan, the Services, and the MTFs."[115] This group monitors HEDIS performance quarterly. There are also "clinical incentives in the managed care support contracts that encourage performance improvement on select measures."[18]

Proposed Pediatric Quality Dashboard

The MHS currently is developing a pediatric quality measures dashboard. As was previously discussed, the only pediatric-related measures on the Partnership for Improvement dashboard are composite metrics with adult data. To remedy that, the MHS convened a group of federal child health leaders and Service representatives to identify areas in need of measurement, choose appropriate measures to reflect MHS performance and areas for improvement, and examine the domains of better health, better care, and lower cost.[126] This group considered the entire spectrum of measures specified for the pediatric age group, which included some HEDIS measures, but also those overall measures most relevant to the MHS pediatric population. This group then performed an environmental scan for measures from multiple sources. From the 280 measures that were specified for children, the group systematically distilled those down to the proposed measure set detailed in Table 8 below.[127] The Pediatric Advisory Working Group has approved these measures, which are being evaluated for the capability and feasibility of obtaining them in the current information technology system and the upcoming MHS GENESIS. These measures will be presented to MHS-CQIB once validated.[128] As of July 31, 2017, the proposed measure set included:

Table 8. Military Health System Pediatric Quality Dashboard Proposed Measure Set[126,127]

Better Health
Immunizations for adolescents: percentage of adolescents 13 years of age who had one dose of meningococcal vaccine and one tetanus, diphtheria toxoids and acellular pertussis vaccine (Tdap) or one tetanus, diphtheria toxoids vaccine (Td) by their 13th birthday
Childhood immunization status: percentage of children 2 years of age who had four diphtheria, tetanus, and acellular pertussis (DTaP); three polio; one measles, mumps, and rubella; three haemophilus influenza type B (HiB); three hepatitis B; one chicken pox (VZV); four pneumococcal conjugate (PCV); one hepatitis A; two or three rotavirus (RV); and two influenza (flu) vaccines by their second birthday
Weight assessment and counseling for nutrition and physical activity for children/adolescents: percentage of members 3 to 17 years of age who had an outpatient visit with a primary care provider (PCP) or obstetrician/gynecologist (OB/GYN) and who had evidence of counseling for physical activity during the measurement year
Weight assessment and counseling for nutrition and physical activity for children/adolescents: percentage of members 3 to 17 years of age who had an outpatient visit with a PCP or OB/GYN and who had evidence of counseling for nutrition during the measurement year
Weight assessment and counseling for nutrition and physical activity for children/adolescents: percentage of members 3 to 17 years of age who had an outpatient visit with a PCP or OB/GYN and who had evidence of body mass index percentile documentation during the measurement year

Well-child visits in the third, fourth, fifth, and sixth years of life: percentage of members 3 to 6 years of age who had one or more well-child visits with a PCP during the measurement year
Adolescent well-care visits: percentage of enrolled members 12 to 21 years of age who had at least one comprehensive well-care visit with a PCP or an OB/GYN practitioner during the measurement year
Oral Health
Dental care: percentage of enrolled children under age 21 who received a comprehensive or periodic oral evaluation as a dental service within the reporting year
Better Care
Access to Care (Excluding Perinatal/Neonatal Care)
Composite measure for specialty referral time to care (specialty care)
Average number of days to 3rd next available 24 hours appointment (urgent care visit to primary care)
Patient-Reported Outcomes/ Patient Experience
Joint Outpatient Experience Survey (JOES) and JOES-C (Consumer Assessment of Health Providers and Systems)
Family Experiences with Care Coordination Measure Set
Perinatal/Neonatal Care
Neonatal mortality rate
Behavioral and Developmental Health
Child and adolescent major depressive disorder: percentage of patient visits for those patients aged 6 through 17 years with a diagnosis of major depressive disorder with an assessment for suicide risk
Attention-deficit/hyperactivity disorder (ADHD) follow-up care
Developmental screening in the first three years of life
Acute Care
Healthcare-Associated Infections: Central Line-associated Bloodstream Infection (CLABSI)
Care and Management of Chronic Conditions
Sickle cell disease: percentage of children with a newborn screen positive for sickle cell disease who receive appropriate preventive antibiotics by 3 months of age
Asthma Medication Ratio: a measure to help providers assess the quality of asthma care received by their patients with persistent and/or chronic asthma
Lower Cost
Appropriateness of Care
Appropriate treatment for children with upper respiratory infection: percentage of children 3 months to 18 years of age who were given a diagnosis of an upper respiratory infection and were not treated with an antibiotic medication
Appropriate testing for children with pharyngitis: percentage of children 2 to 18 years of age who were diagnosed with pharyngitis, dispensed an antibiotic medication, and received a group A streptococcus (strep) test for the episode
Overuse of imaging: percentage of children, ages 6 months through 4 years, diagnosed with simple febrile seizure who are evaluated with imaging of the head (computed tomography or magnetic resonance imaging) without indications for neuroimaging, including lumbar puncture and complex febrile seizure
Rate of patients using the emergency department for Level I and Level II diagnoses

From Adirim, 2017.

APPENDIX C. PEDIATRIC CLINICAL PREVENTIVE SERVICES

C.1 BACKGROUND

Appendix C of this report will address pediatric clinical preventive services; specifically, it will focus on the following objectives of the tasking:

- Identify the extent to which children receive developmentally appropriate and age appropriate health care services, including clinical preventive services, in both the direct care and purchased care components;
- Identify the degree to which the Military Health System (MHS) delivers clinical preventive services that align with standards, guidelines, and recommendations established by the Patient Protection and Affordable Care Act; the Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) program; and organizations that specialize in pediatrics, such as the American Academy of Pediatrics (AAP) and the American Pediatric Surgical Association (APSA);
- Determine what policies, practices, and capabilities the Department of Defense (DoD) should implement to improve monitoring of compliance with pediatric clinical preventive services and immunizations in military dependents; and
- Determine what approaches DoD should take to increase compliance with recommended pediatric clinical preventive services and immunizations in military dependents.[43]

The Terms of Reference for this tasking state that, in contrast to military members, "it is not clear that dependents have received the same level of monitoring, access, and encouragement to complete recommended preventive services on a consistent and system-wide basis."[71] For instance, Healthcare Effectiveness Data Information Set (HEDIS) measures were highly variable across the MHS, according to the *Military Health System Review: Final Report to the Secretary of Defense*.[115,116] Specifically, the HEDIS metric for the percentage of children receiving 6 or more well-child visits in the first 15 months of life fell between the 25th and 49th percentile in the Army, Navy, Air Force, National Capital Region Medical Directorate, and the purchased care component when benchmarked against other organizations.[116] Additionally, according to a study published in *Pediatrics*, the National Immunization Survey indicated that 28 percent of military dependent children compared to 21 percent of all other children aged 19 to 35 months had not completed the recommended immunization series for that age group.[129] The recommendations for children ages 19 to 35 months are: the complete 4:3:1:3:3:1 vaccination series, which includes 4 doses of diphtheria-tetanus-acellular pertussis (DTaP); at least 3 doses of polio; at least 1 dose of measles-containing vaccine (e.g., measles, mumps, rubella); at least 3 doses of Haemophilus influenzae B (HiB); at least 3 doses of hepatitis B antigens; and at least 1 dose of varicella.[129]

While these publications bring important focus to clinical preventive services, including the full spectrum of immunizations, within the MHS it is essential to acknowledge the limitations of the National Immunization Survey and HEDIS datasets, as well as the methodologies used in both reports (see Appendix B.3 for more information about HEDIS).

The National Immunization Survey focused its research on children between the ages of 19 and 35 months, reviewing records from 2007 to 2012. The study published in *Pediatrics* reviewed

the records of only 3,412 military children, which is less than 1 percent of the total number of pediatric beneficiaries in that age range.[129] Further, the survey relied on individual primary care providers to report the immunization status of their patients, which may have resulted in incomplete data collection. Since military dependents can receive immunizations at both military and civilian facilities, a provider may not be able to access a complete and accurate electronic immunization record due to issues in electronic data sharing between military and civilian electronic health records.[130]

To gain a better understanding of immunization compliance for pediatric beneficiaries, the Air Force reviewed immunization records in the Aeromedical Services Information Management System (ASIMS) for children between 19 and 35 months of age for the 4:3:1:3:3:1 vaccination series and found that 19 percent of Air Force children were not up to date on their immunizations; these data may still underreport immunizations, as many children receive vaccines in Army, Navy, or civilian facilities.[131] Another retrospective study, which reviewed the records of 131,656 infants born in the MHS between 2008 and 2011 who received regular care at military treatment facilities (MTFs), looked at data across all 3 Services and found that 13.9 percent of children were not compliant with the 4:3:1:3:3:1 vaccination series by 2 years of age. HiB immunization status was excluded due to the vaccine shortage during 2007-2009.[132]

For calendar years 2015 and 2016, the percentage of children enrolled to an MTF who received four DTaP, three inactive polio, three HiB, four pneumococcal conjugate (PCV), or two influenza vaccines by their second birthday were as follows:[F]

Table 9. Calendar Year 2015 and 2016 Immunization Rates[133]

Vaccine	Calendar Year 2015	Calendar Year 2016
4 DTaP	74%	79%
3 Inactive Polio	84%	89%
3 HiB	79%	85%
4 PCV	78%	83%
2 Influenza	44%	49%

From DHA Solution Delivery Division, 2017.

The World Health Organization (WHO) and Healthy People 2020 have identified goals related to vaccination coverage. WHO's Global Vaccine Action Plan has identified a goal of at least 90 percent national vaccination coverage by 2020 for all countries that are member states of the WHO for all vaccines that are part of a national immunization program.[134] Healthy People 2020 has identified an objective of 80 percent compliance with the 4:3:1:3:3:1:4 vaccination series for children aged 19 to 35 months (the 4:3:1:3:3:1:4 series includes the 4:3:1:3:3:1 series plus 4 doses of PCV).[135] The three studies referenced above (the *Pediatrics*/National Immunization Survey study, the Air Force review, and the retrospective study) indicate an MHS compliance rate of between 72 and 86.1 percent.

[F] These data include children who were enrolled to an MTF but received their immunization in the direct or purchased care components. However, it only includes claims processed during the calendar year, and claims can take several months to process.

Recommendations for pediatric clinical preventive services primarily come from three medical and scientific bodies: the Advisory Committee on Immunization Practices (ACIP), the U.S. Preventive Services Task Force (USPSTF), and *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents* (Bright Futures).[136] APSA also issues standards for pediatric care, but not for clinical preventive services.

Advisory Committee on Immunization Practices

The ACIP is a federal advisory committee established under Section 222 of the Public Health Service Act (42 U.S. Code §217a) in 1964 that provides policy guidance to the Director of the Centers for Disease Control and Prevention (CDC) "regarding the most appropriate selection of vaccines and related agents for effective control of vaccine-preventable diseases in the civilian population."[137] The ACIP develops two immunization schedules annually, one for children and adolescents and one for adults.[138]

The committee consists of 14 members with expertise in vaccinology, immunology, pediatrics, internal medicine, nursing, family medicine, virology, public health, infectious disease, or preventive medicine, as well as one member who "provides perspectives on social and community aspects of vaccination."[139] The ACIP also relies on eight ex officio members representing other federal agencies with immunization responsibilities and 30 non-voting representatives of liaison organizations with immunization expertise.[139] These liaison organizations include the American Academy of Family Physicians, the AAP, the American College of Obstetricians and Gynecologists, and the American College of Physicians.[138]

United States Preventive Services Task Force

In 1998, the Agency for Healthcare Research and Quality convened a group of independent, volunteer experts in prevention and evidence-based medicine to form the USPSTF, which is "mandated by Congress to conduct rigorous review of scientific evidence to create evidence-based recommendations for preventive services that may be provided in the primary care setting."[140] Recommendations for preventive services for adults, pregnant women, and children and adolescents are regularly revisited and updated to account for new evidence, improved data collection and analysis, and new technologies.[140] Because evidence evolves over time, the USPSTF grades its recommendations on a scale from A to D to reflect "both the magnitude of net benefit and the strength and certainty of the evidence supporting the provision of a specific preventive service."[140] Physicians are encouraged to "discuss services with 'A' and 'B' recommendation grades with eligible patients;" "discourage the use of services with 'D' recommendation grades, unless there are extenuating circumstances;" and "give lower priority to services with 'C' recommendation grades." Services for which the current evidence is "insufficient to determine net benefit" to the patient are rated "I," and physicians should emphasize the uncertainty surrounding those services when discussing them with patients.[140]

Bright Futures Guidelines for Health Supervision

Bright Futures is an initiative launched and funded in 1990 by the U.S. Department of Health and Human Services Health Resources and Services Administration's Maternal and Child Health Bureau.[141] In 2002, the AAP was selected to lead the initiative, which is described as:

> . . . a set of principles, strategies, and tools that are theory based, evidence driven, and systems oriented that can be used to improve the health and well-being of all children through culturally appropriate interventions that address their current and emerging health promotion needs at the family, clinical practice, community, health system, and policy levels.[141]

The mission of Bright Futures is to "promote and improve the health, education, and well-being of infants, children, adolescents, families, and communities."[142] The most recent edition of the guidelines was published in 2017. Bright Futures incorporates "current scientific knowledge in health practice;" relies on the "collaboration of 4 multidisciplinary panels of experts" in infancy, early childhood, middle childhood, and adolescence; and is widely reviewed by health care and public health professionals, educators, parents, and child health advocates.[142]

The Bright Futures Guidelines are divided into two major focus areas: health promotion themes and Bright Futures health supervision visits. Health promotion themes "highlight issues that are important to families and health care professionals across all the developmental stages."[142] Bright Futures health supervision visits are designed to include state-of-the-art, age-specific recommendations and "are presented in accordance with the AAP Periodicity Schedule, which is the standard for preventive care for infants, children, and adolescents."[142]

American Pediatric Surgical Association

APSA was founded in 1970 prior to the existence of pediatric surgery board certification; its original members are considered founders of the pediatric surgery specialty. Members of the APSA have created training programs and standards, as well as tools and techniques specific to the needs of pediatric patients; researched how medical conditions affect pediatric patients; and directed and developed the field of pediatric surgery. The APSA is dedicated to ensuring the best care for patients and families. Today, the APSA is the nation's largest professional organization for pediatric surgery and includes more than 1,200 members. It "sets forth guidelines and statements for standards of care for infants and children and for influencing public policy around the surgical care of children."[143] However, its guidelines and standards do not relate to pediatric clinical preventive services, instead relating to such things as innovative therapies, infant surgery, ethics, and firearm injuries in children.[143,144]

COVERED PEDIATRIC CLINICAL PREVENTIVE SERVICES

Covered Services Per the Affordable Care Act

In March 2010, the Patient Protection and Affordable Care Act (Public Law 111-148) and the Health Care Education and Reconciliation Act (Public Law 111-152) were signed into law. Together, these acts comprise the health reform package known as the Affordable Care Act

(ACA).[145,146] The ACA requires private health insurance plans, either a group health plan or health insurance issuer, to cover recommended preventive services without cost sharing, to include copayments, deductibles, and co-insurance.[80,136] Preventive services that must be covered without cost sharing come from recommendations from the USPSTF, ACIP, Bright Futures, and the Committee on Preventive Services for Women, which was convened by the Institute of Medicine (now known as the National Academy of Medicine).[136,147] The following coverage is recommended:

- Evidence-based screenings and counseling: Insurers must cover recommended evidence-based services that have a grade of "A" or "B" from the USPSTF.
- Routine immunizations: Insurers must cover immunizations that are recommended by the ACIP for children, adolescents, and adults.
- Preventive services for children and youth: Insurers must cover the preventive services "provided for in the comprehensive guidelines supported by the Health Resources and Services Administration,"[80] which is Bright Futures.
- Preventive services for women: Insurers must cover additional preventive services for women, based on the recommendations of the Committee on Preventive Services for Women.[80,136,147]

Covered Services in Medicaid's Early and Periodic Screening, Diagnostic, and Treatment

Children under the age of 21 who are enrolled in Medicaid receive the EPSDT benefit, which provides comprehensive preventive, dental, mental health, developmental, and specialty services.[148] States must develop EPSDT as a comprehensive child health program that assures "that health problems found are diagnosed and treated early, before they become complex and their treatment more costly."[149] Services listed in Section 1905(a) of the Social Security Act must be covered, including screening services, such as a comprehensive health and developmental history, physical exam, immunizations as recommended by the ACIP, laboratory tests, and health education; vision, dental, and hearing services; and other medically necessary health care, screening, diagnostic, and treatment services.[148-152] Although each state develops its own periodicity schedule for screening, vision, hearing, and dental services that "meet reasonable standards of medical and dental practice,"[149] states frequently elect to use Bright Futures' nationally recognized pediatric periodicity schedule.[148,153] Each state must "also provide for medically necessary screening, vision, hearing, and dental services regardless of whether such services coincide with [the] established periodicity schedules for these services."[149]

Covered Services in TRICARE

As mentioned in Appendix B, because TRICARE is neither a group health plan nor health insurance issuer, the ACA's statutory requirements do not apply directly to the TRICARE program.[79,80] However, the TRICARE benefit does align for the most part with the ACA requirements. The TRICARE Dental Program, which is a separate benefit, covers topical fluoride and fluoride varnish application twice within a 12-month period to strengthen the tooth enamel as a means to prevent dental caries, but does not cover "preparations that can be used at home," such as fluoride gels or special mouth rinses.[154] In many cases, TRICARE may not explicitly cover a service, such as routine screening for sexually transmitted infections, but the service can still be covered if medically necessary.[97,155,156]

The 2014 *Report to Congressional Defense Committees: Study on Health Care and Related Support for Children of Members of the Armed Forces (NDAA 2013 S.735 TRICARE Pediatric Report)* identified areas for improvement in pediatric care, but did conclude that TRICARE is meeting the needs of its pediatric beneficiaries across nine studied elements.[22] For instance, in 2014, although the MHS "fully supports the basic tenants of AAP's Bright Futures program," beneficiaries did not receive the well-child care benefit after the age of six years,[156] which did "not conform to the AAP periodicity guidelines, which address the special physical, emotional, and developmental needs of children and include recommended screening up to the age of 21 years."[22] Instead, in 2014, children 6 years of age or older received clinical preventive services per the TRICARE Policy Manual.[22,156] However, as of January 2017, TRICARE will cover annual preventive office visits, including services recommended by AAP and Bright Futures, for all Prime beneficiaries 6 years of age and older, in addition to the well-child care coverage received through age 5. TRICARE Standard beneficiaries can receive preventive services with no cost-share or copayment when rendered in connection with a covered immunization or cancer screening.[157,158]

The *NDAA 2013 S.735 TRICARE Pediatric Report* recommends that DoD "analyze use of health care benefits by children ages 6 to 21 years to assess if developmental- and age-appropriate care is being delivered as compared to AAP-recommended periodicity schedules and guidelines, the 2010 Patient Protection and Affordable Care Act, or Medicaid's EPSDT benefit."[22] Further, the report stated that "definitions of 'medical necessity' differ between the broader healthcare system and the TRICARE program direct care component with the higher standard of medical necessity governing DoD's authority to cost-share private sector care in the TRICARE purchased care component."[22] In its response to the *NDAA 2013 S.735 TRICARE Pediatric Report*, the Tricare for Kids Stakeholders Coalition, which provided information and perspectives for the report and consists of "pediatric provider organizations, military and veterans' service organizations, disability groups, and military families,"[159] recommended TRICARE adopt the AAP's definition of medical necessity:

> Health care interventions that are evidence based, evidence informed, or based on consensus advisory opinion and that are recommended by recognized health care professionals, such as the AAP, to promote optimal growth and development in a child and to prevent, detect, diagnose, treat, ameliorate, or palliate the effects of physical, genetic, congenital, developmental, behavioral, or mental conditions, injuries, or disabilities.[98,159]

Although the TRICARE benefit is intended to apply to beneficiaries receiving care in the direct care and purchased care components, the direct care component has more latitude in what services it provides to its beneficiaries (see Appendix B.2 for more information about medical necessity).[59]

Table 10 summarizes the pediatric clinical preventive services recommended by the USPSTF and Bright Futures, as well as services covered with no cost sharing according to the ACA, covered by Medicaid's EPSDT, and covered by TRICARE, as of June 2017.

Table 10. Recommended and Covered Pediatric Clinical Preventive Services[136,140-142,155,160-169 148,149,151,152,156]

	Recommended Service		Covered Service		
	USPSTF	Bright Futures	ACA	EPSDT	TRICARE Purchased Care[A, B, C, D]
Neonatal					
Gonococcal Ophthalmia Neonatorum Preventive Medication[F]					
Hyperbilirubinemia Screening[F]					
Advisory Committee on Heritable Disorders Recommendations[G]					
General Health					
Medical History and Physical Exam[A, C]					
Height, Weight, and Body Mass Index Measurements					
Vision Screening[E]					
Developmental Hip Dysplasia Screening					
Idiopathic Scoliosis Screening					
Lead Screening[E]					
Developmental and Behavioral Health					
Autism Screening					
Behavioral Assessment					
Developmental Screening, Including Speech and Language Delay					
Alcohol, Tobacco, and Drug Use Assessments, Including Tobacco Cessation					
Depression Screening					
Suicide Risk Screening					
Chronic Disease					
Blood Pressure Screening					
Dyslipidemia Screening[E]					
Hematocrit, Hemoglobin, or Anemia Screening					
Obesity Screening and Counseling[E]					
Skin Cancer Prevention Counseling[E]					
Testicular Cancer Screening					
Dental Health					
Fluoride Chemoprevention Supplements					
Oral Health Risk Assessment					
Infectious Disease					
Hepatitis B Screening					
Tuberculin Screening					
Sexual and Reproductive Health					
Breastfeeding Education, Counseling, and Evaluation[E]					
Contraception Education and Counseling					
Cervical Dysplasia Screening[E]					
Chlamydia Screening[D]					
Gonorrhea Screening[D]					
HIV Screening					

Pediatric Clinical Preventive Service	Recommended Service		Covered Service		
	USPSTF	Bright Futures	ACA	EPSDT	TRICARE Purchased Care[A, B, C, D]
Sexually Transmitted Infection Prevention Counseling and Screening[D, E]					
Syphilis Screening[D]					

Key	
Covered/Recommended for a Certain Age Group/Population	
Covered/Recommended for a Certain Age Group/Population with Caveats (such as when sexually active or when at higher risk)	
Not Covered/Recommended Unless Medically Necessary/Indicated	
No Recommendation (As Indicated by "I" for the USPSTF)	
N/A (No Recommendation Provided)	

[A]Well-child care visits under TRICARE end at age 6 years.
[B]Preventive care service coverage varies between TRICARE Prime and TRICARE Standard. TRICARE Standard covers only cancer screenings, immunizations, and well-child visits through age 5 years for no cost.
[C]For children age 6 years and older, an annual comprehensive clinical preventive examination is covered if it includes an immunization. TRICARE does not cover routine physicals or sports physicals, but school enrollment physicals for children ages 5–11 years are covered. TRICARE Prime beneficiaries in each of the following age groups may receive one comprehensive clinical preventive examination without receiving an immunization: ages 6–11 years, 12–17 years.
[D]In addition to things explicitly covered by TRICARE, TRICARE also will cover any service that is medically necessary or medically indicated.
[E]USPSTF is currently updating its recommendations for these services.
[F]Bright Futures considers eye prophylaxis as part of "delivery care," not part of the Newborn Visit. Bright Futures mentions hyperbilirubinemia as a potential risk to consider during the 1st Week Visit, but does not specifically recommend the screening.
[G]The Advisory Committee on Heritable Disorders in Newborn and Children recommends screening for 32 core disorders and 26 secondary disorders during a newborn screening panel, including congenital hypothyroidism, critical congenital health defect, hearing, hemoglobinopathies or sickle cell, and phenylketonuria. USPSTF refers to the Advisory Committee's recommendations.
[H]Although Section 1905 of the Social Security Act mandates basic coverage for EPSDT, each state has the flexibility to design a program that meets the needs of its population as long as it meets "reasonable standards of medical and dental practice" and provides for "medically necessary screening, vision, hearing, and dental services." Accordingly, not every item indicated as covered may be covered by every state, or it may be covered under certain circumstances only.

Adapted from the Henry J. Kaiser Family Foundation, 2015; U.S. Department of Health and Human Services, 2012; CDC, 2015; USPSTF, 2014 and 2015; Bright Futures, 2008 and 2015; the Advisory Committee on Heritable Disorders in Newborns and Children, 2015; DoD, 2015.

In most cases, consensus exists between the USPSTF and Bright Futures regarding the types of services recommended for children and adolescents. Where they differ, it is generally because one organization recommends the service only be provided to certain age groups or under certain circumstances, such as when individuals are sexually active or when they are at higher risk.

The USPSTF and Bright Futures both reference ACIP's guidelines regarding required and recommended immunizations, and the ACA, EPSDT, and TRICARE cover all immunizations required and recommended by the ACIP.[15,28,32-34,38,39,41,42,46,51,53,54,56,58,59,62] Recommended vaccinations include:

- Hepatitis B
- Rotavirus (RV1 or RV5)
- DTaP
- Tetanus, diphtheria, & acellular pertussis
- HiB
- PCV13
- Pneumococcal polysaccharide (PPSV23)
- Inactivated poliovirus (IPV)
- Influenza (IIV; LAIV)
- Measles, mumps, & rubella
- Varicella
- Hepatitis A (HepA)
- Human papillomavirus (HPV2 or HPV4)
- Meningococcal (HiB-MenCY; MenACWY-D; MenACWY-CRM)

Importance of Pediatric Clinical Preventive Services

Ensuring beneficiaries receive pediatric clinical preventive services is imperative to reducing rates of vaccine-preventable diseases, which "still represent a major cause of morbidity and mortality worldwide,"[170-172] as well as improving the health of infants, children, and adolescents.[173] Specifically:

> Improving delivery and use of clinical preventive services during the prenatal period, infancy, and throughout childhood and adolescence can reduce illnesses, disorders, and disability among children and adolescents and can yield significant long-term benefits to help enable children to reach their full potential as healthy, productive adults.[173]

Additionally, "evidence-based preventive services can save lives and improve health by identifying illnesses earlier, managing them more effectively, and treating them before they develop into more complicated, debilitating conditions."[136] CDC determined that "millions of infants, children, and adolescents in the United States have not benefitted from key clinical preventive services."[173] Accordingly, the provision of "available and effective clinical preventive services in childhood and adolescence is a public health priority."[173] In a 2010 policy statement, the American Public Health Association stated:

> Children should have access to developmentally appropriate, integrated health care (i.e., physical, mental, developmental, oral, vision) that is accessible, continuous, comprehensive, family centered, coordinated, compassionate, and culturally effective. A uniform set of core preventive and support services should be established through policy at the national, state, and local levels.[174]

The American Public Health Association also advocates for regular, periodic health screenings for children "to identify emerging medical, emotional, vision, and dental conditions and developmental delays and to provide preventive care such as immunizations," all of which are fundamental to children's health.[174] One focus area of the National Prevention Strategy is clinical and community preventive services,[175] many of which can be cost effective and cost saving.[176-178] The National Prevention Strategy calls for health care systems, clinicians, and insurers to routinely inform patients about the benefits of preventive services and offer recommended services, as well as establish patient and clinical reminder systems for preventive services (see Appendix C.3 for more information on how to increase compliance with pediatric clinical preventive services).[179]

With regard to immunizations specifically, the WHO estimated that 1.5 million children under 5 years of age worldwide died from vaccine-preventable diseases in 2008.[180] In the United States, approximately 300 children die every year from vaccine-preventable diseases.[171,172] Immunizations, in particular, are a successful and cost-effective clinical preventive service, preventing between two and three million deaths every year from diphtheria, tetanus, pertussis, and measles.[171,172,180-182] According to the Office of Disease Prevention and Health Promotion, "for each birth cohort vaccinated with the routine immunization schedule," 33,000 lives are saved, 14 million cases of disease are prevented, direct health care costs are reduced by $9.9 billion, and $33.4 billion in indirect costs are saved.[171]

Because vaccination coverage is so important to decreasing rates of vaccine-preventable diseases, immunizations have been identified as a public health priority by the WHO.[134] The WHO's Global Vaccine Action Plan identified six strategic objectives, three of which are particularly relevant to the MHS. First, all countries must commit to immunizations as a priority. Second, individuals and communities must understand the value of vaccines and demand immunization as both their right and responsibility. Finally, strong immunization programs are an integral part of a well-functioning health system.[134] Additionally, the American Public Health Association promotes the importance of vaccinations for children and adolescents.[183-185] In a 2000 policy statement, the American Public Health Association reaffirmed "its support for immunization as one of the most cost-effective means of preventing infectious diseases," as well as urged the CDC and the Department of Health and Human Services to "promote public awareness of the importance of immunizations."[186] Healthy People 2020 has also identified a goal to "increase immunization rates and reduce preventable infectious diseases," as residents of the United States continue to get vaccine-preventable diseases.[171]

Emerging Factors Affecting Pediatric Clinical Preventive Services

An important factor currently affecting pediatric clinical preventive services is the prevalence of the anti-vaccination movement and vaccine hesitancy. The WHO has defined vaccine hesitancy as "a behavior, influenced by a number of factors including issues of confidence (do not trust a vaccine or a provider), complacency (do not perceive a need for a vaccine or do not value the vaccine), and convenience (access)."[187]

Vaccination law is one tool used to maintain low rates of vaccine-preventable diseases and to counter vaccine hesitancy.[188,189] For instance, although states require vaccines for school children and children attending day care facilities, each state "grants exemptions to children for

medical reasons," and "almost all states grant religious exemptions for people who have religious beliefs against immunizations."[188-191] Additionally, 18 states also allow "philosophical exemptions for those who object to immunizations because of personal, moral or other beliefs."[191]

The Department of Defense Education Activity (DoDEA) also monitors whether students are complying with recommended immunizations, as pediatric beneficiaries must receive all recommended vaccinations to attend DoD schools and childcare centers unless they have a religious or medical exemption.[85,192] However, less than one percent of the DoDEA student population has received immunization exemptions, and no confirmed cases of measles have been reported in the pediatric population; three cases of measles have occurred in DoD's entire beneficiary population since 2008.[192] Although DoD recommends that pediatric beneficiaries follow ACIP recommendations, DoD cannot require all children to be vaccinated.[192] As discussed in Appendix B, pediatric health care services, and clinical preventive services in particular, affect medical readiness.

However, a recent study in *Pediatrics* indicated that more pediatricians (11.7 percent in 2013 compared to 6.1 percent in 2006) are dismissing patients from their practice for continued vaccine refusal. In addition, this study indicated that the "proportion of pediatricians reporting parental vaccine refusals increased from 74.5% in 2006 to 87.0% in 2013" with many pediatricians reporting that parents delay vaccines because of concerns about discomfort or concern for immune system burden.[193] However, the AAP "recommends that pediatricians continue to engage vaccine-hesitant parents, provide other health care services to their children, and attempt to modify their opposition to vaccines," as "most vaccine-hesitant parents are responsive to vaccine information, consider vaccinating their children, and are not opposed to all vaccines."[194]

It is evident that pediatric clinical preventive services recommendations are not static. Instead, organizations should assess emerging scientific, cultural, environmental, and other factors to determine which preventive services should be recommended and covered and to determine what factors may contribute to increased or decreased uptake rates. The vaccine-hesitant population provides a modern example of such challenges.

Another important factor affecting pediatric clinical preventive services is pediatric obesity, which is described in detail in Appendix D.1. Because children who are overweight or obese are at increased risk of a host of chronic diseases, screening for obesity is recommended by USPSTF and Bright Futures. TRICARE currently covers screening for obesity.[195]

C.2 Monitoring Compliance with Pediatric Clinical Preventive Services in Military Dependents

Current Policies, Practices, and Capabilities for Monitoring Compliance

Enterprise-wide Policies, Practices, and Capabilities

DoD provides guidance on "procedures for implementing health promotion and disease prevention programs to improve and sustain military readiness and the health, fitness, and quality

of life of Service members, medical beneficiaries, and civilian DoD employees."[84] It is Departmental policy to "provide effective, integrated, and comprehensive health promotion and disease prevention programs throughout DoD that are based on scientific evidence."[84] However, DoD guidance focuses heavily on immunizations. Specifically, DoD Directive (DoDD) 6205.02E provides "immunization policies for the Armed Forces to increase military readiness, decrease the risk of preventable infections, and decrease time lost from training and work…" and "provides direction to protect military personnel, civilian personnel, healthcare beneficiaries, and eligible contracted workers from vaccine-preventable diseases, across the spectrum of peacetime, contingency, and wartime situations."[85] It also establishes the military immunization program, "a program of educational, public health, and clinical services"[85] to deliver and assess the effect of immunizations for this population and designates the Army as Executive Agent. The program is further defined in the Joint regulation titled *Immunizations and Chemoprophylaxis for the Prevention of Infectious Diseases* (Army Regulation 40-562/United States Navy Bureau of Medicine and Surgery Instruction 6230.15/Air Force Instruction 48-110/Coast Guard Commandant Instruction M6230.4E).[196]

In October 2014, oversight was transferred from the Army to the Defense Health Agency (DHA) with the Military Vaccine Agency-Vaccine Healthcare Centers Network transitioning to the Immunization Healthcare Branch under the Public Health Division of DHA.[197] The Joint regulation outlines eight key responsibilities:

1. Operate a Military Vaccine Office to provide the Military Services with a coordinated source for information and education of vaccine-related activities needed in order to implement DoDD 6205.3, DoDD 6205.02E, and DoD Instruction (DoDI) 6205.4.
2. Synchronize, integrate, and coordinate immunization policies and other immunization-related activities for all DoD components.
3. Facilitate and promote the quality of immunization policy, implementation, education, distribution, risk communication, administration, clinical services, safety surveillance, research, and program evaluation.
4. Provide a comprehensive access point to provide information, education resources, safety surveillance, and uniform procedures to identify, report, and evaluate vaccine-associated adverse events.
5. Maintain historical vaccine usage data as well as identify future vaccine requirements as needed.
6. Provide primary coordination between DoD and vaccine manufacturers for all applicable post-licensure vaccine studies.
7. Coordinate with other Secretaries of the Military Departments and the Commandant, U.S. Coast Guard to:
    a. Establish joint clinical quality standards for immunization delivery and education and training to personnel involved in immunization healthcare. The goals of these standards are to promote clinical excellence and decrease practice variability.
    b. Assess the DoD Immunization Program by developing metrics to measure individual medical readiness, vaccine effectiveness and safety, and compliance with overall immunization policies.
    c. Regularly update the Joint regulation on *Immunization and Chemoprophylaxis for the Prevention of Infectious Diseases*.

8. Promote scholarly immunization study activities through the Army's Medical Infectious Disease Research Program using funds both from the Defense Health Program and the Research, Development, Test, and Evaluation program.[196]

DoDD 6205.02E states that "recommendations for immunizations of the Centers for Disease Control and Prevention and its [ACIP] shall generally be followed."[85] In addition, "immunizations shall be recorded in individual health records and in a centralized electronic database in a manner suitable for standardized tracking and surveillance of force health protection practices."[85] While this is true for active duty Service members, beneficiary "immunization data is [sic] not captured in a single repository" as "immunizations are documented at the point of care, whether military or civilian."[198,199] Additionally, there are multiple systems used to capture immunization data, which are not currently interoperable.[130,198,199] The Immunization Healthcare Branch has formed a Joint Immunization Working Group, whose focus is improving interoperability of immunization records among the various health record systems as "failure to standardize and modernize our business processes for capturing and reporting immunizations across the MHS will continue to result in under or over-vaccination for individuals, unnecessary risk of vaccine-preventable disease, and excess costs for the DoD."[130]

The Joint regulation on *Immunizations and Chemoprophylaxis for the Prevention of Infectious Disease* further "updates quality standards for immunization delivery, establishes electronic immunization tracking systems as the preferred immunization record . . . and describes the role of the Military Vaccine Office."[196] Medical commanders, commanding officers, and command surgeons are responsible for ensuring "standard operating procedures. . . are established that implement current national standards for adult and pediatric immunizations and chemoprophylactic practices and promote appropriate quality improvement mechanisms."[196]

Similar to DoDD 6205.02E, the Joint regulation recommends that individuals receive immunizations as recommended by ACIP (see Appendix C.1).[196] Specifically, "children attending DoD and U.S. Coast Guard-sponsored primary and secondary schools, childcare centers, or similar facilities are required to be up to date on all age appropriate ACIP-recommended vaccines for children unless there is documentation of previous immunization, religious exemption, or medical contraindication."[196] To receive an exemption for a religion reason, a parent must provide a written statement explaining he or she "objects to the immunization based on personal beliefs."[192] DoDD 6205.02E also indicates that all immunizations must be documented in a DoD- or U.S. Coast Guard-approved immunization tracking system, including the "date, immunization given, dose, anatomical location of administration, lot number, manufacturer, Vaccine Information Sheet date, and the identification of the person administering the vaccine."[196] Further, electronic immunization tracking systems must "be capable of generating printed reports of immunization status and exemption information on both an individual and unit basis."[196]

(See Appendix B.2 for more information about program oversight and responsibilities related to health promotion and disease prevention.)

Service-specific and Defense Health Agency Policies, Practices, and Capabilities

Each Service has its own policies and practices related to the provision and tracking of clinical preventive services and immunizations. These differences often hinder the ability to gain an enterprise-wide view of compliance. However, Tri-Service Workflow Forms are embedded in the Armed Forces Health Longitudinal Technology Application (AHLTA) to drive "standard clinical processes and screening."[123] These forms incorporate recommendations from the USPSTF, ACIP, and Bright Futures. A core pediatric form exists, as well as age-specific forms for children ages birth to 23 months, 2 to 6 years, and 7 to 18 years. As of 2016, the Tri-Service Workflow Form is utilized in 90 percent of primary care appointments, but a DHA policy is being developed that will mandate its use.[123] The Board was informed that the Tri-Service Workflow Forms will be embedded in MHS GENESIS, the new electronic health record (EHR).[200]

For immunization and chemoprophylaxis, the Services rely on the Joint regulation on *Immunizations and Chemoprophylaxis for the Prevention of Infectious Disease*, described in the previous section. All Services will be documenting immunization delivery in MHS GENESIS.[200] Other differences in clinical preventive services are described below.

U.S. Army

The U.S. Army uses the Bright Futures[156] and ACIP to determine which pediatric clinical preventive services and immunizations to provide beneficiaries in the direct care component, consistent with guidance in the Joint regulation on *Immunizations and Chemoprophylaxis for the Prevention of Infectious Disease*. It relies on Bright Futures for the provision of well-child care from birth through age 6 years.[156] According to Army Regulation 40-5, Army preventive medicine programs and services include disease prevention and control; field preventive medicine; environmental health; occupational health; health surveillance and epidemiology; soldier, family, community health, and health promotion; preventive medicine toxicology and laboratory services; health risk assessment; and health risk communication.[201] Army Pamphlet 40-11 states that Army preventive medicine is "focused on the medical readiness of the force to combat health threats across the full spectrum of military operations" and is "designed to promote and maintain the health and well-being of all personnel for whom the Army is responsible."[202] As such, the soldier, family, community health, and health promotion programs and services "support the goals of readiness, combat efficiency, work performance, and quality of life for all military health system beneficiaries."[202]

Frequent relocations, insufficient access, and a lack of awareness of needed preventive services can be barriers to receiving the recommended preventive services. Further, monitoring immunization compliance for dependents who receive immunizations in a variety of locations may be challenging due to data limitations and the number and interoperability of data systems used to track compliance. Prior to the implementation of MHS GENESIS, the Army will record dependent immunizations in AHLTA, which is the outpatient EHR. Within AHLTA, immunization data may be recorded in three locations: in the Immunization Module, as a patient encounter by diagnosis or procedure code, or in the Medication Module.[198] Immunizations given in civilian pharmacies can be captured in the Medication Module with incomplete immunization data through the Pharmacy Data Transaction Service (PDTS). If it is recorded as a patient

encounter or in the Medication Module, it does not become visible in the Immunization Module unless it is manually re-entered.[198] Immunizations received at civilian health care facilities other than pharmacies are only entered into AHLTA if the patient brings a copy of the immunization record to the corresponding MTF to be entered manually.[198] Additionally, vaccination information is not transferable from Essentris, the inpatient EHR, to AHLTA, unless information is entered manually.[198]

Army child development programs also record immunization history in the Child Youth Management System, which may also identify patients who are due or overdue for an immunization.[203] While there is no central tracking of who is due or overdue for pediatric clinical preventive services, the Board was informed that each clinic or patient centered medical home has flexibility in determining how best to track and manage its patient population and that the Army is currently working to standardize processes and improve its ability to track beneficiary compliance.[204]

U.S. Navy

The U.S. Navy relies on guidance from Bright Futures[156] from birth through age 6 years, AAP policy statements, ACIP, Bureau of Medicine and Surgery Instruction 6300.19, the Joint regulation on *Immunizations and Chemoprophylaxis for the Prevention of Infectious Disease,* and National Committee for Quality Assurance certification standards.[205]

Bureau of Medicine and Surgery Instruction 6300.19 focuses on the implementation of primary care services in Navy family medicine clinics via the patient-centered medical home model. It indicates that "standardized performance measures are critical to Navy Medicine's analysis of the impact of Medical Home Port and essential to help guide future planning."[206] Primary care metrics include population health metrics, such as asthma rates, diabetes management, breast cancer screening, colon cancer screening, cervical cancer screening, and well-baby visits.[206]

Bureau of Medicine and Surgery Instruction 6222.10C addresses the prevention and management of sexually transmitted diseases stating that "Navy Medicine endorses the CDC sexually transmitted disease treatment and prevention guidelines . . . developed using an evidence-based approach advocated by the [USPSTF]."[207] For those persons at risk for vaccine-preventable sexually transmitted diseases, "immunization status shall be reviewed to ensure all required immunizations have been administered and are current."[207]

Prior to the implementation of MHS GENESIS, the Navy also will record immunization data in AHLTA. The Navy utilizes AHLTA, the CarePoint Military Health System Population Health Portal (MHSPHP), Military Health System Management Analysis and Reporting Tool (M2), Medical Home Port metrics, and HEDIS metrics to track compliance with pediatric clinical preventive services in the direct care component.[198,205] The MHSPHP synthesizes data from a variety of sources and can provide patient-level data. However, currently it functions more as a population health tool to show provider, clinic, command, and Service level data, rather than as a tool to guide each patient visit. The Navy currently tracks certain HEDIS metrics, such as well-child visits and immunization compliance, and primary care manager continuity.[205]

The Board was informed that frequent relocations of personnel, fragmentation between the direct care component and purchased care component, cross-Service enrollment, families that apply for religious exemptions from vaccinations, and the location at which immunizations are administered have been cited as potential barriers to receiving pediatric clinical preventive services.[205]

U.S. Air Force

The U.S. Air Force relies on Air Force Instruction 44-102 and the Joint regulation on *Immunizations and Chemoprophylaxis for the Prevention of Infectious Disease*, which also refer to Bright Futures and ACIP.[208] Air Force Instruction 44-102, Medical Care Management, directs how clinical preventive services and immunizations should be provided, as well as how they should be documented. Regarding the provision of clinical preventive services and immunizations, the instruction states that nationally recognized guidelines, such as those published by the American College of Obstetricians and Gynecologists, USPSTF, or Bright Futures, should govern the frequency and content of periodic screening examinations and periodic health maintenance recommendations.[209] The instruction requires all outpatient evaluation and treatment episodes to be "documented and entered into the Outpatient Health Record, Dental Health Record, or in an electronic health record in use in the Military Healthcare System" and all inpatient evaluation and treatment to be "documented in Essentris or in an electronic health record in use in the Military Healthcare System."[209] Immunizations, however, should be "documented in the [ASIMS] or the current accepted [Air Force] electronic tracking application."[209] When MHS GENESIS is fully live, all immunizations will be documented in MHS GENESIS, rather than in ASIMS. Until it is fully live, all immunizations will be documented in MHS GENESIS and reported back to the legacy systems.[210]

As opposed to the Army and Navy, which use AHLTA, the Air Force documents immunizations in ASIMS.[198] The Board was informed that, similar to AHLTA, documentation of immunizations received through the purchased care component at pharmacies is pulled from the PDTS into ASIMS,[211] and immunizations administered by a civilian provider would not appear in ASIMS unless the patient/parent provides written documentation and the information is entered manually.[198] Subject matter experts also indicated that documentation of immunizations entered in Essentris do not appear in ASIMS.[211]

Each Air Force MTF can use the MHSPHP to track immunization rates for the direct care component.[208] The Air Force also tracks certain HEDIS metrics through ASIMS and the MHSPHP, both of which are available to Air Force physicians, clinic chiefs, and MTF commanders. The MHSPHP provides the ability to analyze population compliance data.[208] The Board was informed that MHSPHP was more effective than AHLTA at tracking immunizations, which has data analysis limitations and a higher error rate in immunization data entry, and that Air Force personnel receive additional formal training to become certified to administer and document immunizations.

As noted above, monitoring compliance with recommended immunizations in dependents who have immunization records in multiple information systems may be complicated due to incomplete data sharing. ASIMS is not a tri-Service immunization registry; other Service MTFs and practitioners have read-only access to the files.[208] Although Service member immunization

data are transferable from ASIMS to AHLTA and vice versa via the Defense Enrollment Eligibility Reporting System (DEERS), dependent immunization data are not transferable.[198]

Direct Care Compared to Purchased Care Policies, Practices, and Capabilities

The Board was informed that the Services do not actively monitor pediatric clinical preventive services in the purchased care component, primarily due to data limitations, as data from the purchased care component are accessed through claims data. Data are inaccurate and/or incomplete for individuals with other health insurance, as their non-TRICARE claims would not be accessible. Another limitation is the inability to identify which immunizations were provided to a patient based on International Classification of Diseases, Tenth Revision (ICD-10) code, although they can be determined based on the Current Procedural Terminology code or National Drug Code. However, purchased care claims data do not include the same level of detail as would be included in a dedicated immunization tracking system.[212] ASIMS does import immunization data from commercial pharmacies for military members and dependents, but does not currently import data from other sources, such as commercial EHR systems.[213] As described above, AHLTA also imports data from commercial pharmacies, but the data are recorded in the Medication Module instead of the Immunization Module. Data from other commercial sources are not recorded in AHLTA. For instance, civilian health care facilities maintain their own EHR, to which MTFs and military providers do not have direct access; instead, TRICARE claims data are available via TRICARE Encounter Data Records in the Military Health System Data Repository. Because of data exchange limitations among ASIMS, AHLTA, and commercial EHR systems, gaps in immunization data would need to be manually entered into each system using an official paper copy of the record.[198]

In the purchased care component, "data on quality measures are collected by the TRICARE Managed Care Support Contractors and reported separately from data on care in the MTFs."[208] TRICARE does not have a central immunization registry for documenting purchased care immunizations. As such, patients must ensure they obtain immunization records from their primary care manager when they relocate so they can be provided to their new physician or manually entered into AHLTA or ASIMS.[208] The DHA has developed a Pediatric Advisory Working Group (PAW), which will involve representatives from the TRICARE Regional Offices, to standardize the oversight of pediatric quality services for the direct care and purchased care components. The PAW's responsibilities include "tracking compliance and metrics related to pediatric, MHS, or organizational recommendations" (e.g., the AAP) and "reducing practice variation through standardization with and application of evidence informed practices to optimize clinical practice."[214]

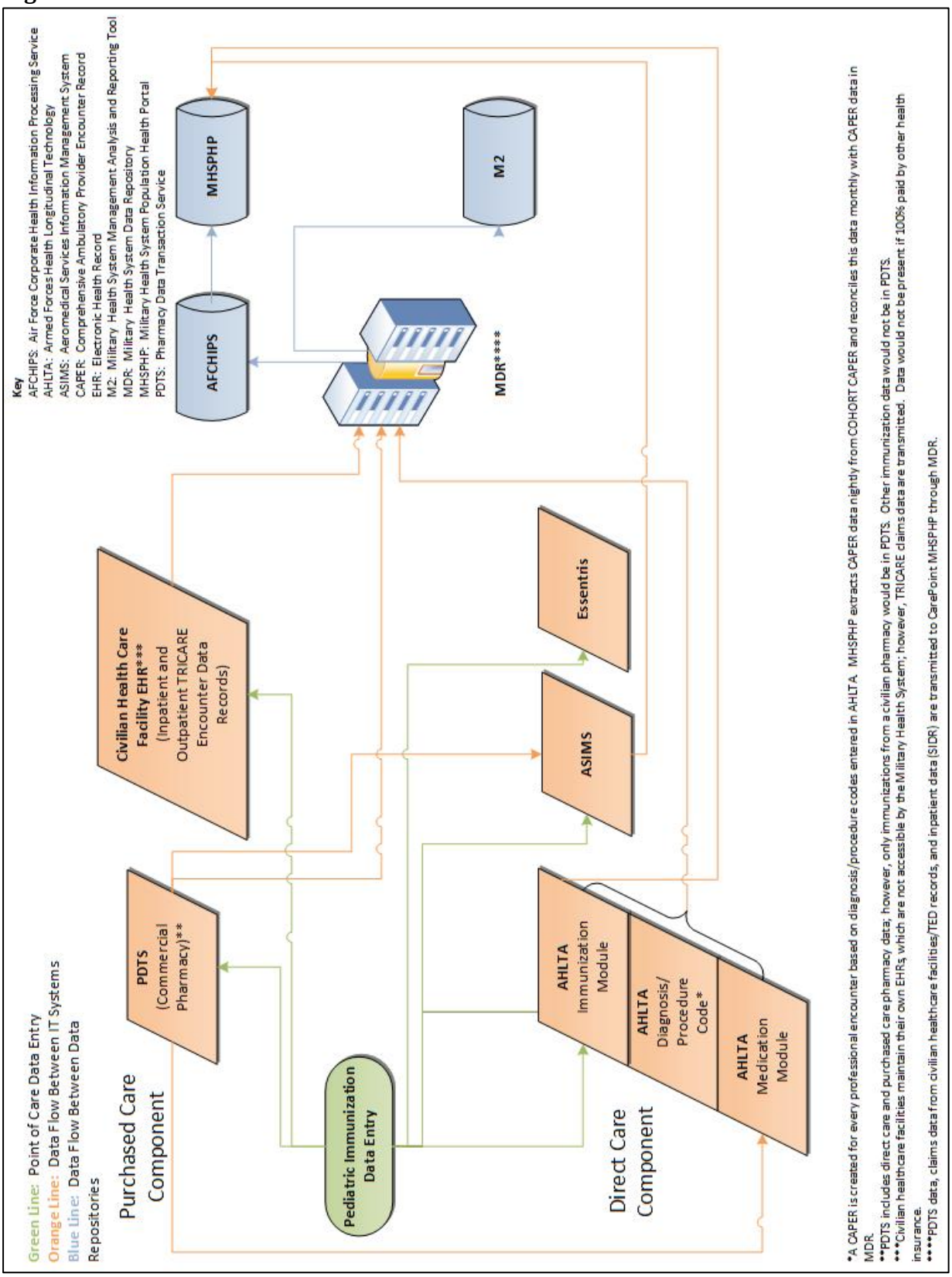
Because of the myriad documentation systems used within the direct care and purchased care components, immunization and pediatric clinical preventive services records of DoD beneficiaries are fragmented.[199,215] Specifically, "an individual's full immunization history may not be visible to any provider in the MHS, resulting in over- or under-vaccination."[198,208] This issue can be compounded by the frequency with which military families relocate.

Figure 12 illustrates the flow of pediatric immunization data in the MHS, as described above, until the implementation of MHS GENESIS. The flow of pediatric immunization data follows:

- In the purchased care component, a provider can enter a pediatric immunization into the PDTS, if received at a civilian pharmacy, or into a civilian health care system's EHR (as claims data).
- Currently, in the direct care component, a provider will enter a pediatric immunization into AHLTA, ASIMS, or Essentris.
- ASIMS imports data from the PDTS, and, as mentioned previously, AHLTA also imports data from the PDTS, but the data are recorded in the Medication Module instead of the Immunization Module or by diagnosis/procedure code.
- Data from the PDTS, purchased care component claims data, and AHLTA are imported into the Military Health System Data Repository, which then makes its way to MHSPHP and M2 for analysis.
- Data from ASIMS and the AHLTA Immunization Module are also imported into MHSPHP, which makes it the most complete source of immunization data.

When MHS GENESIS is fully implemented, AHLTA and Essentris will be completely replaced,[200] and all immunizations will be documented in MHS GENESIS. ASIMS will no longer be used for beneficiary immunizations when MHS GENESIS is fully live.[210]

Figure 12. Pediatric Immunization Data Flow Chart[216]



Accurately monitoring compliance with pediatric clinical preventive services and standards presents challenges across the health care sector. In both public and private sector practices, children typically receive care in a medical home that includes many different settings, as opposed to one physical location.[217] This uniquely affects pediatric beneficiaries and is especially true for children with special or complex needs.[217] Complex immunization schedules and variation in provider policies compound this issue, leading to scattered records and problems in measuring vaccine coverage levels across communities.[218] There are several initiatives to mitigate these challenges and facilitate the monitoring of compliance, including immunization information systems (IIS), standardized provider operations and guidelines, and strong organizational leadership.

Immunization Information Systems

IIS are population-based, computerized databases that confidentially record all immunization doses administered by participating providers to individuals within a given area and have both clinical and population level uses. During a patient visit, the IIS provides a consolidated immunization history for the provider to determine the appropriate vaccinations. On the population level, the IIS "provides aggregate data on vaccinations for use in surveillance and program operations, and in guiding public health action with the goals of improving vaccination rates and reducing vaccine-preventable disease."[219]

The Community Preventive Service Task Force (Task Force) recommends IIS based on strong evidence of effectiveness in increasing vaccination rates and reducing vaccine-preventable disease, achieved through capabilities to inform assessments of vaccination coverage, missed vaccination opportunities, invalid dose administration, and disparities in vaccination coverage, as well as to facilitate vaccine management and accountability. The Task Force reviewed 240 studies in their assessment of IIS, and most of the studies showed IIS being utilized to "provide assessment information or to support specific investigation of changes, trends, or gaps in vaccination coverage in the population."[220] The Task Force found IIS provided information to decision-makers that facilitated the planning and implementation of additional interventions to address identified issues around immunization compliance.[220] IIS provide broad assessments of vaccination rates and coverage trends, but also allow providers and policy-makers a more focused look at certain target or high-risk populations.[221]

As previously mentioned, multiple systems are used to capture immunization data. Scattered immunization records "significantly compromise the ability of clinicians to determine the immunization status of their patients who received immunizations at other sites of health care."[218] IIS combine immunization information from various sources into a single record, which facilitates appropriate medical care, and can serve as an official immunization record for school, day care, and camp entry requirements.[219] The Immunization Services Division of the CDC, previously known as the National Immunization Program, also advocates for the advancement of IIS. The Immunization Information Systems Support Branch of the Immunization Services Division works to promote and enhance IIS partnerships, provide focused technical assistance, increase IIS research and evaluation activities, monitor IIS Sentinel sites, and standardize IIS operations.[222] In the private sector, the option of merging health registries

with existing billing and patient management systems has been explored to further maximize efficiencies, relieve duplication, and streamline all patient-relevant information.[223]

In addition to the benefits to monitoring immunization compliance, IIS have been shown to:

- Create or support effective interventions such as client reminder and recall systems, provider assessment and feedback, and provider reminders;
- Determine client vaccination status for decisions made by clinicians, health departments, and schools; and
- Guide public health responses to outbreaks of vaccine-preventable disease.[220]

Best practices to increase compliance will be discussed in detail in Appendix C.3.

As IIS technology matures, there is the potential to integrate IIS immunization records with other child health information systems, expanding the reach beyond vaccinations.[224] In its systematic review, the Task Force found evidence of successful integration of immunization data with data on blood lead levels, early hearing detection and intervention screening, and a body mass index calculation chart.[221]

However, although IIS "are highly effective for increasing vaccination rates," they are not used by all providers or in a consistent manner. For instance, 91 percent, 82 percent, and 41 percent of pediatricians, family physicians, and general internists, respectively, were aware that there was an IIS in their locality. Overall, 81 percent, 72 percent, and 27 percent of pediatricians, family physicians, and general internists, respectively, reported using an IIS. Provider understanding of the IIS capabilities varied.[225]

Standardized Operations and Guidelines

Improved EHRs and sophisticated data systems are widely accepted as keys to successfully monitoring high-quality health care in pediatrics. However, optimal use of health care information systems is hindered by the lack of coordinated data standards and operations.[217] Standards provide a framework for individuals in different roles and institutions to cooperate and work toward shared goals. Organizations that develop standards exist to "make it possible for different information systems to interoperate, that is, to function independently for their designed purposes while sharing electronic data in such a way that reentry of data is [sic] unnecessary."[217] Quality improvement methods in health care also include guidelines or pathways to establish standardized operations.[226]

Monitoring compliance of immunizations relies heavily on the timely input of correct data into tracking systems. Rules detailing recommended immunization schedules can be embedded into an EHR, facilitating correctly timed and properly administered immunizations.[217] Research has shown that "[EHRs], properly deployed with immunization decision support, demonstrate the clearest benefit to the quality of child health care."[217]

After establishing uniform guidelines, decision-support to facilitate provider adherence is essential. Provider education on new or updated immunization guidelines when used alone has not proven to be an effective method in changing behaviors and ensuring compliance.[227,228,224]

Interventions, however, such as system prompts, are useful in converting guidelines and education into practice.[224] The awareness-to-adherence model has shown to be an effective framework for provider adherence. It is a sequence of cognitive and behavioral steps in which physicians (1) become aware of a new guideline, (2) agree with the guideline on an intellectual level, (3) adopt the guideline into their practice, and (4) successfully adhere to the guideline.[228] Non-adherence by physicians to immunization guidelines has led to 40 percent of children under 2 years of age in the United States not receiving vaccines on schedule; of these the primary reason is due to missed clinical opportunities to vaccinate patients.[228] When non-adherence among physicians is due to a disagreement with, or inability to, adopt a recommendation, further interventions are needed to increase uptake among health care providers.

Given that many physicians rely on the CDC for updates on pediatric vaccine guidelines, it would also be useful for providers to receive a summary of the changes as a joint recommendation of the CDC, AAP, and American Academy of Family Physicians to reduce confusion or contradiction.[228] Clinical team engagement is an essential component to building sustainable immunization practices and processes; engaging a comprehensive staff of nurses, physicians, technicians, and information technology staff enables collaboration across the health care organization for better compliance.[229]

Organizational Leadership

Health care systems that successfully improve the tracking and delivery of preventive care include "visible and tangible top leadership support for prevention goals, and have translated this support into systems and tools for quality measurement and improvement."[224] In a survey of 45 directors of best-practice prevention programs (as determined by the Robert Wood Johnson Foundation and the Center for Advancement of Health), 75 percent of the programs directors reported clear organizational priorities and strong senior leadership as keys to success.[224]

For example, in an effort to implement broad organizational change, The Johns Hopkins Hospital developed a conceptual model to significantly improve performance across standard accountability measures. The model focused on the following concepts:

1. Clearly communicate goals and measures;
2. Build capacity using Lean Six Sigma and improvement science;
3. Transparently report results and create an accountability process; and
4. Create a sustainability plan.[229]

Commitment from the Board of Trustees, senior executives, and clinical directors was essential to successful implementation of the model, and "progress toward the goal was an agenda item at every board meeting."[229] In addition, goals were created collaboratively and were clearly articulated at the outset, leading to buy-in across the organization and clear communication from leadership.

Changes and improvements to monitoring compliance could follow similar frameworks.

C.3 Increasing Compliance with Recommended Pediatric Clinical Preventive Services in Military Dependents

Current Approaches to Increasing Compliance

Military providers and clinics currently may use a variety of methods to increase compliance with immunizations and pediatric clinical preventive services, such as:

- Text messaging;
- Auto text messaging services, such as Text 4 Babies, which sends immunization reminders via text message;
- Secure electronic messaging, such as Relay Health;
- Handouts, such as those from Bright Futures or ACIP;
- Automated telephone call reminders;
- Personal telephone call reminders from clinic staff;
- Reminder letters through the U.S. Postal Service; and
- E-newsletters, such as through UbiCare, which sends immunization reminders from birth through age 3 years.[205,208,230-232]

Additionally, children's records are reviewed at sick visits to determine if the child is due for a well-child visit or immunization.[199] Many clinics, especially in the U.S. Navy or U.S. Air Force, also use the Military Health System Population Health Portal to identify individuals in the enrolled populations who need certain preventive services.[230,231,233]

These methods are primarily used for children ages 6 years and below, as opposed to adolescents.[230,232] However, some groups are targeting adolescents to improve precollege immunizations[230] and increase the number of adolescents who receive the Human Papilloma Virus vaccine.[231]

Best Practices in Increasing Compliance

The literature reveals a number of practices that have been shown to directly or indirectly improve vaccination compliance. Bundy et al assert that three foundational principles fortify reliable immunization delivery, which are key to developing and implementing any best practices: "children must have access to clinical venues providing immunizations; they must present for care when immunizations are due; and providers must consistently recognize when children are due and deliver immunizations."[234(p. 2)]

Others have contributed to ways of framing strategies to improve compliance. For example, a 1999 systematic review of the literature conducted by Briss et al assessed the effectiveness of a diverse set of interventions to improve vaccination coverage across all age groups.[235] That work created a conceptual framework that has been largely adopted and adapted by the Community Preventive Services Task Force. The framework focuses on: "(1) interventions to increase community demand for immunizations; (2) interventions that enhance access to immunization services; (3) interventions that mandate immunizations; and (4) provider-based interventions."[170] Table 11 summarizes the Task Force's recommended strategies within each of these categories for increasing appropriate vaccination compliance (detailed descriptions can be found at

https://www.thecommunityguide.org/task-force-findings). More recently, use of social media and messaging has been seen as a potentially effective means for increasing compliance, especially in populations that are not likely to routinely seek or have access to health care services.[170]

Table 11. Community Preventive Services Task Force Recommended Practices for Increasing Vaccination Rates[236]

Intervention	Task Force Finding
Enhancing Access to Vaccination Services	
Home Visits to Increase Vaccination Rates	Recommended February 2016
Reducing Client Out-of-Pocket Costs	Recommended September 2014
Vaccination Programs in Schools and Organized Child Care Centers	Recommended June 2009
Vaccination Programs in Women, Infants, and Children Settings	Recommended March 2015
Increasing Community Demand for Vaccinations	
Client or Family Incentive Rewards	Recommended May 2015
Client Reminder and Recall Systems	Recommended May 2015
Client-Held Paper Immunization Records	Insufficient Evidence February 2016
Clinic-Based Education when Used Alone	Insufficient Evidence May 2015
Community-Wide Education when Used Alone	Insufficient Evidence September 2015
Community-Based Interventions Implemented in Combination	Recommended October 2014
Monetary Sanction Policies	Insufficient Evidence September 2015
Vaccination Requirements for Child Care, School, and College Attendance	Recommended February 2016
Provider- or System-Based Interventions	
Health Care System-Based Interventions Implemented in Combination	Recommended October 2014
Immunization Information Systems	Recommended July 2010
Provider Assessment and Feedback	Recommended March 2015
Provider Education when Used Alone	Insufficient Evidence May 2015
Provider Reminders	Recommended March 2015
Standing Orders	Recommended March 2015

Adapted from The Community Guide, 2016.

Systems-level Reviews

Several studies have looked at system-level approaches to improving immunization compliance, for example, organizational aspects, policies, and actions of local health departments, and at state and local vaccination requirements. As one of the most effective practices, the CDC notes that

"State and local vaccination requirements for daycare and school entry are important tools for maintaining high vaccination coverage rates, and, in turn, lower rates of vaccine-preventable diseases (VPDs)."[189] However, as previously noted, all States allow for medical exemptions, and some state statutes allow exemptions for religious or philosophical reasons. Studies by Yang and Silverman and Opel and Omer have found that complementing state-mandated vaccination requirements with additional health care efforts, such as reaching out to uncertain parents for further discussion and emphasizing that vaccination is the default policy (and that exemptions are to be the exception), can improve vaccination coverage rates.[237,238]

Connors et al conducted a literature review to assess unique features of the MHS that have contributed to establishing childhood vaccination rates that exceed those of the civilian sector, according to Air Force data from 2007.[G,239] The results of the review identified several significant factors in the MHS that should facilitate higher vaccination compliance rates than those found in the civilian sector, many of which track with the Community Preventive Services Task Force recommendations: (1) widespread use of electronic vaccination records combined with universal access to care in this population through MHS enrollment; (2) mandatory vaccination of active duty personnel and children enrolled in base schools; and (3) service-specific media promotion of vaccinations (e.g., wellness and education programs for parents).[240] Access to free or low-cost health care should enhance compliance in this population: "The nature of this system facilitates compliance with routine preventative care, including vaccinations, whereas the civilian sector does not offer cost-free health coverage universally."[240(p. 722)] The authors note that, while these enablers of compliance exist in civilian systems, they are not as widespread as in the MHS. In addition, the authors found that DoD does a better job than the civilian sector in clarifying medical and health information presented to its beneficiaries. "Combined with targeted education programs, the DoD media system serves to better inform MHS beneficiaries about preventative health practices, including vaccination."[240]

In another review of systems approaches to improve compliance, Ransom et al conducted case studies of 17 local health department's immunization programs and found that six key factors play a role in improving childhood immunization rates: (1) organizational leadership and management that aligns immunization services with other child-focused services offered by the organization; (2) organizational efforts that align federal and state financing for immunization with local needs; (3) advocacy and partnering with community stakeholders; (4) community engagement to form coalitions and partnerships that prioritize immunization programs; (5) building agency credibility in the community; and (6) ensuring cultural competency of staff.[241] The authors note that "Community specific attributes (e.g., poverty, lack of health insurance, or geographic isolation) affect childhood immunization coverage rates, but internal LHD [local health department] aspects such as leadership and organizational culture also likely have a significant impact."[241(p. 419)]

A challenge is to ensure ongoing and consistent access to health care systems that encourage and provide vaccination. Nelson et al conducted a large, multisite, retrospective cohort study of

[G] This Air Force data from 2007 indicates that the Air Force had higher immunization rates than the civilian sector; this is counter to more recent data the Board has reviewed.

older children, adolescents, and adults in the Vaccine Safety Datalink population over an 8-year period (1996 through 2004) to quantify rates of completion of all required doses of varicella, HepA, and hepatitis B vaccines. They found that relatively few completed the series, as low as 40 percent for most.[242] "Compliance was lowest among adolescents (35.9%) and Medicaid recipients (29.7%) who received varicella vaccine and among younger adult age groups who received HepA vaccine (25%–35% across those age groups)."[242(p. S389)] The authors found that full compliance with multiple-dose vaccines among all age groups increased modestly the longer they were enrolled in a health care system, as well as the greater the number of medical visits that occurred in the year prior to the first dose. As such, just having continuity of access to care can improve compliance. They also suggest that if there were improvements in vaccine formulations, for example, to increase the duration of protection or to achieve immunization with a single dose, compliance might be higher in hard to reach or transient populations for vaccines that required a series of vaccinations over time.[242]

Provider-based Approaches

Proactive efforts on the part of providers are essential to improving immunization rates. In 2015, Jones et al (2015) reviewed the literature and found that "two of the main causes of poor immunization rates in a medical practice are missed opportunities by clinicians for immunization, and patients not coming in for appointments."[243(p. 51)] They summarized some of the approaches found in the literature to address these factors, stating, "Audit and feedback mechanisms, whereby clinicians are given constant information regarding the immunization rates of their patients, along with electronic medical record (EMR) reminders and templates, clinic-wide standing orders, and vaccine delivery protocols have all been shown to improve immunizations through decreased missed opportunities."[243(p. 51)]

Connor et al found that education offered by providers to patients regarding vaccinations is "necessary to influence a parents' decision to vaccinate their child."[240(p. 723)] Jones et al (2014) found that when immunization rates and current clinical workflow were integrated into continuous quality improvement plans, providers were able to decrease missed opportunities for vaccinations. In their study that introduced continuous quality improvement involving immunization strategies to medical residents and immunization teams, immunization rates improved from 66 percent at baseline to 91 percent.[244]

IIS can be used to increase and improve vaccination delivery in the United States. Such systems are "confidential, population-based, computerized databases that record all vaccination doses administered by participating providers to people residing within a given geopolitical area."[245-247] Since 1994, the National Vaccine Advisory Committee Subcommittee on Vaccination Registries of the CDC has advocated the use of computerized immunization registries to increase immunization rates.[248] "When such registries are population-based and include all patients in a given area, they consolidate immunization records that are scattered among multiple providers, which facilitates the targeted recall of children who are truly underimmunized and decreases the chances of a child's being overimmunized."[249(p. 967)] In a study published in 2004, Kempe et al reported on the impact of a regional immunization registry on "up to date" rates among three health care delivery sectors—private practices, community health centers, and public health clinics. They concluded that "regional immunization registries can help clinicians and public health officials increase immunization 'up to date' rates by better tracking patients, by helping to

target and carry out recall and reminder efforts, and by preventing overimmunization."[249(p. 972)]

In 2014, the Community Preventive Services Task Force recommended use of IIS as an effective means to increase vaccination rates.[245,250] However, a 2015 review of the costs and benefits of implementing, operating, and participating with an IIS was somewhat ambivalent about whether the benefits outweighed the costs.[246]

A study by Bundy et al tested whether either of two interventions would increase overall pediatric immunization rates in three pediatric age groups, as well as rates of immunization for HepA in a 2-year old age group and human papillomavirus in a 13-year old age group. The two interventions were: (1) an EHR immunization prompt for children due or overdue for an immunization, and (2) a quarterly, provider-specific bulletin of children due or overdue for an immunization. The EHR prompt was intended to indicate to providers when a child who had already presented for care was due or overdue for an immunization. The provider-specific bulletin was intended to increase the number of children who present for care because they are due or overdue for an immunization. Neither intervention improved overall immunization rates or rates of human papillomavirus immunization, but did improve immunization rates for HepA.[234]

However, it appears that more research is needed to assess the effectiveness of provider-oriented alerts. In 2013, Stockwell and Fiks conducted a review of IT-based provider alerts and found:

> Among the most effective provider-oriented alerts has been the use of clinical decision support . . . delivered through the [EHR]. In broad terms, [clinical decision support] provides clinicians with clinical knowledge and patient-related information, intelligently filtered or presented at appropriate times, to impact clinical decision-making to enhance patient care.[251(p. 1806)]

The authors acknowledge that more research is needed and that clinical decision support approaches are only effective for patients who actually come in to the clinic.[251]

Finally, because health care providers need complete health care records to accurately assess and promote compliance, some of these best practices can be less effective when children are seen by multiple providers. Stokley et al reviewed data from the 1995 National Immunization Provider Record Check Study to assess immunization compliance among children who were seen by multiple providers. They found that, without complete records, or with records scattered across multiple providers, the lack of an ability to determine the immunization status of patients who had received vaccinations at other sites of health care negatively affected adequate coverage. The authors recommend developing community-wide immunization registries to address the challenges of reminders and recalls when records are incomplete.[218]

Patient-targeted Approaches

Historically, immunization programs have relied on telephone and postal reminders and home visits to contact parents about compliance. Many studies show the value of a multi-pronged approach. Jones et al reviewed the literature on the use of automated patient reminders,

reminder-recall systems, patient registries, and home visits and found that these approaches have been effective in improving immunization rates among populations that do not consistently seek medical care.[243] However, the cost-effectiveness of such strategies is questionable or remains to be determined. For example, while they found that telephone calls and home visits have been shown to be the most effective, they are also the most costly interventions. They conclude that a combination of audit and feedback to providers and use of a patient registry to spur outreach to noncompliant patients has been shown to be effective.[243] The authors found that clinicians can decrease missed opportunities by printing immunization records the day of an appointment and that reaching out to patients with letters and follow-up calls increased immunization rates.[243,244] Similarly, a review by Harvey et al found that receiving both telephone and postal (paper mail) reminders was the most effective reminder strategy, but this study did not assess costs.[252]

In 2010, the Cochrane Collaboration reported the results of a literature review that found that patient reminder and recall systems increase the number of people vaccinated, whether the patients were due or overdue for vaccinations. "Reminding people over the telephone, sending a letter or postcard, or speaking to them in person increased vaccinations. Providing numerous reminders was more effective than single reminders."[253(p. 2)] As with Jones et al, the review concluded that while reminding people over the telephone was more effective than postcard or letter reminders, this strategy may be relatively more expensive. The Cochrane review found that reminders worked when coming from most sources, including a private doctor's office, a medical center, or a public health department clinic.[253]

In-person Education Efforts

In 2013, the Cochrane Collaboration conducted an assessment of face-to-face information or education sessions with parents about vaccinations to determine if they improved vaccination rates and parental knowledge or understanding of vaccination. The interventions that were the focus of the research reviewed were single- or multi-session sessions offered to individuals, groups of parents, or soon-to-be parents. The authors concluded, "The studies suggest that face to face strategies do not consistently improve either immunisation rates or parent knowledge and understanding of vaccination, but the evidence was low to very low quality for these outcomes."[254(p. 2-3)] However, the review noted that the results of the review were "limited by the small number of included studies, small number of outcomes measured and problems with the way the researchers decided who should receive the intervention and with the way outcomes were assessed."[254(p.3)]

Social and New Media

Research on the effectiveness of social media in promoting vaccine compliance is in its early stages, with mixed reviews. According to a 2015 review paper by Odone et al, evidence suggests that "text messaging, accessing immunization campaign websites, using patient-held web-based portals and computerized reminders and standing orders increase immunization coverage rates. Insufficient evidence is available on the use of social networks, email communication and smartphone applications.[170(p. 80)] The authors call out text messaging, in particular, as a promising strategy for reminder/recall purposes and to provide immunization-

related health education for parents, particularly those in more impoverished or remote communities.[170]

Smartphone applications (apps) have been developed and launched by the CDC and the WHO Regional Office for Europe. The CDC app targets clinicians and other immunization providers to remind them of the vaccine schedules recommended by ACIP.[255] The WHO app targets parents to remind them when their child's vaccinations are due based on the country-specific immunization schedule.[256] Wilson et al reviewed the literature on mobile applications and concluded they provide a conceivable direct channel to communicate with individuals about vaccination.[257]

Odone et al note that, while social and new media have great potential to improve compliance, they can also have a negative impact as a conduit for dissemination of negative or incorrect messages regarding immunization.[170] Wilson et al noted that those who tend to be anti-vaccine, or are hesitant, are most susceptible to having their views on vaccination altered by social media. They suggest, however, that "The advent of digital detection strategies provides an opportunity for public health authorities to monitor vaccine hesitancy in real time….Identification of public concerns in real time using digital detection can facilitate early engagement with the public to ensure sustained confidence in vaccines and immunization."[257(p. 975)]

APPENDIX D. PRIMARY AND SPECIALTY CARE

D.1 BACKGROUND

Appendix D of this report will address primary and specialty care services; specifically it will focus on the following objectives of the tasking:

- Identify the extent to which children receive developmentally appropriate and age-appropriate health care services, including clinical preventive services, both in the direct care and purchased care components;
- Evaluate whether children have ready access to primary and specialty care;
- Assess other issues related to the evaluation and general improvement of health care for children within the Military Health System (MHS), including: data collection, data utilization, and data analysis that could improve pediatric care and related services, including the availability and maturity of pediatric specific outcome measures.[43]

IMPORTANCE OF PEDIATRIC PRIMARY AND SPECIALTY CARE

In addition to the preventive services discussed in Appendix C, infants, children, and adolescents require primary care services to ensure they are meeting developmental milestones and receiving basic medical care, and some will need specialty care to address more complex health needs.

Primary Care

In 1994, the Institute of Medicine, now known as the National Academy of Medicine, began a two-year study of the future of primary care in the United States with the intention of reorienting health care to have a greater focus on the function of primary care. In its report, the Institute of Medicine proposed a new definition of primary care:

> Primary care is the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community.[258]

Using existing definitions at the time, the Institute of Medicine team updated their definition to emphasize the patient-provider relationship in the context of the patient's family and community and to highlight the primary care provider as a team member within an integrated delivery system.[258] Pediatric primary care providers are a child's first entry point into the health care system and serve as the focal point for all needed health care services, taking continuing responsibility for providing comprehensive care.[259] Beyond working to ensure a child's physical health, pediatric primary care providers work to achieve optimal mental and social health and safety of all children in their care. Often, health care consumers do not realize the true benefits of primary care, causing this discipline to be undervalued and underfunded.[260] Despite this, primary care has been shown to help prevent illness and death and is associated with a more equitable distribution of health across populations.[261]

Recent trends across the health care system in the United States have elevated the importance of primary care and have focused on primary care as a key to reducing costs, while improving quality of care. The Patient Protection and Affordable Care Act, when passed in 2010, provided a framework to increase payments for primary care providers and made key investments in the primary care infrastructure in the United States.[262] In addition, the Patient Protection and Affordable Care Act served to shift health care from a volume-based payment system to a value-based payment system thus reinforcing the importance of primary care.

Within the MHS, primary care is a key driver of the stated goals of the MHS Quadruple Aim: improved readiness, better health, better care, and lower cost.[18]

Specialty Care

The majority of care for both pediatric and adult patients occurs in primary care settings. For the small number of cases beyond the general scope of a pediatrician or family medicine provider, medical specialists are needed. The primary care provider will refer the patient to a specialist for secondary medical care, which is care that requires a different set of training, experience, and expertise. If a patient is hospitalized and needs a more extensive level of care, they may be referred to tertiary care for specialized equipment and procedures.[263]

Across developed countries, approximately 70 percent of the typical health care workforce consists of primary care physicians. In the United States however, specialists outnumber generalists, and specialty care accounts for considerably more health care resources than primary care.[264] Medical specialties include the following fields, among others (Table 12):

Table 12. Selected Medical Specialties[265]

Audiology	Hematology	Oncology	Psychiatry & Psychology
Cardiology	Immunology	Ophthalmology & Optometry	Pulmonary Medicine
Dermatology	Nephrology	Orthopedics	Transplant Medicine
Endocrinology	Neurology	Otolaryngology	Rheumatology
Gastroenterology	Occupational Therapy	Physical Therapy	Urology

From Cincinnati Children's, 2017.

Pediatric specialty care differs from adult care. Health care needs and patterns of morbidity for children and adolescents are qualitatively and quantitatively different from those of adults. In addition, the family is the child's primary source of strength and support and thus plays a central role in health care decision-making.[266,267] Pediatricians refer children and adolescents to specialty care for a wide variety of reasons and generally have multiple justifications for the referral. When surveyed, pediatricians commented that reasons for referral were not mutually exclusive, and common reasons for referral included:

- Advice on treatment;
- Advice on diagnosis;
- Specialized surgical skill;
- Specialized medical treatment;

- Failed conventional treatment;
- Mental health counseling; and
- Parental request.[266]

For children with complex or comorbid conditions that affect daily functioning, specialty services are essential. Children with health insurance coverage have been shown to have more ready access to needed specialty care.[268] In addition, care coordination between primary and specialty care providers facilitates care delivery. Collaborative care agreements are helpful in coordinating care when a patient's needs span multiple health care providers. These agreements clearly outline expectations for both the referring physician and the specialty consultant.[264]

Some specialty practices have adopted a medical-home model to improve care using patient-management services traditionally found in primary care practices. These specialty medical homes can be utilized when a specialty care setting serves as the patient's main point of contact with the health care system.[269] They can be centered on a specific complex condition and are rooted in the following principles:

- Enhanced communication;
- Improved coordination of care;
- Expanded access through extended hours and phone and electronic contact with providers;
- Provider teamwork;
- Proactive assistance to help patients manage their own health; and
- Continuous performance tracking and quality improvement.[270]

Please refer to Appendix F for a detailed analysis of pediatric care coordination in the MHS.

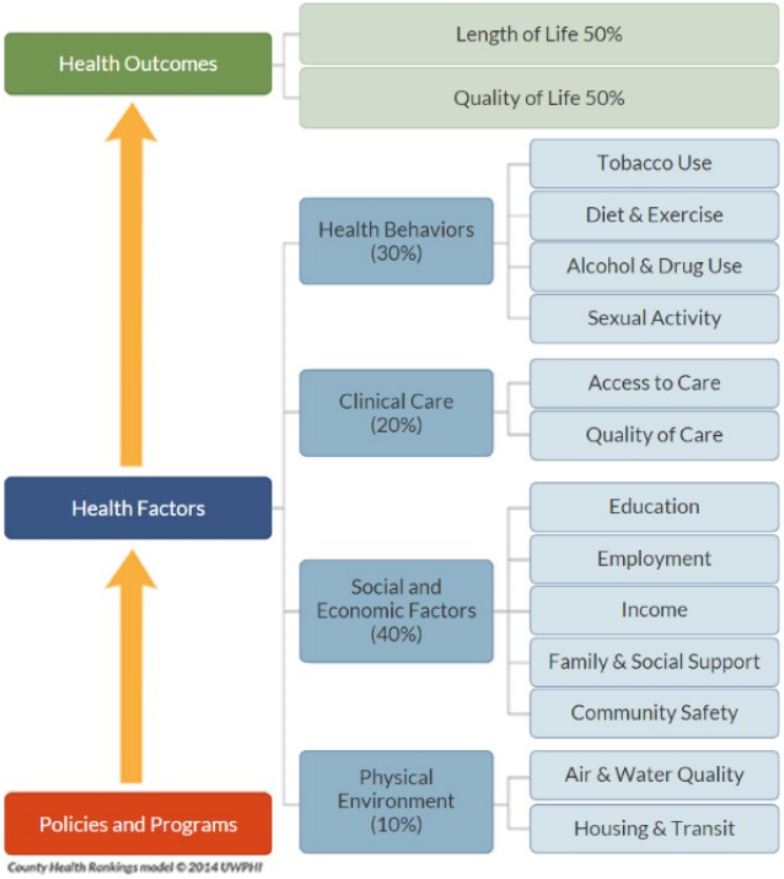
Emerging Factors in Pediatric Primary and Specialty Care

Population Health in Pediatrics

In his February 2016 remarks before the Senate Armed Services Committee, Subcommittee on Personnel, then Assistant Secretary of Defense for Health Affairs Dr. Jonathan Woodson stated, "lessons from fourteen years of battlefield medicine, along with transformative changes in the practice of medicine in the United States, require new approaches to how we ensure medical readiness and how we best meet the expectations of our beneficiaries."[14] Care provided in the MHS, while distinct in scope and structure from other health systems across the country, has not been immune to the shifts in the health care field. Under guidance from the Patient Protection and Affordable Care Act, health care organizations are increasingly population health based.[271, 272] Increased use of electronic health records (EHRs) and a move toward capitation payment models have also been drivers of this transition.

Population health is widely defined as "the health outcomes of a group of individuals, including the distribution of such outcomes within the group."[273] The Department of Veterans Affairs builds on this definition and understands population health to be "the practice of determining the health and health needs of a population by measuring and reporting factors that may influence an individual's health."[274] As they note, many factors influence health outcomes. Figure 13 shows one representation of the population health model and the various health factors that affect health outcomes.[28]

Figure 13. Population Health Model[28]



From County Health Rankings & Roadmaps – Our Approach, 2017.

In addition to the model outlined above, genetic factors play a role in determining health outcomes. Recent studies have shown that the interactions between genes and the environment affect development and that "external experiences leave a chemical 'signature' on genes that determines whether and how genes are expressed."[275] Those collective "signatures" are called the epigenome, and the implications of epigenetic modification are particularly profound for infants and young children as negative experiences can influence physical and mental health for a lifetime (see Appendix E.1 for information on Adverse Childhood Experiences).[275]

Within pediatrics, a population health approach is particularly applicable and, along with an increased focus on the social determinants of health, represents a paradigm shift in the field.[272] The majority of children, including TRICARE beneficiaries, are generally healthy. As noted in the model above, other factors in the life of a child, particularly social and economic status of the family, have a larger impact on well-being than clinical care.[28]

Pediatric residency programs now require all residents to have community pediatric experience, an important preface to a population health based practice. The quality improvement focus area of the Accreditation Council for Graduate Medical Education's Clinical Learning Environment Review also looks at how residents are engaged in reducing health disparities, with the hope of

making larger changes in health outcomes.[271] In addition to training and quality metrics, well-designed EHRs can facilitate a population health perspective. Patient demographic data and clinical decision support focused on social determinants of health can be built into the EHR. This allows pediatric providers to identify areas known to improve health outcomes broadly and align their efforts to achieve higher impacts on population health overall.[272]

Population health is currently a part of the MHS Quadruple Aim as outlined by leadership. Taking into consideration the distinct pressures and environmental circumstances military families face, a population health based approach to pediatrics may allow MHS to better understand and serve their beneficiaries.

Adolescent Medicine

Pediatric care focused specifically on adolescents and issues faced by this group is an emerging field. The Society for Adolescent Health and Medicine notes that adolescence is "a challenging stage of human development during which pre-teens, teenagers and young adults experience physical, intellectual, emotional and social maturation."[276] The following topic areas are all of areas of emphasis for adolescent-focused care and health research:

Table 13. Adolescent Medicine Topic Areas[276]

Eating Disorders and Nutrition	Puberty/Normal Development
Lesbian, Gay, Bisexual, and Transgender Health	Sexually Transmitted Infections
Media Use by Adolescents	Sports Medicine
Menstrual Disorders	Substance Use
Psychiatric and Mood Disorders	Transition to Adult Care

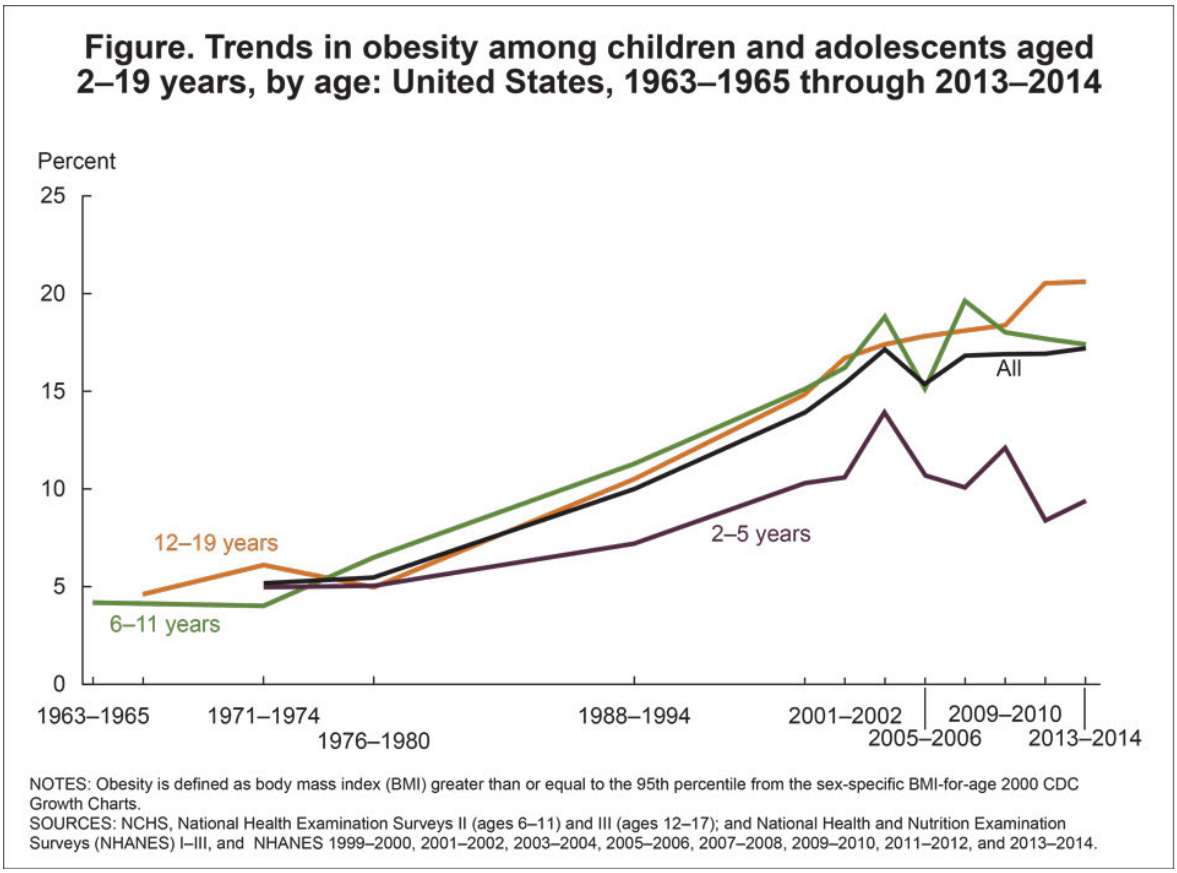
From Society for Adolescent Health and Medicine, 2017.

Pediatricians, mental health specialists, registered nurses, and physician assistants, among others, may specialize in, or focus on, adolescent health. In addition to understanding specific medical needs, the most effective providers know how best to relate to their adolescent patient. Those adolescents with higher satisfaction in their care were more likely to keep appointments for needed care, though it is important to note that parents and adolescents differ in their opinion of what constitutes satisfactory health care.[277,278] Adolescents desire to create strong relationships with their health care providers; feel physically and emotionally safe when receiving care; and, in some cases, be able to turn to their provider for counseling.[279] Reflecting these realities and to most appropriately address needs, the field of adolescent medicine recently made a profound shift from its traditional role. Instead of providing preemptive guidance to parents, providers now work to reduce risk-taking behaviors with their focus aimed directly at the adolescent.[279]

Pediatric Obesity

Children who are overweight or obese are at increased risk of a host of chronic diseases. While rates of pediatric obesity prevalence have remained relatively stable over the past decade, holding at roughly 17 percent of 2-19 year olds nationally, this is triple the rate seen in 1980 (Figure 14).[280]

Figure 14. Trends in Childhood Obesity Prevalence[280]



From National Center for Health Statistics, Centers for Disease Control and Prevention, 2016.

Obesity in childhood and adolescence is associated with serious medical problems, including:

- High blood pressure and high cholesterol;[281]
- Increased risk of impaired glucose tolerance, insulin resistance, and type 2 diabetes;[282]
- Breathing problems (e.g., sleep apnea, asthma);[283]
- Joint problems and musculoskeletal discomfort;[284] and
- Fatty liver disease, gallstones, and gastro-esophageal reflux.[285]

Within the MHS, rates of childhood obesity are generally lower than comparable national rates. However, childhood obesity is still a concern, particularly because youth with a parent who served in the military are twice as likely to consider military service than children of parents with no history of military service. Considering the implications that childhood obesity has on the health of an adult and the likelihood that military families will be a major source of future

Service members, the focus on childhood obesity is critically important to current DoD health care expenditures and to the future of our nation's security.[10] Dr. Terry Adirim, Deputy Assistant Secretary of Defense for Health Policy and Oversight noted:

> About 40 percent of service members have children, and many of those children follow their parents into military service. How they are cared for now is reflected in how they grow up and become functioning members of not just our military community but society as a whole. Taking care of them today is an investment in the future.[69]

In its 2013 report, *Fit to Fight, Fit For Life: Implications and Trends in Obesity and Overweight for the Department of Defense*, the Board commended DoD efforts to address pediatric obesity among beneficiaries through the Childhood Obesity Working Group and the implementation of evidence-based interventions. In addition, the Board recommended DoD adopt best practices from civilian childhood obesity programs where possible and develop opportunities to provide children with exposure to and education on healthy lifestyles.[10] Currently, DoD should again be commended for its leadership in this area. DoD is on the leading edge in tracking important pediatric obesity measures and in addressing the rising costs of health care spending related to childhood obesity through a value-based payment pilot.[286]

Additionally, DoD launched the 5210 Healthy Military Children campaign, a collaboration between DoD's Office for Military Community and Family Policy and the Clearinghouse for Military Family Readiness at Penn State University, to encourage a healthy lifestyle among military children. The program encourages children to:

- Get five or more servings of fruits and vegetables a day;
- Spend fewer than two hours of recreational time in front of a TV, tablet, portable video game, or computer screen;
- Exercise for one hour each day; and
- Consume zero sugary drinks.[69]

Since implementing the campaign, DoD officials have seen the most success in reducing screen time, noting parents are much more aware of the difference between productive and non-productive screen time (e.g., using computer screens for math homework versus using computer screens for videogames). A goal of the 5210 campaign is to help children self-regulate between productive and non-productive activities as they enter their teen years.[69]

Officials are promoting education efforts where military families live, work, and play, including doctor offices, recreation centers, and schools on base, with the goal of making 5210 part of every family's lifestyle. MHS officials note, however, that about 70 percent of military families live off military installations in the United States.[69] Program leaders are now researching ways to get information about the 5210 campaign out to groups beyond the military landscape[69]

D.2 Evaluating Access to Primary and Specialty Care

Current Policies, Practices, and Capabilities

Enterprise-wide Policies, Practices, and Capabilities

"The Military Health System has fully embraced an enterprise management approach – that is, an approach that better integrates our operations and strengthens collaboration among DHA, the service medical departments, the Joint Staff and the Combatant Commands. Whether it is in deployed environments abroad or our multi-service markets in the United States, we are moving toward greater integration because it enhances our readiness, improves efficiency, and strengthens our ability to provide the high-quality, patient-centered care our patients expect and deserve."[30]

VADM Raquel Bono,
Director of the Defense Health Agency (DHA)
August 2, 2017

Guidance directing all care in the MHS, including pediatric primary and specialty care, is rooted in United States Code and detailed in Code of Federal Regulations (CFR) interpretations of the law (see Appendix B for statutory and regulatory language).[4,75]

From this legislative and administrative guidance, the MHS established a set of access standards that apply to the direct care component (care provided in military treatment facilities (MTFs)) and to the purchased care component (services provided in the civilian TRICARE network). Time and distance access standards for all MHS care are detailed in 32 CFR 199.17(P)(5) and are outlined below:

Table 14. MHS Access Standards[287]

	Routine Care	Urgent Care	Referred/Specialty Care	Wellness/Preventive Care
Appointment Wait Time	Not to exceed 7 days	Not to exceed 24 hours	Not to exceed 4 weeks	Not to exceed 4 weeks
Drive Time	Within 30 minutes from home	N/A	Within 60 minutes from home	N/A
Wait Time in Office	Not to exceed 30 minutes for non-emergency situations			

From 32 CFR 199.17(P)(5).

In addition to congressional and DoD-level guidance, the Assistant Secretary of Defense for Health Affairs issues guidance to DoD components on medical matters.[288] Policies specific to primary and specialty care across the MHS enterprise include:

Table 15. Health Affairs Policy Guidance[109,275,289]

DoD Health Affairs Policies	Impact on Access to Care
Health Affairs Policy 11-005, TRICARE Policy for Access to Care, 23 February 2011	This policy provides guidance for access standards to health care benefits under TRICARE, consistent with 32 CFR, Part 199.17(p)(5), and rescinded and replaced eight previous policies. Health Affairs Policy 11-005 details wait and travel times (outlined in Table 14), priority of access to MTF care by beneficiary status, TRICARE Prime Service Area, and beneficiary waiver of travel standards. The standards established in

	this policy apply to all MTFs (to the extent practicable in overseas locations).[115,290]
Health Affairs Policy 09-015, Policy Memorandum Implementation of the Patient Centered Medical Home, Model of Priority Care in MTFs, 18 September 2009	This policy establishes a model of primary care associated with better outcomes, reduced mortality, fewer hospitalizations for patients with chronic diseases, lower utilization, improved patient compliance with recommended care, and reduced medical spending. Health Affairs Policy 09-15 "builds on MTF current success with appointment access and provider continuity by requiring that a single primary care framework be adopted that specifically targets communication and patient-centered health care delivery."[289]

From Health Affairs Policy 09-15 and 11-005.

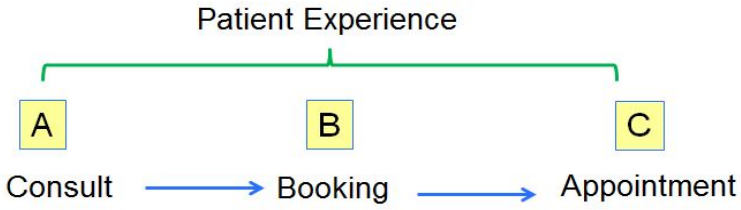
In December 2008, the MHS published the *MHS Guide to Access Success*, which established roles, responsibilities, definitions, and guidance for implementing, sustaining, and managing MTF access to care that meets or exceeds the access standards stated in 32 CFR 199.17.[115,291] The Guide defines access to care as "all of the necessary activities that will ensure [MHS] beneficiaries get to the right provider at the right time at the right place."[291] This detailed and comprehensive guide provides MTFs across the Services with direction and systematic guidance on:

- Day-to-day management of clinic templating, scheduling, and appointing functions;
- Information system management that supports access to care;
- Enrollment, panel, and demand management and analysis;
- Referral management activities;
- Appointing management via telephone; and
- Effective and efficient personnel management in support of the MTFs access to care program.[291]

In 2014, the MHS Access Improvement Working Group was tasked to update the 2008 *Guide to Access Success* to reflect the tenets of the Patient Centered Medical Home and the MHS Quadruple Aim and support MHS strategic goals.[116] The working group included broad representation from medical specialties, as well as representation from all of the Services and DHA. To date, those updates have yet to be published.

In January 2017, the MHS approved DHA Interim Policy Memorandum 17-002 to streamline and expedite the specialty referral process.[39] Traditionally, wait times for specialty care appointments were measured in days from booking (B) to appointment (C) (see Figure 15). For patients, this meant that any delays from the initial consult to booking the specialty appointment could push total wait time over the 28-day threshold, though this would not be reported in MHS metrics. To address this gap, the MHS will now be reporting a new set of core measures: days from consult to booking (A to B) and days from booking to appointment (B to C).

Figure 15. Specialty Care Referral Process[39]



From Julian, R., 2017.

According to Memorandum 17-002, the specialty referral process is as follows:[39,292 38,291 38,291 38,291 38,290]

- If clinically indicated, the Primary Care Manager enters the referral in the EHR.
- The referral management office either accepts the referral at the MTF within 24 hours or immediately defers to network (network has 3 days to book the enrollee).
- If accepted by the MTF, the goal is to offer the patient an appointment date/time before he/she departs the MTF or within 24 hours.[38,290]

To streamline referral processes further, evidence-based specialty referral guidelines have been embedded in the EHR. These guidelines help providers identify when it is appropriate to refer the enrollee to a specialist and what diagnostic tests or other treatment should be accomplished prior to referral.[39]

Section 701 of the 2017 National Defense Authorization Act eliminated the need for a prior authorization before a referral for specialty care within the network, though a referral would still be required.[19]

Urgent care

In May of 2016, DoD launched an Urgent Care Pilot Program for TRICARE Prime beneficiaries that is projected to continue until May 2019. The DoD was instructed to create this pilot under a provision of the National Defense Authorization Act from fiscal year 2016, which mandated an urgent care pilot program be implemented within 180 days of enactment that eliminated the need for a preauthorization when seeking urgent care outside of a primary care or emergency facility.[293]

Previously, TRICARE Prime beneficiaries who received care from a provider other than a primary care provider or an emergency medicine facility were required to obtain a preauthorization. If this was not done, the patient could incur greater out of pocket costs associated with receiving point of service care without a preauthorization. Under the Urgent Care Pilot Program, non-active duty Prime enrollees can receive two self-referred urgent care visits by either a TRICARE network provider or a TRICARE-authorized urgent care clinic, without obtaining a preauthorization first and without incurring any point of service cost-shares. Additionally, the Nurse Advice Line can be used to determine the appropriate care plan and, if needed, an urgent care visit can be recommended and a referral submitted.[16,293]

Covered services for special or complex needs

The TRICARE basic benefit covers a variety of additional services for beneficiaries with chronic or complex needs. Covered services include, but are not limited to: [H]

- Applied Behavior Analysis (ABA): TRICARE covers ABA therapy for all beneficiaries with an autism spectrum disorder through the TRICARE Comprehensive Autism Care Demonstration (see Appendix E.1 for more information on the demonstration).
- Cancer Clinical Trials: TRICARE covers participation for all beneficiaries who are selected to participate in National Cancer Institute sponsored Phase I, Phase II, and Phase III studies. Coverage includes all medical care to determine eligibility and all medical care needed during the study.
- Durable Medical Equipment: TRICARE covers the rental or purchase of some types of durable medical equipment. These items must be prescribed by a physician and are used to improve, restore, and/or maximize the patient's function consistent with physiological or medical needs.
- Home Health Care: The home health services covered by TRICARE are the same services covered by Medicare, including part-time and intermittent skilled nursing care; home health aide services; physical, speech, and occupational therapy; and medical social services. TRICARE does cover some medically necessary home health care services beyond those listed through the Extended Health Care Option (ECHO) program.
- Hospice Care: The TRICARE basic benefit covers hospice care; however, like home health care, it must follow Medicare policy. The Medicare policy guidance prevents concurrent coverage of curative care and hospice care. This creates a conflict for parents and families of pediatric beneficiaries who are within their last six months of life. Many families seek a blended package of curative and palliative services, working with doctors to prolong their child's life, while ensuring some measure of relief for their child from the symptoms of their serious illness. Section 2302 of the Affordable Care Act amended the Social Security Act to allow children who are eligible for Medicaid or the Children's Health Insurance Program to receive curative treatment upon the election of the hospice benefit.[294] This provision does not apply to TRICARE, as the Affordable Care Act does not govern the TRICARE health benefit. Currently, TRICARE administrators and DHA officials work with individual families and providers when concurrent services are needed, though this does not ensure both curative and palliative services will be covered, creating additional stress for families during a difficult time. TRICARE and DHA officials are now exploring long-term solutions for this issue, including the potential for a demonstration project to cover concurrent curative and palliative services.[295]
- Mental Health Care: TRICARE covers medically necessary mental health care and both inpatient and outpatient services (see Appendix E.2 for more information on behavioral health services in the MHS).
- Skilled Nursing Facility Care: TRICARE covers skilled nursing facility care in the U.S., District of Columbia, and U.S. Territories to provide skilled nursing, rehabilitation, and other care, including medications. Skilled nursing facilities are not nursing homes or intermediate facilities.[296]

[H] This is not an exhaustive list of benefits for children with complex needs; these are the benefits as described on the TRICARE mil website for beneficiaries with special needs.

Extended Health Care Option

In addition to the basic benefit, TRICARE includes a number of special programs for beneficiaries with specific health care needs, including ECHO, for active-duty family members. ECHO provides financial assistance for assistive services, durable medical equipment, and respite care, among other support, to families with children with a qualifying condition. Conditions that qualify for ECHO coverage include, but are not limited to:

- Autism spectrum disorder;
- Moderate or severe intellectual disability;
- Severe physical disability;
- Extraordinary physical or psychological condition of such complexity that the beneficiary is homebound;
- Diagnosis of a neuromuscular developmental condition or other condition in an infant or toddler (under age 3) that is expected to precede a diagnosis of moderate or severe intellectual disability or a serious physical disability; and
- Multiple disabilities, which may qualify if there are two or more disabilities affecting separate body systems.[60]

The ECHO benefits closely align with the state Medicaid Home and Community-based Services (HCBS) waiver, which certain states use to develop new services and extend the Medicaid benefit beyond the traditional group of beneficiaries. For example, income eligibility for HCBS waivers is based on the exceptional family member's income, as opposed to the entire family income. Almost all states and the District of Columbia offer services through HCBS waivers. States can operate multiple HCBS waivers, with currently more than 300 HCBS waiver programs active nationwide.[49] The HCBS waiver that would most closely align with the types of services that caregivers in active duty families express that they need the most, including respite care, is the waiver for caregivers of those with intellectual and/or developmental disabilities.[50] The waitlist for these services varies by state, ranging from zero in states such as California and Hawaii to 186,627 caregivers on the waitlist in Texas. In the ten states with the highest number of active duty military populations, the total number of military and civilian caregivers on the waitlist for HCBS waivers is 260,793 and includes several of the states with the largest waitlists.[297]

ECHO provides in-home respite care for primary caregivers of up to 16 hours per month, for a total of 192 hours per year. Respite care is only available in months when another ECHO benefit is utilized.[21] For children who are homebound, or who require more than 28-35 hours per week of home health services, expanded in-home medical services are provided through the ECHO Home Health Care benefit. Respite services for primary caregivers through the Home Health Care Benefit include up to 8 hours of care, 5 days per week, for a total of 2080 hours per year.

The January 2015 *Military Compensation and Retirement Modernization Commission (MCRMC) Final Report* found that respite care is one of the services family members often need and demand. In its analysis of the ECHO program, the Commission performed a state-by-state analysis of respite care waivers and hours offered. The analysis showed that states have multiple waivers through which they provide respite care, and care levels vary by condition and level of need. The Commission calculated an average maximum number of respite hours per year to be 695 hours, though this included all levels of care offered, included programs for adults and

children, and excluded 11 states from their analysis because no level of respite hours was reported.[298]

The Commission recommended that services covered through ECHO be increased to more closely align with state Medicaid waiver programs, including expanding respite care hours to align more closely with state offerings, though they did not provide a target number of respite hours. Family members do not understand why the amount of respite care available to them differs from the hours that would be available under a state Medicaid waiver program. This difference between the ECHO respite benefit and a given state's Medicaid waiver program benefits further promulgates the sense of frustration and unfairness experienced by families.

Service members must be enrolled in their respective Service's Exceptional Family Member Program (EFMP) in order for their families to be eligible for ECHO.[21] The EFMP is an administrative program comprised of three components: identification and enrollment (medical function); assignment coordination (medical and personnel function); and non-clinical family support (family center function). It should be noted that there are no medical benefits offered by the EFMP as it is not a part of ECHO. Enrollment in EFMP serves to ensure that the special medical and educational needs of the family member will be considered during the assignment process.[299] Each Service has specific policies to further guide their respective programs, which includes offering a respite care program to eligible families, which is separate from the ECHO respite care program administered through TRICARE.[53]

Another challenge is that ECHO is only available for active duty family members. Retiree families are not eligible for ECHO. This exclusion does not apply to the Autism Care Demonstration, as retiree family members are eligible for autism care (see Appendix E.1 for more information on the Autism Care Demonstration).[21]

Survey tools

The MHS uses several survey tools to assess patient satisfaction from beneficiaries across the system. The DHA Decision Support Division collects the information in accordance with FY 1992 National Defense Authorization Act, which directed the MHS to "conduct annually a formal survey of persons receiving health care to determine:

- Availability of services provided, type of services received and facilities where provided;
- Familiarity with availability and facilities;
- Health status;
- Satisfaction with system and quality provided; and
- Other matters as appropriate."[300]

Within the Decision Support Division, DoD Health Care Survey Operation and Information Control provides the oversight, direction, and coordination of all enterprise-wide health care survey and research operations.[300]

The MHS lists three core surveys as the tools to assess patient satisfaction:

1. Joint Outpatient Experience Survey (JOES): This recently updated survey combines and standardizes three distinct outpatient surveys into one tool to assess patient satisfaction and is the only tool to provide pediatric-specific information.

a. The standardized JOES combines long-standing methods from Army (Army Medical Department Provider Level Satisfaction Survey), Navy (Bureau of Medicine and Surgery Patient Satisfaction Survey), and Air Force (Service Delivery Assessment). Beneficiaries have the opportunity to answer the same questionnaire to assess their outpatient experience irrespective of where they received care in the direct care component.[301]
b. The JOES also includes a separate monthly survey based on the DHA TRICARE Outpatient Satisfaction Survey (TROSS), called JOES-C (where "C" stands for Consumer Assessment of Health Providers and Systems (CAHPS)). JOES-C allows MHS to compare beneficiary results to the corresponding civilian benchmark results.[300]
c. In the case of pediatric patients, parents and guardians are the designated respondents. Currently, the JOES is only sent to parents of children ages 10 years and younger, leaving the MHS unable to assess satisfaction for children ages 11-21 and their parents. The response rate for the JOES child survey is eight percent.[35]
d. State laws regarding access to care and consent to treatment differ across the country, meaning the MHS cannot ensure Health Insurance Portability and Accountability Act of 1996 (HIPAA) compliance through mail-based surveys to minor patients. This is particularly true for adolescents seeking mental health or reproductive health services, and, as such, the MHS issued a memorandum to restrict event-based surveying of patients 11-17 years old.[56]

2. Health Care Survey of DoD Beneficiaries (HCSDB): This large-scale, annual survey is designed to collect information on TRICARE administered benefits, including preventive services, ease of access to health care, health insurance coverage, satisfaction and customer services. The MHS began using this tool in 1995.[300]
3. TRICARE Inpatient Satisfaction Survey (TRISS): The MHS began collecting information on beneficiaries' inpatient satisfaction using the TRISS in 1999. Beneficiaries provide feedback on their inpatient experiences at an MTF or a civilian health care facility. DoD then compares the responses against the results of previous surveys, as well as civilian benchmark data nationwide to track progress toward stated goals.[300]

Service-specific and Defense Health Agency Policies, Practices, and Capabilities

Efforts to standardize primary and specialty care services across the MHS have reduced differences in policy and care delivery across the Services. MTFs follow the same set of access standards, regardless of Service, and all clinics and hospitals in the direct care component are required to undergo on-site surveys by nationally-recognized accreditation organizations every three years, either by the Joint Commission or the Accreditation Association for Ambulatory Health Care.[302]

Access to Primary and Specialty Pediatric Care

When a child falls ill or needs medical services, a parent needs to know *how* to access the health care system, *when* their child will be seen, *who* will care for their child, *what* to do if their child needs specialty care, *what* will be the quality of the care, and *how much* the services will cost the family. In its review of pediatric primary and specialty care, the Board viewed access through the lens of four categories of care: routine, urgent, chronic, and complex care. Various data

points were requested to evaluate access to pediatric primary and specialty care, and an analysis of the data using the aforementioned framework follows below.

Routine Care

Routine care is care designed to maintain the well-being of children, track developmental milestones, and provide clinical preventive services. This includes, prenatal care, newborn care, immunizations, well-child care, annual physicals, and adolescent care. Within the MHS, a child's primary care manager, who may be a pediatrician, family medicine physician, nurse practitioner, or physician assistant, typically provides routine care.[39]

Nurse Advice Line

The Nurse Advice Line (NAL) was implemented by the MHS in 2014. The purpose of the NAL is to provide beneficiaries with access to after-hours health care expertise from registered nurses, along with appointment services for those enrolled in direct care. The NAL has provided triage services, self-care advice, and general health information to more than 1.3 million callers since 2014. The NAL can schedule urgent care MTF appointments, transfer a patient's call directly to their MTF, or provide information about urgent care or emergency facilities to callers enrolled in direct care. Additionally, the NAL seeks to ensure that patients are seeking the appropriate level of care by reducing unnecessary urgent care and emergency room visits. In FY 2016, 35 percent of callers to the NAL intended to seek in-network emergency room care; after calling NAL, only 11 percent of callers actually sought that care.

In FY 2015, there were 222,682 calls to the NAL for which the beneficiary was birth to 20 years of age at the time of the call; this accounted for 49.2 percent of total NAL calls. Twenty five percent of all NAL calls were made for children between birth and two years of age. The NAL will expand in FY 2017 and 2018 to include areas outside the contiguous United States to ensure that this support for pediatric patients and their families will be available worldwide. Additionally, Section 704 of the FY 2017 National Defense Authorization Act mandates that the NAL continue to be used to direct beneficiaries to the most appropriate level of care, including urgent care.[110]

Routine appointments

The MHS standard for referrals to routine care is that beneficiaries must be offered an appointment within seven calendar days; for acute care, beneficiaries must be offered an appointment within 24 hours.[287] Table 16 illustrates the average number of days to an appointment by age group, in the direct care component.

Table 16. Average Number of Days to Appointment by Age Group, FY 2014-2016[40]

Age Group	Future (Non-Acute) Appointment			Acute Appointment		
	FY14	FY15	FY16	FY14	FY15	FY16
<1	0.05	0.00	0.00	0.00	0.00	0.00
1-4	0.85	0.87	1.03	0.44	0.44	0.36
5-8	1.30	1.37	1.60	0.59	0.58	0.56
9-12	3.08	3.23	3.73	0.80	0.75	0.70
13-17	8.32	8.56	9.06	3.08	3.18	3.34
18-20	7.76	7.66	7.81	1.37	1.23	1.39
Total	**4.19**	**4.40**	**4.91**	**1.05**	**1.09**	**1.05**

From DHA Clinical Support Division, 2017, using Military Health System Data Repository Appointment Master File.

In FY 2014 to 2016, the average number of days to a future (non-acute) appointment was between 4 and 5 days; newborns and children ages 1-4, 5-8, and 9-12 were, on average, offered an appointment within 4 days, while beneficiaries ages 13-17 and 18-20 were offered an appointment in 7 to 9 days.[40]

In FY 2014 to 2016, the average number of days to an acute appointment was 1 day; newborns and children ages 1-4, 5-8, and 9-12 were, on average, offered an appointment within 1 day, while beneficiaries ages 13-17 were offered an appointment within 4 days and beneficiaries ages 18-20 were offered an appointment within 2 days.[40]

As of March 2017, 23 percent of all MTFs did not meet the guidelines for an appointment for routine care within seven days, and 34 percent of MTFs did not meet the guidelines for an urgent appointment within one day. These numbers demonstrate that, even though on average MTFs are meeting access standards, there are still facilities that are falling behind and represent an opportunity for improvement.[41]

Pediatric primary care providers, specialists, and subspecialists

In FY 2014 to 2016, the highest numbers of providers who provided care to children or specialized in pediatrics were family practice physicians, pediatricians, emergency medicine physicians, family nurse practitioners, physician assistants, internal medicine physicians, physical therapists, optometrists, and obstetricians/gynecologists. The highest numbers of behavioral health and social services providers who provided care to children or specialized in pediatrics were social workers, psychologists, behavioral analysts, and marriage and family therapists.[40]

Primary Care Health Professional Shortage Areas

Between FY 2014 and 2016, approximately seven percent of the pediatric population in the MHS lived in a zip code designated as a primary care health professional shortage area,[303] which is defined as a shortage of primary care providers by the U.S. Health Resources and Services Administration. The health professional shortage area designation applies to the entire population of the zip code, not just MHS beneficiaries. This designation considers the population to provider ratio, the percent of the population below the federal poverty level, the infant health index (which considers the infant mortality rate and the rate of low birth weight), and travel time to the nearest source of care outside of the health professional shortage area designation.[304]

In the area of pediatric subspecialties, TRICARE faces similar, nation-wide challenges with provider shortages, especially in rural areas. Specifically, this can be an issue in the areas of developmental pediatrics and child psychiatry, and some of these providers can have long wait times for patients to be seen for an appointment. In addition, pediatric subspecialists are often located in larger metropolitan areas and, since military bases are often located in more remote areas, this can contribute to patient access challenges. To mitigate these challenges for patients, TRICARE requires their Managed Care Support Contractors to ensure access to specialty care, and they actively recruit providers to join the network. In addition, TRICARE will pay the travel expenses for patients enrolled in TRICARE Prime if they need specialty care that is located more than 100 miles from their residence.[53]

Outpatient visits by age group and sex

In FY 2014 to 2016, the majority of pediatric, outpatient visits were for a routine visit or a medical examination or evaluation. Otherwise, the highest numbers of visits were for disorders usually diagnosed in infancy, childhood, or adolescence (of which autism is the primary diagnosis); other upper respiratory infections; developmental disorders; attention-deficit, conduct, and disruptive behavior disorders; and immunizations and screening for infectious disease.[40] This varied widely by age and sex, however. Mental health conditions start appearing as top conditions for outpatient visits early in childhood in males and females ages 1-4 (see Appendix E.3 for more information about the prevalence of mental health conditions in pediatric beneficiaries). The top three clinical classification system categories for outpatient visits by age and sex, excluding administrative and social admissions, are illustrated in Table 17.

Table 17. Top Outpatient Visit Categories by Age Group and Sex[40]

Age	Female	Male
<1	Immunizations and screening for infectious disease	Other perinatal conditions
	Other upper respiratory infections	Immunizations and screening for infectious disease
	Other perinatal conditions	Other upper respiratory infections
1-4	Other upper respiratory infections	Developmental disorders
	Developmental disorders	Other upper respiratory infections
	Otitis media and related conditions	Disorders usually diagnosed in infancy, childhood, or adolescence
5-8	Other upper respiratory infections	Disorders usually diagnosed in infancy, childhood, or adolescence
	Disorders usually diagnosed in infancy, childhood, or adolescence	Developmental disorders
	Developmental disorders	Attention-deficit, conduct, and disruptive behavior disorders
9-12	Other upper respiratory infections	Disorders usually diagnosed in infancy, childhood, or adolescence
	Attention-deficit, conduct, and disruptive behavior disorders	Attention-deficit, conduct, and disruptive behavior disorders
	Disorders usually diagnosed in infancy, childhood, or adolescence	Other upper respiratory disease
13-17	Mood disorders	Disorders usually diagnosed in infancy, childhood, or adolescence
	Other non-traumatic joint disorders	Attention-deficit, conduct, and disruptive behavior disorders
	Adjustment disorders	Mood disorders
18-20	Mood disorders	Mood disorders
	Other upper respiratory infections	Other non-traumatic joint disorders
	Contraceptive and procreative management	Other upper respiratory infections

From DHA Clinical Support Division, 2017, using Military Health System Data Repository TRICARE Encounter Data Non-Institutional and Comprehensive Ambulatory/Professional Encounter Record.

Rates of preventable admissions

In FY 2014 to 2016, approximately six percent of pediatric inpatient admissions in the MHS were preventable.[40] The Prevention Quality Indicators software from the Agency for Healthcare Research and Quality indicates conditions "for which good outpatient care can potentially prevent the need for hospitalization, or for which early intervention can prevent complications of more severe disease."[305] Table 18 illustrates the rate of preventable admissions by age and sex. The rates were highest for children ages 1-4 and 5-8.[40]

Table 18. Percent of Preventable Admissions by Age/Sex[40]

Age/Sex	2014	2015	2016
<1	**5.0%**	**4.8%**	**5.2%**
F	5.4%	5.2%	5.7%
M	4.7%	4.4%	4.7%
1-4	**9.5%**	**10.3%**	**9.0%**
F	10.5%	11.1%	9.8%
M	8.8%	9.7%	8.3%
5-8	**12.7%**	**13.1%**	**11.9%**
F	13.4%	14.6%	12.4%
M	12.2%	12.0%	11.5%
9-12	**8.2%**	**7.7%**	**7.9%**
F	8.5%	7.7%	8.0%
M	8.0%	7.7%	7.8%
13-17	**3.1%**	**3.0%**	**3.7%**
F	2.8%	2.9%	3.4%
M	3.4%	3.2%	4.1%
18-20	**7.0%**	**5.7%**	**6.3%**
F	6.8%	4.4%	5.6%
M	7.6%	8.4%	7.8%
Grand Total	**5.7%**	**5.5%**	**5.7%**

From DHA Clinical Support Division, 2017, using Military Health System Data Repository TRICARE Encounter Data – Institutional and Standard Inpatient Data Record.

Asthma is an example of one condition with preventable admissions. In FY 2015, only 47.3 percent of children with asthma enrolled to MTFs received a home care management plan while hospitalized for asthma-related admissions, which is well below the national average of 88 percent. The national average of children who received a home care management plan while hospitalized for asthma increased from 86 percent to 88 percent from FY 2012 to FY 2015, and the MTF average dropped from a high of 70.9 percent in FY 2012 to 47.3 percent in FY 2015.[16]

Influenza immunization rates

Approximately 24 percent of all pediatric beneficiaries received the flu immunization in FY 2016. It is important to note that counts are understated, as self-pay patients or cases where the immunization was free would not be included in this total (see Appendix C.2 for more information). The influenza vaccine is recommended annually for patients age 6 months through 18 years.[160]

Table 19. Percent of Pediatric Population with Flu Immunization[40]

FY	# Beneficiaries with Flu Immunization	Pediatric Population	% Immunized
2014	521,091	2,307,175	22.6%
2015	498,556	2,263,488	22.0%
2016	548,917	2,246,935	24.4%

From DHA Clinical Support Division, 2017, using Military Health System Data Repository Standard Inpatient Data Record, Comprehensive Ambulatory/Professional Encounter Record, TRICARE Encounter Data Institutional, TRICARE Encounter Data Non-Institutional, and CDR Immunization File.

Urgent Care

Urgent care provides immediate medical care for the treatment of acute and chronic illness and injury. Urgent care does not replace primary care; it is a convenient option for families when a child falls ill or is injured outside of office hours, and it is a preferable alternative to utilizing a hospital emergency room.[38]

Urgent care appointments

In FY 2016, there were 343,218 urgent care visits in the pediatric population, a rate of 15.3 visits per 100 children. This is an increase from the 296,584 visits in FY 2014, a rate of 12.9 visits per 100 children. Children ages 1-4 of active duty Service members were most likely to have an urgent care visit, at a rate of 24.4 visits per 100 children or 0.24 visits per child.[110]

Emergency room access

In FY 2016, there were 893,498 emergency room (ER) visits in the pediatric population, a rate of 39.8 visits per 100 children. This is a decrease from the 946,130 visits in FY 2014, a rate of 41 visits per 100 children. Newborns of active duty Service members were most likely to visit an ER, at a rate of 81.7 visits per 100 children in FY 2016 or 0.8 visits per child in FY 2016.[110]

Chronic and Complex Care

Chronic care addresses pre-existing or long-term illnesses, as opposed to an urgent or acute need due to illnesses of brief duration. Children with chronic conditions typically regularly interact with the health care system, need their care coordinated through several specialists, and require ongoing adjustments in care.

Complex care provides care to children who have multiple chronic and severe conditions, a congenital or acquired multisystem disease, major functional limitations, need for medical technology for daily activities, high health care utilization, or substantial family-identified service needs. Children requiring complex care need extra time, expertise, and resources to achieve optimal health outcomes. This includes substantial family-identified needs, which have a significant impact on the family, specifically time devoted to care, frequent provider visits, care coordination, and financial burden.[36-38]

The nature, intensity, and consistency of a child's chronic or complex care needs may change over the child's lifetime depending on a variety of medical, psychosocial, and community factors. In FY 2015, within the MHS, 77.1 percent of children were categorized as non-chronic, 17.3 percent as non-complex chronic, and 5.6 percent as complex chronic, according to the Pediatric Medical Complexity Algorithm.[16]

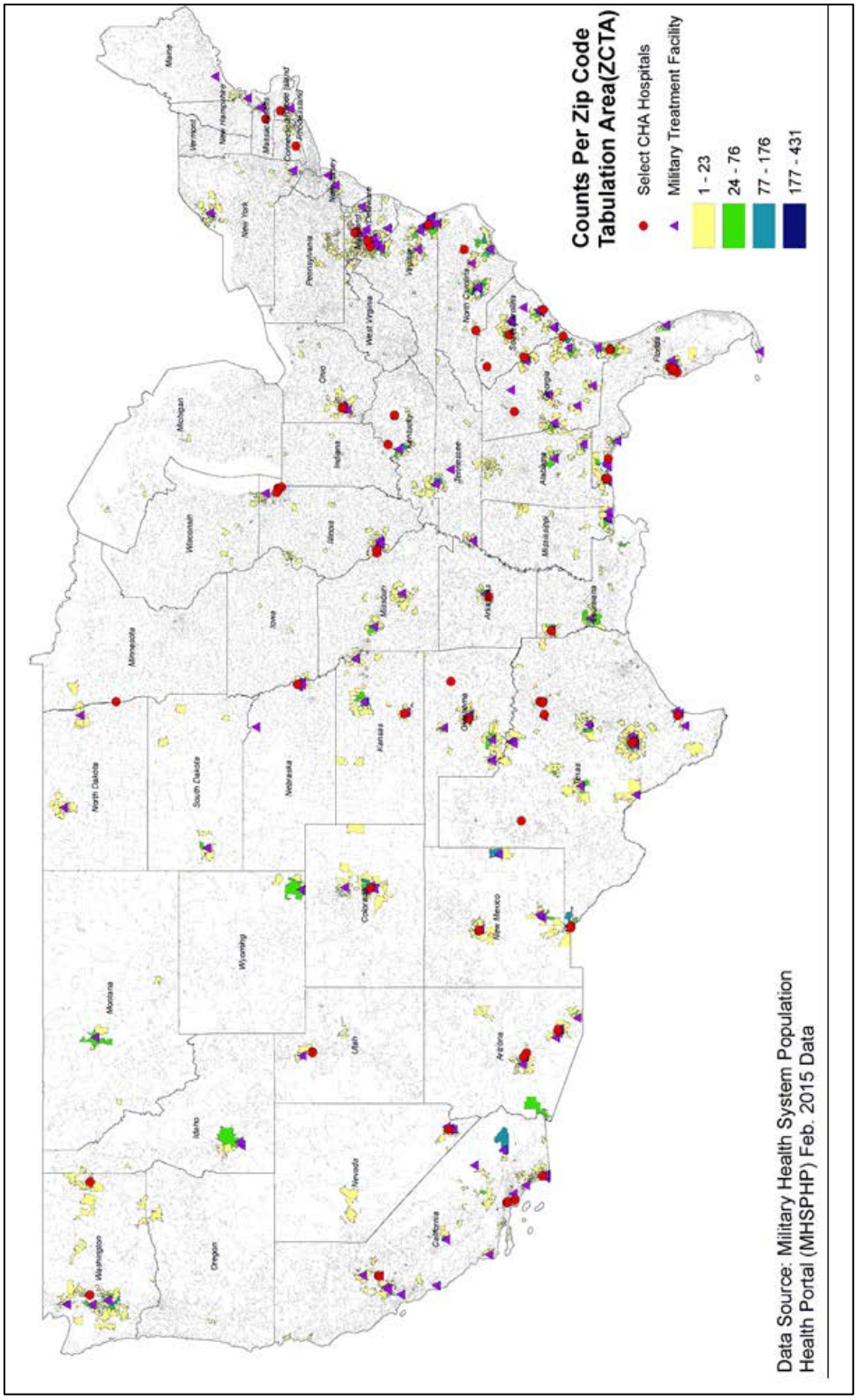
Pediatric population with Resource Utilization Bands 4 and 5

Researchers at Johns Hopkins University School of Hygiene and Public Health developed the Adjusted Clinical Group® (ACG) system to measure health status and to determine the general illness or resource burden of an individual within a health system. Using International Classification of Disease (ICD) diagnosis codes, the ACG system assigns individuals within a population to simplified morbidity categories called Resource Utilization Bands (RUBs), which range from 0 (Non-users) to 5 (Very High), and groups individuals together who are expected to use the same level of resources.[306] This methodology allows health care providers to identify high-risk patients and more accurately forecast health care utilization.[307] Between FY 2014 and 2016, just over four percent of TRICARE Prime enrollees under 20 years of age enrolled to the Army, Navy, Air Force, and National Capital Region Medical Directorate (4.4 percent in FY 2016) were in RUB 4 and less than one percent (0.6 percent in FY 2016) were in RUB 5.[308,I]

Figure 16 illustrates the geographical distribution of TRICARE Prime enrollees under age 18 with RUBs 4 and 5.

[I] A RUB value is generated for patients who are enrolled 11 of 12 months.

Figure 16. Enrollees Under Age 18 with Resource Utilization Bands 4 and 5, as of Feb 2015[29]



From DHA Clinical Support Division, 2017.

Specialty care appointments

The MHS standard for referrals to specialty care services is that beneficiaries must be offered an appointment within 28 calendar days. In FY 2014 to 2016 in the direct care component, the average number of days to specialty care for pediatric beneficiaries was between one and two days, with the average number of days increasing as patients aged. For instance, newborns and children ages 1-4 were, on average, offered an appointment within one day, while beneficiaries ages 18-20 were offered an appointment within 5 days.[40]

Specialty and subspecialty referrals

In FY 2016, the highest numbers of referrals from the direct care component to the purchased care component were for speech-language pathologists, physician assistants, family practice physicians, and pediatricians, followed by physical therapists, nurse practitioners, otolaryngologists, occupational therapists, emergency medicine physicians, ophthalmologists, allergy and immunology physicians, orthopedic surgeons, and dermatologists. In FY 2016, there were approximately 321,000 referrals; the specialists above accounted for 159,000 referrals, with more than 10,000 referrals each.[309]

The highest number of referrals within the direct care component that resulted in an appointment were to orthopedic clinics, otolaryngology clinics, audiology clinics, dermatology clinics, and child guidance clinics, followed by allergy clinics, physical therapy clinics, outpatient nutrition clinics, and ophthalmology clinics.[309,J]

Pediatric Extended Care Health Option beneficiaries

In FY 2016, there were 16,950 members of the pediatric population enrolled in ECHO; 14 percent used the ECHO benefit that year. This is an increase in number of beneficiaries from FY 2014, when 13,472 members of the pediatric population enrolled in ECHO; that year 59 percent used the ECHO benefit.[303]

In FY 2014, 88 percent of ECHO users had autism spectrum disorder, compared to 36 percent in FY 2016 after the TRICARE Comprehensive Autism Care Demonstration had begun. Other common diagnoses include cerebral palsy or other brain damage; spina bifida or other congenital anomalies; pulmonary, respiratory, or tracheostomy conditions; and Down Syndrome or intellectual disability.[40]

Inpatient admissions by age group and sex

In FY 2014 to 2016, the top three Medicare Severity-Diagnosis Related Group for inpatient admissions by age and sex are illustrated in Table 20. The first time a mental health condition appears as a top MS-DRG for inpatient admissions is for males ages 18-20 (see Appendix E.3 for more information about the prevalence of mental health conditions in pediatric beneficiaries).

[J] This excludes health care services support codes and managed care administration codes.

Table 20. Top Medicare Severity-Diagnosis Related Groups by Age Group and Sex[40]

Age	Female	Male
<1	Normal Newborn	Normal Newborn
	Neonate, Birthweight >2499g, W/O Significant O.R. Proc, W Other Problem	Neonate, Birthweight >2499g, W/O Significant O.R. Proc, W Other Problem
	Neonate, Birthweight >2499g, W/O Significant O.R. Proc, W Major Problem	Neonate, Birthweight >2499g, W/O Significant O.R. Proc, W Major Problem
1-4	Bronchitis & Asthma Age 0-17	Bronchitis & Asthma Age 0-17
	Simple Pneumonia & Pleurisy Age 0-17	Simple Pneumonia & Pleurisy Age 0-17
	Miscellaneous Disorders Of Nutrition, Metabolism, Fluids/Electrolytes 0-17	Otitis Media & Upper Respiratory Infection Age 0-17
5-8	Simple Pneumonia & Pleurisy Age 0-17	Bronchitis & Asthma Age 0-17
	Bronchitis & Asthma Age 0-17	Simple Pneumonia & Pleurisy Age 0-17
	Esophagitis, Gastrointestinal & Miscellaneous Digest Disorders Age 0-17	Esophagitis, Gastrointestinal & Miscellaneous Digest Disorders Age 0-17
9-12	Esophagitis, Gastrointestinal & Miscellaneous Digest Disorders Age 0-17	Seizures & Headaches Age 0-17
	Seizures & Headaches Age 0-17	Esophagitis, Gastrointestinal & Miscellaneous Digest Disorders Age 0-17
	Bronchitis & Asthma Age 0-17	Bronchitis & Asthma Age 0-17
13-17	Poisoning & Toxic Effects Of Drugs Age 0-17	Appendectomy W/O Complicated Principal Diagnosis W/O Cc/Mcc
	Vaginal Delivery W/O Complicating Diagnoses	Seizures & Headaches Age 0-17
	Seizures & Headaches Age 0-17	Esophagitis, Gastrointestinal & Miscellaneous Digest Disorders Age 0-17
18-20	Vaginal Delivery W/O Complicating Diagnoses	Psychoses
	Vaginal Delivery W Complicating Diagnoses	Appendectomy W/O Complicated Principal Diagnosis W/O Cc/Mcc
	Cesarean Section W/O Cc/Mcc	Neuroses Except Depressive

From DHA Clinical Support Division, 2017, using Military Health System Data Repository TRICARE Encounter Data Institutional and Standard Inpatient Data Record.
Cc: complication or co-morbidity
Mcc: Major complication or co-morbidity

Patient Satisfaction Surveys

As previously stated, the MHS uses JOES to assess patient satisfaction in pediatric patients ages 10 years and younger, with a response rate of 8 percent.[35]

Ease of making appointment
In the first and second quarters of FY 2017, 68 percent and 72 percent, respectively, of parents/guardians stated the ease of making an appointment was very good or excellent. There was variation between the Services, with a higher percentage of parents at Army facilities stating the ease of making an appointment was very good or excellent.[34]

Time until appointment
In the first and second quarters of FY 2017, 66 percent and 71 percent, respectively, of parents/guardians stated the amount of time between when the appointment was made and the

actual visit was very good or excellent. There was variation between the Services, with a higher percentage of parents at Army facilities stating the amount of time between when the appointment was made and the actual visit was very good or excellent.[34]

Satisfied with healthcare

In the first and second quarters of FY 2017, 93 percent and 92 percent, respectively, of parents/guardians stated they somewhat agreed or strongly agreed with the statement, "Overall, I am satisfied with the healthcare my child received on this visit."[34]

Recommend facility

In the first and second quarters of FY 2017, 89 percent of parents/guardians stated they somewhat agreed or strongly agreed with the statement, "I would recommend this facility to a TRICARE-eligible family member or friend."[34] There was variation between the Services, with a higher percentage of parents in the National Capital Region somewhat agreeing or strongly agreeing.[34]

Able to see provider when needed

In the first and second quarters of FY 2017, 82 percent and 83 percent, respectively, of parents/guardians stated they somewhat agreed or strongly agreed with the statement, "In general, I am able to see my child's provider when needed."[34]

PROMISING PRACTICES

Across the health care field, much of the research and initiatives to improve ready access to pediatric primary and specialty care have centered on expanding insurance coverage, improving outreach and enrollment efforts, and implementing patient-centered medical homes (which is discussed in Appendix F).[310] In the civilian public sector, the focus has been on eligibility for federal or state insurance programs, such as Medicaid and the Children's Health Insurance Program. For example, the Patient Protection and Affordable Care Act passed in 2010 expanded Medicaid eligibility levels, called for additional funding for the Children's Health Insurance Program, and streamlined enrollment processes.[311] With regard to primary care and specialty care in the MHS and the TRICARE health benefit, the relatively low costs of the benefit to the patient and the universally-covered military population mean that the barriers in accessing care in the civilian sector do not apply in the same way to care in the MHS, though raising a family can be financially difficult for parents in the military's junior enlisted ranks.[312] Three practices that have the potential to improve patient and parent engagement and access to needed pediatric services are EHRs and PHRs, telemedicine linking pediatric patients and providers to specialty care, and survey tools to measure satisfaction.

Electronic and Personal Health Records

When examining ready access to primary and specialty care, one constant among top performing children's hospital systems, including Boston Children's Hospital, the Children's Hospital of Philadelphia, and the Cincinnati Children's Hospital Medical Center, is robust EHR systems utilized to track health information and engage patients and families.[313-315] These facilities

employ a tethered PHR and patient portal to increase patient access to health information and improve communication with providers.

A PHR is "an electronic application through which individuals can access, manage and share their health information, and that of others for whom they are authorized, in a private, secure, and confidential environment."[316] For pediatric care, PHRs enable patients and families to take a more active role in their child's care, and health care organizations can take special considerations to ensure that the PHR can adequately serve the needs of children and adolescents.[317] PHRs designed for children ideally contain the following information:

- demographic data;
- insurance information;
- information on family members and other support providers;
- summary and links to key documents (i.e., individualized education plan);
- health care professionals and encounter lists (to include dental and oral care);
- problem list, including active conditions and illnesses, chronic health problems and mental health issues, and emergency care procedures;
- allergy, adverse-reaction, and other alert data;
- list of medications and immunizations and date of last reconciliation;
- anthropometric data (i.e., height, weight, body mass index, and head circumference and developmental milestones);
- laboratory, imaging, and screening results and links to resources that can help explain the results and the implications upon care giving;
- family health history;
- birth history;
- healthy behaviors;
- adverse childhood experiences screening; and,
- information on durable medical equipment and supplies.[317]

EHR and PHR systems work to reduce paperwork, coordinate care, and facilitate parental participation in pediatric care.[318] The ideal pediatric PHR should be designed to help patients and families interact with and securely share health information with multiple providers, school-based health centers, public health agencies, or other health organizations. For parents of children with special health needs, EHRs can help organize a child's complex medical records in a way that can be easily tracked and shared with other providers, specialists, and therapists.[318]

The PolicyLab of Children's Hospital of Philadelphia is working to expand the impact of the traditional EHR and PHR and has developed and piloted an EHR-based patient portal to facilitate shared decision-making in cases of pediatric asthma. The team at the PolicyLab extended the standard patient portal features of messaging, appointing, and scheduling to more closely mirror the principles of shared decision-making. The updated features are designed to improve patient engagement, link to the child's EHR, establish a platform for parents to access educational content, track asthma symptoms over time, identify concerns and goals, and share this information with the child's doctor or asthma care team.[319]

DoD has integrated several PHR initiatives into care delivery systems for members of the Armed Forces and their families, including secure online messaging (RelayHealth), a patient portal to

communicate with providers (TRICARE Online), and the DoD Blue Button to view and download personal health information, such as laboratory results and radiology.[320] MHS GENESIS, the new EHR for the MHS, is a commercial, off-the-shelf product that will replace several legacy systems and include a patient portal. The functionality from the patient perspective will be similar to TRICARE Online; however, the system-wide goals are interoperability of health information across care settings and geographic regions of care and integration of health records for 9.4 million DoD beneficiaries and approximately 205,000 MHS personnel worldwide.[321] Vice Admiral Raquel Bono, Director of the DHA, echoed the importance of interoperability and noted "the demand for interoperability extends beyond just DoD-VA information sharing. Integration of health information with the private sector is essential – more than half of the care provided to the DoD population is delivered through TRICARE network partners."[30] The MHS GENESIS rollout will deploy using a "wave" model, which began at sites in the Pacific Northwest, specifically Fairchild Air Force Base, in early 2017.[20]

The implementation of an enterprise-wide EHR and tethered PHR provides the MHS opportunities to improve beneficiary satisfaction by providing a service many patients and families have come to expect in civilian care systems, as well as enhance communication and coordination of care across the Services. DHA leadership sees the fielding of a modernized EHR as a "critical support component of [the] readiness mission."[30] Additionally, given that many military children go on to become Service members themselves, there are opportunities for longitudinal data collection and analysis by tracking pediatric patients through their lifetime.

Telemedicine to Improve Access to Pediatric Subspecialty Care

A factor affecting ready access to pediatric care both in the MHS and the civilian health care sector more broadly is the geographic maldistribution and relative shortage of pediatric primary, specialty, and, most notably, subspecialty care providers.[322] These shortages cause barriers to care and are most pronounced for families in rural communities, though pediatric physician shortages affect families in suburban and urban communities as well.[323] Primary care pediatricians who practice in rural communities report greater challenges in accessing subspecialty care when compared to other providers. [324] As previously mentioned, the Board received several public comments over the course of this tasking regarding the challenges families face when trying to access pediatric specialty care.

Telemedicine, or the "use of medical information exchanged from one site to another via electronic communications," is one promising practice to address shortcomings or barriers to accessing pediatric primary and certain specialty care, particularly when integrated in an established practice or as part of a patient-centered medical home. [323,324] In their 2016 review of the literature on telemedicine, Marcin, Shaikh, and Steinhorn examined the potential for telemedicine to improve access to pediatric subspecialty care consultations in ambulatory care, acute and inpatient care, and perinatal and newborn care settings. The research team found that telemedicine allowed pediatric subspecialty care to be provided in settings that were more convenient for families, such as local primary care offices and community hospitals, and as a result, these pediatric patients were more likely to receive care that adhered to evidence-based guidelines. In addition, they found that in many cases telemedicine can significantly improve provider, patient, and family satisfaction; increase measures of quality of care and patient safety;

and reduce overall costs of care.[324] The MHS was an early adopter of telemedicine technologies, particularly for rural populations and deployed populations.[325]

Another important use of telemedicine technologies is physician-to-physician consultation. In medically underserved communities, patients with complex physical and/or mental health needs may not have access to physicians with the skills and niche expertise needed to improve their care and lower costs. In these cases, videoconferencing sessions can be used to connect primary care physicians who generally work in small or solo practices to specialists. One successful implementation of this approach is Project ECHO (Extension for Community Health Outcomes) based in New Mexico. Since 2003, the Project ECHO team has worked to "move knowledge, not people" and has trained groups of primary care physicians in best practices in hepatitis C, diabetes, and epilepsy care. The videoconferencing sessions combine didactic instruction with case-based learning. The primary care clinicians and/or care teams present cases, learn from experts and each other, and gain the confidence and competencies needed to manage particularly challenging conditions. The Project ECHO team has created more than 70 ECHO-style training hubs in universities, health systems, and governments in 13 countries.[326]

Several telemedicine applications can be used to address access challenges and physician shortages. Live interactive videoconferencing allows physicians and patients to interact directly and is typically used for ambulatory, subspecialty consultations. Store-and-forward technologies transmit medical information and images for a specialist to review and are best suited for tele-echocardiography, tele-dermatology, tele-retinal screening, and similar specialty services. Remote patient monitoring, through tracking of health care data, such as vital signs and laboratory results, is most beneficial for chronic pediatric conditions, including asthma, diabetes, and obesity.[324] Opportunities to leverage telemedicine technologies to deliver safe, effective, and quality mental health care exist as well, and DoD has implemented a two-year telemental health pilot through the Johns Hopkins U.S. Family Health Plan at the Kennedy Krieger Institute (see Appendix E for details).[327]

Telemental health pilot programs are also being used to address the nationwide shortage of pediatric behavioral health providers, specifically child psychiatrists. More than two dozen states have implemented virtual support systems for pediatricians, which allows these providers to call a hotline and receive guidance and advice regarding pediatric mental and behavioral health issues that they increasingly encounter in their daily practices. In Pennsylvania, this program is called TIPS and is covered under Medicaid. The TIPS program connects doctors with a child psychiatrist to receive the support they need to make good clinical decisions, be more comfortable prescribing appropriate psychotropic medications, and connect patients with an immediate evaluation with a pediatric psychiatrist.[328] While research has shown comparable outcomes between telemedicine and in-person care, there are several barriers impeding wider adoption of telemedicine to increase access to pediatric subspecialists.[324] Barriers include current state and federal policies around licensure and payment, initial financial investment in telemedicine infrastructure, and ongoing maintenance costs.[323]

Two examples of successful implementation of pediatric telehealth in the military are the Pacific Asynchronous Telehealth (PATH) system and the Health Experts onLine for Providers (HELP). These programs consist of provider-to-provider teleconsultation platforms, facilitate access to

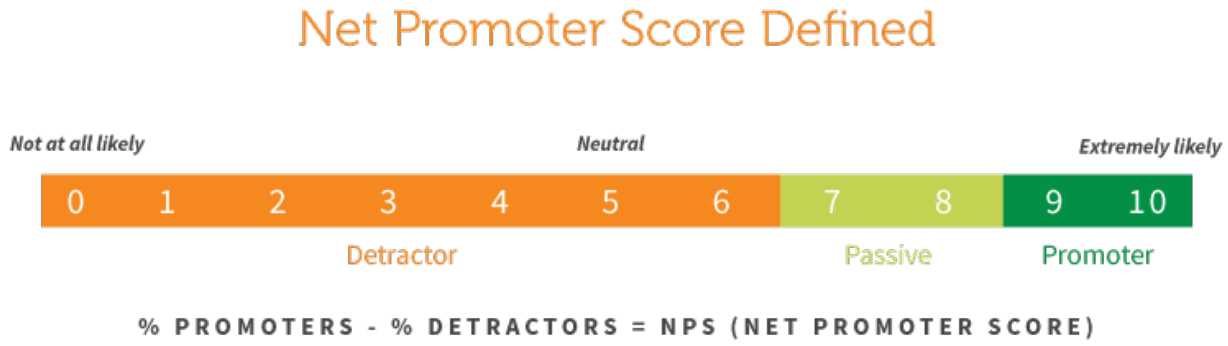
subspecialists, and reduce both patient and provider travel. Two military pediatricians will be discussing these telehealth efforts and sharing lessons learned with other pediatric experts at the American Academy of Pediatrics National Conference in September 2017.[68]

Tools to Measure Patient Satisfaction

Many tools exist to assist health care systems in measuring patient experience and satisfaction. While there is some debate regarding the nature of the relationship between patient satisfaction ratings and health care outcomes, recent studies and meta-analyses have shown that high patient satisfaction is correlated with improved outcomes.[54] A 2017 analysis of hospital quality measures by health economists at the Massachusetts Institute of Technology found that hospitals that score better on patient satisfaction also have lower mortality rates and reduced readmission rates.[329]

One specific tool increasingly used in the health care field is the Net Promoter Score, an index commonly used among businesses to measure customer loyalty and the willingness of customers to recommend a company's products or services to others. Using a scale ranging from zero to ten, the Net Promoter Score assesses a customer's likelihood of recommending a particular company or brand to a friend or colleague. Responses are classified into three categories: detractors, passives, and promoters (Figure 17). The net promoter score is determined by subtracting the percentage of detractors (those who rated a six or lower) from the percentage of promoters (those who rated a nine or ten) to generate a score between -100 and 100.[55]

Figure 17. Net Promoter Score Scale[330]



From Satmetrix, 2016.

The use of the Net Promoter Score in the health care sector is growing in prominence, with the largest health insurance companies (Anthem, BlueCross/BlueShield, CIGNA, Humana, Kaiser, Medicare, and UnitedHealthcare) receiving an annual score and ranking.[330] Characteristics of the health care sector make the application of this metric less straightforward than for other industries, and additional research is needed to confirm its validity within the health care industry.[331]

Tools to assess patient satisfaction can be implemented as one piece of a comprehensive strategy to transform the culture of a health care system toward patient centricity. As part of its 2008 Exceptional Patient Experience initiative, the University of Utah Health Care System utilized the

Press Ganey Medical Practice survey to assess patient experience.[54] Press Ganey survey tools provide health care organizations access to a robust and well-established database of patient satisfaction scores for physicians, which enable comparisons across peer groups.[332] The University of Utah's initiative demonstrated that timely patient feedback, when shared publicly, can ensure that a broad range of patient voices are heard when providing direct feedback to physicians and providers to help improve patient experience.[54]

APPENDIX E. BEHAVIORAL HEALTH CARE

E.1 BACKGROUND

Appendix E of this report will address behavioral health care; specifically, it will focus on the following objectives of the tasking:

- Assessing certification requirements for residential treatment centers of the Department to expand the access of children of members of the Armed Forces to services at such centers; and
- Evaluating the quality of and access to behavioral health care under the TRICARE program for children, including intensive outpatient and partial hospitalization services.[43]

IMPORTANCE OF BEHAVIORAL HEALTH CARE

The terms mental, emotional, or behavioral disorders can and have been used to refer to diagnosed mental or substance abuse disorders and include neurodevelopmental disorders.[333,334] According to the World Health Organization, mental health is, "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community."[335,336] Mental disorders are defined as all diagnosable mental disorders or "health conditions that are characterized by alterations in thinking, mood, or behavior (or some combination thereof) associated with distress or impaired functioning."[337]

Specifically, mental disorders in children are described as "serious deviations from expected cognitive, social, and emotional development,"[333] which "are an important public health issue in the United States because of their prevalence, early onset, and impact on the child, family, and community."[333]

One of the Substance Abuse and Mental Health Services Administration's (SAMHSA's) core missions is "improving access to behavioral health services for children, youth, and their families"[338] as approximately half of adult mental illness can be identified before the age of 14 and 75 percent before the age of 24.[338,339] This includes conditions such as autism spectrum disorder (ASD); attention-deficit/hyperactivity disorder (ADHD); and mood, anxiety, and psychotic disorders.[339] Additional statistics regarding mental illness in children in the U.S. include the following:

- More than 40 percent of children ages 13-17 experience a behavioral health problem by the seventh grade.[338]
- 13 to 20 percent of children living in the United States experience a mental disorder each year; this percentage increased between 1994 and 2011.[333]
- 11 percent of children ages 12-17 experienced a major depressive episode in 2014, while only 41 percent of that 11 percent received treatment.[338]
- 46 percent of 13-18 year olds have experienced a mental disorder, and 21 percent have experienced a severe mental disorder.[340,341]
- 9 percent of 13-18 year olds have experienced ADHD.[341,342]

- 1 in every 68 eight-year old children was identified as having ASD in 2012.[343,344] Importantly, autism accounted for 28 percent of active duty dependent and 11 percent of non active duty dependent non-pharmacy mental health costs in fiscal year (FY) 2015.[345]
- More than 30 percent of high school seniors reported drinking some alcohol within the past month, and more than 16 percent reported binge drinking with the past two weeks. Additionally, by the 12th grade, about 50 percent of adolescents have used an illicit drug at least once, most likely marijuana. Finally, tobacco use by adolescents has declined in the last 40 years, but almost 6 percent of high school students were a daily smoker, and almost 10 percent had smoked within the last 30 days.[346]

It is important to note that the rise in prevalence of certain behavioral health disorders such as ADHD and ASD has recently been linked to a surge in awareness, more education, changing diagnostic criteria, and more regular testing, as opposed to a pure increase in overall prevalence. From 1989 to 2000, diagnoses of ADHD increased by 381 percent, with ASD diagnoses increasing by 358 percent over the same period. A study in 2005 by Mandell et al speculated that a significant jump in ADHD awareness brought on by more frequent news coverage might be one factor in this increase in diagnosis. They concluded that popular awareness might fuel parental concern, which in turn can influence the behavior of physicians. Other factors could include the more widespread promotion of stimulants and antidepressants for ADHD treatment by pharmaceutical manufacturers, as well as the requirement of schools to implement systems to accommodate ADHD as a learning disability through the inclusion of ADHD in the Individuals with Disabilities Education Act.[347] Similarly, increased awareness and loosening of the diagnosis criteria for ASD, as well as more access to services, may have contributed to the uptick in autism diagnoses.[348]

There are also biological factors that may help explain the increased prevalence of behavioral health disorders. Having an older parent, particularly the father, may boost the risk for ASD, and there has been a trend over time toward parents having children later in life. In addition, children born prematurely are at an increased risk for ASD, and premature infants continue to survive at higher rates, leading to the possibility that more children are simply surviving past infancy and later being diagnosed with ASD than ever before. All of these factors may contribute to a misleading rise in diagnosis that is based on increased awareness and testing and not true prevalence.[348]

Importance of Behavioral Health Care for Military Families

Access to behavioral health care is particularly important for children of members of the Armed Forces. There are unique stressors for children whose parents serve in the military, such as parental deployments (including repeated parental deployments), multiple relocations, and the possibility of parental injury or death.[7] In fact, children whose parent or parents have deployed can experience:[349]

- increased rates of anxiety and depression;[350-352]
- decreased academic performance;[350-352]
- increases in drug and alcohol use;[350]

- higher levels of suicidal ideation for children whose parents have been deployed multiple times;[350] and
- other behavioral changes, including anger, worrying, hiding emotions, withdrawing, disrespecting parents and authority figures, and feeling a sense of loss.[7,350-352]

This is echoed by increased outpatient mental health visits and inpatient psychiatric care days for children of active duty parents.[7,353,354] In fact, one-third of children with a deployed parent are considered high risk for psychosocial issues.[355] Additionally, deployment has been associated with an increase in the use of psychotropic medications, including anti-depressants and anti-anxiety medication, in children of Army active duty members.[356,357] These effects are especially acute when a parent or other family member is seriously wounded requiring long hospitalization and rehab or in those times of death of a parent or family member.[7] In those situations, it may be beneficial for pediatric psychiatrists to be part of the total care team.

In addition, "frequent parental absences, the threat of potential harm to their parents, as well as the aftermath of wartime deployment including parental physical injury, psychological injury, and, at times, death" have been associated with higher rates of behavioral health conditions in children of members of the Armed Forces. [358] Length of deployment was also associated with mental health problems.[359,360]

Conversely, some studies have shown that some children may develop resilience, or the ability to overcome serious hardships, in the face of challenges.[3] While there are several protective experiences and coping skills that may help a child become resilient when faced with significant adversity, "the single most common factor for children who develop resilience is at least one stable and committed relationship with a supportive parent, caregiver, or other adult."[3] Although in military families there is literature suggesting an association between parental deployment and negative child outcomes (as described above), most military families and children are generally resilient. The Deployment Life Study conducted by the RAND Corporation found that parents remain concerned about their child's well-being during a deployment and perceive a need for mental health services.[361]

Emerging Factors Affecting Behavioral Health Care

Emerging factors affecting behavioral health care in the military include care for children with ASD and gender dysphoria, the use of telemental health, the integration of primary care and behavioral health care, and adverse childhood experiences.

Autism Spectrum Disorder Treatment

There are numerous behavioral and medical therapies for ASD. Early intensive behavioral interventions (EIBIs), which are treatments "based on the principles of applied behavior analysis [ABA] delivered for multiple years at an intensity of 20 to 40 hours per week,"[362] have shown benefits in some children with ASD. In 2009, the Defense Health Board issued a report on treatment for ASD, specifically ABA, including the benefits, treatment intensity and duration, and short-term and long-term effects. At that time, the Board concluded that, overall, there was a "lack of sufficient sound and thorough peer-reviewed evidence on this issue"[363] and recommended "rigorously-designed clinical trials addressing the shortcomings of the

literature."[363] However, the Board did acknowledge that some evidence "exists to conclude that EIBI of which ABA is one example may produce short-term gains in intelligence quotient (IQ) and adaptive behavior, but not improvements in other symptoms or dimensions or functional impairment in individuals with ASD."[363] Evidence was insufficient to draw conclusions on long-term effects of ABA and other forms of EIBI.[363]

Research since 2009 has been mixed on the effectiveness of ABA and is summarized below.

Table 21. Applied Behavior Analysis[362,364-368]

Study Findings	Reference
• In an evaluation of 30 comprehensive treatment models (CTMs), with the majority based on an ABA framework, there was mixed evidence on the operationalization of, fidelity of, replication of, outcome data for, and quality of the CTMs. **Some CTMs had well-established evidence, others had mixed evidence, and some had very weak evidence**. • **Across CTMs, published evidence of efficacy were weak.**	Odom SL, Boyd BA, Hall LJ, Hume K. Evaluation of comprehensive treatment models for individuals with autism spectrum disorders. *J Autism Dev Disord.* 2010;40(4):425-436.
• Although **there is evidence that EIBI is an effective behavioral treatment for some children with ASD**, the evidence relied on non-randomized studies, small sample sizes, and risk of bias.	Reichow B, Barton EE, Boyd BA, Hume K. Early intensive behavioral intervention (EIBI) for young children with autism spectrum disorders (ASD). *Cochrane Database of Syst Rev.* 2012;10:Cd009260.
• Four of five meta-analyses concluded **EIBI was an effective intervention strategy for many children with ASD.** However, no treatment, including EIBI, has been effective for all children with ASD.	Reichow B. Overview of meta-analyses on early intensive behavioral intervention for young children with autism spectrum disorders. *J Autism Dev Disord.* 2012;42(4):512-520.
• Fifteen evidence-based practices have over ten studies providing empirical support for the practice. Of these studies, the **foundational ABA techniques, such as prompting and reinforcement, have the most support.**	Wong C, Odom SL, Hume KA, et al. Evidence-based practices for children, youth, and young adults with autism spectrum disorder: a comprehensive review. *J Autism Dev Disord.* 2015;45(7):1951-1966. Wong C, Odom S, Hume K, et al. *Evidence-Based Practices for Children, Youth, and Young Adults with Autism Spectrum Disorder.* Chapel Hill: The University of North Carolina, Frank Porter Graham Child Development Institute, Autism Evidence-Based Practice Review Group;2013.
• **There is moderate evidence that child-focused EIBIs**, such as the UCLA Lovaas Model and the Early Start Denver Model, **can improve cognitive and language outcomes for some children**.	Weitlauf A, McPheeters M, Peters B, et al. Therapies for children with autism spectrum disorder: Behavioral interventions update. *Comparative Effectiveness Review No.137 (Prepared by the Vanderbilt Evidence-based Practice Center under Contract No. 290-2012-00009-I.) AHRQ Publication No. 14-EHC036-EF.* Rockville, MD: Agency for Healthcare Research and Quality; 2014.

Study Findings	Reference
This study identified: • Two interventions as well-established: (1) individual, comprehensive ABA and (2) teacher-implemented, focused ABA + developmental social-pragmatic (DSP); • Three interventions as probably efficacious: (1) individual, focused ABA for augmentative and alternative communication; (2) individual, focused ABA+DSP; and (3) focused DSP parent training; • **Five interventions as possibly efficacious: (1) individual, comprehensive ABA+DSP; (2) comprehensive ABA classrooms; (3) focused ABA for spoken communication; (4) focused ABA parent training; and (5) teacher-implemented, focused DSP.**	Smith T, Iadarola S. Evidence base update for autism spectrum disorder. *J Clin Child Adolesc Psychol.* 2015;44(6):897-922.

As shown in Table 21, a few, well-established ABA interventions may be beneficial for some children with ASD. However, a 2012 Cochrane Review found that, although there is some evidence that EIBI is an effective behavioral treatment for some children with ASD, the current state of the evidence is limited because of the reliance on data from non-randomized studies, concerns with risk of bias, imprecision because of small sample sizes, and possible publication bias.[362] In 2008, Rogers and Vismara cautioned that, although the randomized controlled trial design is the best methodology to answer some questions, it might be inappropriate for answering others.[369] The strength of evidence varies based on the study design (randomized controlled trials versus within-subject experimental analyses).[370] A randomized controlled trial design has limitations in early intervention studies of autism, such as rigidity that may interfere with the flexibility needed for initial tests and applications in the field[371] or challenges associated with conducting community-based trials.[369] Despite these limitations, recent literature has called for additional randomized controlled trials on ABA.[362,372]

Health care systems may characterize ABA as either an educational service or a medical treatment, due to the individualized design and implementation of ABA using environmental and social modifications to change behaviors.[108] This determination has implications in how ABA is covered.[108] Aetna covers ABA services under certain plans, as does Blue Cross Blue Shield. UnitedHealthcare began including ABA as part of its standard benefits package in 2017, while Cigna does not cover ABA services under any circumstances.[373-378] ABA does not meet the hierarchy of reliable evidence required to be covered under the MHS medical benefit (see Appendix A.2). Currently, ABA is covered through the Demonstration until December 31, 2018.[379]

All ABA services provided through the TRICARE Comprehensive Autism Care Demonstration are obtained through purchased care.[345] The Demonstration seeks to "develop more efficient and appropriate means of increasing access and delivering ABA services under TRICARE while creating a viable economic model and maintaining administrative simplicity."[108] Further, "the overarching goal is to analyze, evaluate, and compare the quality, efficiency, convenience and cost

effectiveness of those autism-related services that do not constitute the proven medical care provided under the medical benefit coverage requirements that govern the TRICARE Basic Program."[108] Specific goals include:

- Further analyzing and evaluating the appropriateness of the ABA tiered-delivery model under TRICARE generally in light of current and future Behavior Analyst Certification Board Guidelines;
- Determining the appropriate provider qualifications for the proper diagnosis of ASD and the provision of ABA and assessing the added value of ABA Tutors, or Behavioral Technicians, beyond ABA provided by Board Certified Behavior Analysts;
- Assessing, across the three TRICARE regions, the ASD beneficiary characteristics associated with full utilization of the ABA tiered-delivery model versus utilization of Board Certified Behavior Analyst services only or non-utilization of any ABA services and isolating factors contributing to significant variation across TRICARE regions in delivery of ABA;
- Determining what beneficiary age groups utilize and benefit most from ABA interventions;
- Assessing the relationship between receipt of ABA services and utilization of established medical interventions for children with ASD, such as speech and language pathology therapy, occupational therapy, physical therapy, and pharmacotherapy; and
- Assessing of the feasibility and advisability of establishing a beneficiary cost share for the treatment of ASD.[108]

Beneficiaries currently have access to unlimited hours of ABA with no limit on cost per beneficiary,[16] and the MHS also has not implemented discharge criteria for the Demonstration. The Board was informed that the average cost per beneficiary for ABA was approximately $17,000 per year; evaluation of outcomes is very important given the high cost of the treatment. It is uncertain what will happen when the Demonstration ends in December 2018, as there currently is not enough evidence to recommend adding ABA to the TRICARE benefit. Board members encouraged the senior policy analyst for behavioral health benefits and standards at the Defense Health Agency (DHA) to collect as much outcomes data as possible in the remaining time of the Demonstration.[345]

To evaluate the Demonstration, two parental surveys were scheduled to be administered, one in 2016 and one at the conclusion of the Demonstration in 2018. These parental surveys would seek to determine:

- Why parents access the ABA tiered delivery model, Board Certified Behavior Analyst-only ABA, or no ABA;
- The perceived impairment(s) of their child with ASD;
- Their degree of difficulty in accessing ABA and other clinical services with ASD; and,
- Their overall satisfaction and perceived benefit regarding the ABA services provided.[108]

In March 2017, the DoD Inspector General issued a report, *The Defense Health Agency Improperly Paid for Autism-Related Services to Selected Companies in the TRICARE South Region.* The report found that the DHA made improper payments for ABA services to five ABA companies in the TRICARE South Region. The ABA companies billed, and then the DHA improperly paid for, ABA services under the following conditions:

- "lack of documentation to support ABA services;
- misrepresentation of the provider who performed the ABA services;

- billing for ABA services provided while the beneficiary was napping;
- billing for two services at the same time;
- unreliable supporting documentation;
- billing for services while the beneficiary was not present; and
- billing for services performed by providers who were not authorized by TRICARE."[380]

The report required the DHA to "demonstrate that it reviewed ABA companies that have specific indicators of improper payments, including the five ABA companies in [the report's] sample, and took appropriate action, such as recouping any overpayments."[380]

Outcome measures for the Demonstration have only recently started being collected. Previously, the MHS had been met with some resistance from technicians regarding the collection of outcomes data using specific tools, such as the Autism Diagnostic Observation Schedule, Second Edition.[345] Although there is not yet enough data to draw meaningful conclusions regarding the Demonstration, the Board did receive information on wait times for appointments with ABA providers. The average wait time from referral of a child to evaluation by an ABA provider is 20 days, which is under the 28-day national standard. There are 5 states where average wait times are over the 28-day standard: Alabama (29 days), Alaska (37 days), New Mexico (31 days), Oklahoma (31 days), and South Carolina (30 days). The Demonstration intends to use aggregated outcomes data to help guide decisions about the future of the Demonstration when the current Demonstration ends on December 31, 2018. This will also incorporate data from a survey of parents of children with ASD that was done in January and February 2017; however, the results from that survey are not currently available.

Services for ASD other than ABA are covered through the TRICARE benefit, such as occupational therapy, physical therapy, physician services, mental health care and psychological testing, prescription drugs, and speech therapy.[16,108,381] Interventions for ASD typically include a combination of behavioral treatments and medicines, depending on the individual medical needs of the patient. Since each autistic child is unique and has different needs, interventions are typically tailored to each individual. For children, early diagnosis and immediate intensive behavioral interventions, including ABA, is recommended as an important treatment option.[382]

Treatments such as ABA are valued by families, have been shown to be beneficial in the short-term, and are the model on which many other behavioral treatments are based, with the same basic methods but different emphasis and techniques. Services such as physical therapy, speech therapy, or prescription drugs may also be used to supplement these behavioral therapies.[382]

A new pilot project aimed at providing care and support for families of children with autism was opened at Madigan Army Medical Center at Joint Base Lewis-McChord in July 2017. The Center for Autism, Research, Education and Services, or "CARES," is designed to provide families and their autistic children with therapy, support, and referrals to services both on and off base. This is currently the only autism care center at a military base or military treatment facility (MTF) and, despite only being open for less than a month, has been well received by both families and providers. The Center hopes to support parents and caregivers by ensuring that care for pediatric beneficiaries with ASD is provided before, during, and after a deployment, in order to support the readiness mission.[383]

Gender Dysphoria Treatment

Prior to the publication of the TRICARE Mental Health and Substance Use Disorder Treatment Final Rule on September 2, 2016, children with gender dysphoria (a conflict between the child's physical or assigned gender and the gender with which they identify[384]) were not eligible for treatment. The Final Rule now permits "coverage of all non-surgical medically necessary and appropriate care in the treatment of gender dysphoria."[385] However, "surgical care remains prohibited by statute at 10 U.S. Code 1079(a)(11),"[385] which prohibits coverage for dependents for "surgery which improves physical appearance but is not expected to significantly restore functions (including mammary augmentation, face lifts, and sex gender changes)."[386] Sex reassignment surgery is permitted for troops on active duty if deemed necessary by a physician.[387]

The World Professional Association for Transgender Health, an international, professional association devoted to the understanding and treatment of individuals with gender dysphoria, has urged major health insurance carriers to eliminate transgender and transsexual exclusions from their policies and provide coverage for those patients. This includes providing policy documents and medical guidelines for gender affirming/confirming services and ensuring that they are accessible and affordable to all subscribers.[388] Several large national health care providers, including Aetna, Cigna, and UnitedHealthcare, have included these benefits related to gender dysphoria treatment, including gender reassignment surgery, in their coverage policies. This surgery is covered at various rates and is required to meet several thresholds to be considered medically necessary, including at least one letter of referral from a mental health professional; persistent, documented gender dysphoria; and the patient's capacity to fully consent to treatment. Patients must be 18 to qualify for the surgery; however, mental health counseling to establish a diagnosis of gender dysphoria may be covered for patients under the age of 18.[388-391]

Telemental Health

Telemental health is "the provision of behavioral health care services from a distance using technology" and may also be known as telepsychology, telepsychiatry, and telebehavioral health.[392] Telemental health can include a variety of applications, including computer programs, Internet programs, teleconferencing or videoconferencing, remote patient monitoring, asynchronous transmission of medical images and/or information, and smartphone applications.[324,393] The Patient Protection and Affordable Care Act called for the meaningful use of telehealth technologies to improve health care and population health for all citizens, thus broadening eligibility for mental health services.[394] However, there are chronic and worsening provider shortages across pediatric specialties, including child and adolescent psychiatrists,[395,396] as well as other pediatric mental health specialists.[394,397] Further, access to pediatric mental health services is concentrated in academic and urban hubs,[394,395] providers may not have access to evidence-based interventions,[398,399] and insufficient funding for public mental health programs threatens their sustainability, as well as the stability of the workforce.[400,401] Therefore, innovative modalities such as telemental health offer opportunities to reduce the disparities in the access to and quality of pediatric mental health services.[396]

DoD has implemented a two-year telemental health pilot through the Johns Hopkins U.S. Family Health Plan at the Kennedy Krieger Institute. This pilot aims to assess use of telemental health to deliver safe, effective, and quality mental health care at a patient's location and determine whether telemental health can enhance access, shorten wait times, facilitate direct observation and parent participation, and serve as a viable alternative to care in the clinic setting.[327]

Kennedy Krieger Institute has been assessing the appropriateness of telemental health for patients, the willingness of the parent to engage in telemental health, provider and patient satisfaction, adverse events, and technological barriers. Assessment scores and outcome measures will be assessed in the second phase of the project.[402]

In testimony to the Board, administrators of the pilot remarked that telemental health has been largely successful within the U.S. Family Health Plan patient population.[402] Additionally, the FY 2017 National Defense Authorization Act calls for implementing strategies to manage face-to-face appointments at MTFs, which may include "maximizing the use of telehealth and virtual appointments for beneficiaries at the discretion of the health care provider and the beneficiary."[19]

A sample of literature on the effectiveness of telemental health is summarized below.

Table 22. Telemental Health Services[392,403-414]

Study Findings	Reference
Adult Telemental Health Studies	
• **Trauma survivors show significant reductions in both posttraumatic stress disorder (PTSD) and depression symptoms from pre- to post-cognitive behavioral telehealth treatment.** • Further, compared to a wait-list comparison condition, cognitive behavioral telehealth interventions result in significantly greater reduction of PTSD and depression symptoms. • However, no significant findings were obtained for cognitive behavioral telehealth intervention relative to a supportive counseling telehealth comparison condition. • Cognitive behavioral telehealth interventions produced an inferior outcome relative to face-to-face interventions for PTSD, but not for depression.	Sloan DM, Gallagher MW, Feinstein BA, Lee DJ, Pruneau GM. Efficacy of telehealth treatments for posttraumatic stress-related symptoms: a meta-analysis. *Cogn Behav Ther.* 2011;40(2):111-125.
• In comparison to primary care practice, a structured telephone program that includes care management and cognitive behavioral psychotherapy **has significant clinical benefit with a modest increase in health services cost.**	Simon GE, Ludman EJ, Rutter CM. Incremental benefit and cost of telephone care management and telephone psychotherapy for depression in primary care. *Arch Gen Psychiatry.* 2009;66(10):1081-1089.
• **The authors found no evidence to suggest that delivering psychotherapy via synchronous telehealth modalities is less effective than nontelehealth means in reducing depression symptoms.**	Osenbach JE, O'Brien KM, Mishkind M, Smolenski DJ. Synchronous telehealth technologies in psychotherapy for depression: a meta-analysis. *Depress Anxiety.* 2013;30(11):1058-1067.

Study Findings	Reference
• Telecounselling is practical and generally accepted by ethnic minority groups. • The results of randomized controlled trials provide some limited evidence that telephone- and Internet-mediated counselling programs **provide significant short-term improvements in depressive symptoms.**	Dorstyn DS, Saniotis A, Sobhanian F. A systematic review of telecounselling and its effectiveness in managing depression amongst minority ethnic communities. *J Telemed Telecare.* 2013;19(6):338-346.
• **Evidence of benefit from telemental health applications is limited;** additionally, more high-quality studies are needed on the use of telemental health in routine care.	Hailey D, Roine R, Ohinmaa A. The effectiveness of telemental health applications: a review. *Can J Psychiatry.* 2008;53(11):769-778.
Pediatric Telemental Health Studies	
• **Referring providers reported high satisfaction with telepsychiatric care,** although pediatricians were consistently more satisfied than family physicians. • Infrastructure costs and low reimbursement by public payers are barriers to the sustainability of telepsychiatry.	Myers KM, Valentine JM, Melzer SM. Feasibility, acceptability, and sustainability of telepsychiatry for children and adolescents. *Psychiatr Serv.* 2007;58(11):1493-1496.
• **The pre-post study of the effect of telepsychiatry counselling on youths housed in juvenile detention facilities suggests that telemedicine may be useful for improving the rate of attainment of goals associated with family relations and personality/behavior.**	Fox KC, Connor P, McCullers E, Waters T. Effect of a behavioural health and specialty care telemedicine programme on goal attainment for youths in juvenile detention. *J Telemed Telecare.* 2008;14(5):227-230.
• **Comprehensive eMental health programs appear to be effective for the psychiatric diagnosis and assessment of children.** • In particular, attention deficit and mood disorders were the most common diagnostic groups overall, and there was a statistically significant improvement between initial evaluation and three-month follow-up in the Affect and Oppositional domains of the Child Behavior Checklists.	Yellowlees PM, Hilty DM, Marks SL, Neufeld J, Bourgeois JA. A retrospective analysis of a child and adolescent eMental Health program. *J Am Acad Child Adolesc Psychiatry.* 2008;47(1):103-107.
• **Both face-to-face and videoconference modalities provided significant reduction in tics for children; there was no difference between the two modalities.** • Acceptability and therapist-client alliance ratings were strong for both face-to-face and videoconference groups.	Himle MB, Freitag M, Walther M, Franklin SA, Ely L, Woods DW. A randomized pilot trial comparing videoconference versus face-to-face delivery of behavior therapy for childhood tic disorders. *Behav Res Ther.* 2012;50(9):565-570.
• **Telepsychiatry evaluations can be valuable for patients with developmental disabilities, providing diagnostic clarity and specific recommendations that can be implemented by the primary care physician.**	Szeftel R, Federico C, Hakak R, Szeftel Z, Jacobson M. Improved access to mental health evaluation for patients with developmental disabilities using telepsychiatry. *J Telemed Telecare.* 2012;18(6):317-321.

Study Findings	Reference
• Primary care physicians were willing to refer young patients to telemental health services. • Families demonstrated high utilization of telemental health services and completion of research assessments. • **Adherence by psychiatrists to guideline-based interventions showed that psychiatric interventions can be reliably provided through videoteleconference.** • Videoteleconference can be used to train community therapists and disseminate evidence-based psychotherapies to communities.	Myers K, Vander Stoep A, Lobdell C. Feasibility of conducting a randomized controlled trial of telemental health with children diagnosed with attention-deficit/hyperactivity disorder in underserved communities. *J Child Adolesc Psychopharmacol.* 2013;23(6):372-378.
• 1.3 million individuals (about 300,000 Service members and 1 million dependents) were at risk of living in an area more than 30 minutes away from behavioral health care or in a low provider density area. • The authors could not estimate shortages in the MTF catchment area, nor could they examine specialization of providers with the age or other characteristics of Service members or dependents (e.g., whether areas with pediatric dependents had sufficient therapists within a 30-minute drive). • DoD has guidelines for access to care, but no evidence it adheres to those guidelines. • **Telehealth and primary care integrated with specialty behavioral care were identified as promising pathways for improved access to care in remote military populations.**	Brown RA, Marshall GN, Breslau J, et al. Access to Behavioral Health Care for Geographically Remote Service Members and Dependents in the U.S. Santa Monica, CA: RAND Corporation; 2015. Brown RA, Marshall GN, Breslau J, et al. *Access to Behavioral Health Care for Geographically Remote Service Members and Dependents in the U.S.* Santa Monica, CA RAND Corporation; 2015.
• There are large gaps between supported treatments in academic settings and services broadly available in the community. • Transformative efforts are needed to overcome barriers to care and broaden the accessibility of child behavioral health care. • As family-based telemental health options continue to develop and build an evidence base, there is a need to ascertain how to best identify families who could benefit from telemental health services as well as how to ensure coverage by third party payers.	Crum KI, Comer JS. Using synchronous videoconferencing to deliver family-based mental healthcare. *J Child Adolesc Psychopharmacol.* 2016;26(3):229-234.

As shown in the sample of studies in Table 22, the evidence of the effectiveness of telemental health has been growing over the last decade. Some studies have found that telemental health modalities are as effective as face-to-face interventions for certain mental health disorders;[406,411] however, one study found that a telemental health intervention for PTSD produced an inferior outcome relative to a face-to-face intervention.[405] Nevertheless, for both pediatric and adult

populations, telemental health has some evidence of effectiveness for reducing symptoms of mental health disorders (e.g., PTSD, depression, tics, or ADHD).[405,407] As the use of telemental health services expands to meet the gap in pediatric mental health needs, additional research is required to help ascertain whether the quality of care and outcomes delivered to pediatric populations are comparable to those provided in person.[415]

Primary Care and Behavioral Health Care Integration

The primary care environment has become a gateway for patients to seek out and receive behavioral health care, with 50 percent of adults with behavioral health disorders receiving services in the primary care setting.[416] Adults with serious mental health and substance abuse disorders die earlier than the general population, making it even more important to identify the early onset of behavioral health problems in children and youth by using primary care and behavioral health integration to close this early mortality gap.[417] SAMHSA and the Health Resources and Services Administration Center for Integrated Health Solutions emphasize that integrated care systems "represent an approach to delivering care that comprehensively addresses the primary care, specialty care, and social support needs of children and youth in a continuous and family-centered manner."[417] The U.S. Army's Child and Family Behavioral Health System integrates primary care and behavioral health care and promotes access to care, evidence-based clinical practices, value-based outcomes, and care delivered at a convenient location. It involves training primary care managers and behavioral health providers in evidence-based practices, providing consultative support to primary care managers, and implementing school-based behavioral health.[418]

The broad terms of collaborative care and integrated care, while often used interchangeably to describe the interface of primary care and behavioral health care, are two distinct concepts. Integrated care involves behavioral health care working within and as a part of primary care, and collaborative care involves behavioral health care working with primary care in consultation but as separate entities. However, within the integrated primary care behavioral health structure, the specific collaborative care model is a system in which primary care providers, case managers, and behavioral health professionals work together to provide care to patients.[419]

Research abounds on the effectiveness of integrating primary care and behavioral health care. As demonstrated in the sample literature in Table 23, there is evidence for a consensus concerning the integrated primary care behavioral health model (also referred to as the collaborative care model). This is particularly true in pediatric care environments, as the majority of behavioral health concerns first arise during childhood and adolescence,[419] and several studies found that both adult and pediatric patients are already seeking behavioral health care through their primary care physician due to a lack of access to specialists/referrals and reduced stigma.[420] Depression is the third most common reason that patients seek consultation in the primary care environment.[421] Co-morbidity of mental illness and medical disease means that the primary care environment is emerging as an important primary point of care for behavioral health issues. However, in non-collaborative care environments, primary care physicians reported a lack of training in pediatric behavioral health.[422,423] Additionally, a collaborative care model that uses a traditional model of payment and reimbursement can face significant barriers to implementation.[424] Several studies listed below concluded that a primary care and behavioral health integration system can improve short-term outcomes for both mental illness and medical

disease in adult populations;[421,424] however, more research is needed to establish the benefits for both short and long-term outcomes in pediatric populations, as well as ensure integrated methods for payment and reimbursement.

Table 23. Primary Care and Behavioral Health Care Integration[420-427]

Study Findings	Reference
Adult Primary Care and Behavioral Health Integration Studies	
• Integrated team-based care is best when applied to patients with complex mental illness and chronic medical disease. The prevalence of co-morbidity of mental illness and medical disease can be better addressed in an integrated care environment. • **Outcomes improved for both mental and medical health conditions, and resource utilization was lower in an integrated team-based care environment.** • However, practicing this type of integrated care while still reimbursing through the traditional care model is costly and inefficient.	Schwenk TL. Integrated behavioral and primary care: what Is the real cost? *Jama.* 2016;316(8):822-823.
• Poor access to specialists, poor referral services, and reduced stigma lead many people to seek mental health care in their primary care setting. • **Integrated care programs can increase access, engagement, and quality indicators for patients seeking behavioral health services for depression.** • Primary care is emerging as an important point of service for mental health in the overall health care system.	Serrano N, Monden K. The effect of behavioral health consultation on the care of depression by primary care clinicians. *Wmj.* 2011;110(3):113-118.
• Collaborative care was broadly defined as a multifaceted intervention involving combinations of three distinct professionals working collaboratively within the primary care setting: a case manager, a primary care practitioner, and a mental health specialist • While depression is the third most common reason for consultation in primary care, it is often suboptimally managed in a traditional care environment • **Collaborative care is effective in improving short-term outcomes in depression.** • **Long-term outcomes and effectiveness of collaborative care beyond depression is uncertain.**	Gilbody S, Bower P, Fletcher J, Richards D, Sutton AJ. Collaborative care for depression: a cumulative meta-analysis and review of longer-term outcomes. *Arch Intern Med.* 2006;166(21):2314-2321.
Pediatric Primary Care and Behavioral Health Integration Studies	
• **Effective behavioral health care is essential for pediatric populations to reduce morbidity and mortality, both in the short and long term.** • Incentivizing further integration of primary and behavioral health care will yield improvements in pediatric heath. • Pediatric patients randomly selected to receive integrated care were 66 percent more likely to have a better outcome than those pediatric patients who received usual care.	Asarnow JR, Rozenman M, Wiblin J, Zeltzer L. Integrated medical-behavioral care compared with usual primary care for child and adolescent behavioral health: a meta-analysis. *JAMA Pediatr.* 2015;169(10):929-937.

Study Findings	Reference
• There are significant barriers to access for families who seek behavioral health treatment for children and adolescents. • Identification of mental health problems in children by primary care physicians continues to rise, yet two-thirds of these physicians report a lack of training in pediatric behavioral health. • Behavioral health integration in pediatric primary care has immense potential for identifying and effectively treating behavioral health concerns in children and adolescents.	Tyler ET, Hulkower R, Kaminski J. *Behavioral Health Integration in Pediatric Primary Care: Considerations and Opportunities for Policymakers, Planners, and Providers.* Milbank Memorial Fund;2017.
• There is strong evidence that collaborative care is effective for managing depressive disorders in both adults and adolescents and contributes to improvements in symptoms, adherence to treatment, response to treatment, and remission and recovery. • Assessments of costs and benefits of collaborative care show good economic value.	Community Preventive Services Task Force. *Improving Mental Health and Addressing Mental Illness: Collaborative Care for the Management of Depressive Disorders.*
• Universal mental health screening is recommended for all pediatric patients; however, follow through after referral to specialized care is low. Integrating behavioral health into the primary care environment is one way to eliminate the need for a specialized care referral. • For mental health screening to be effective, patients must be willing to divulge potentially sensitive information and agree to its meaning and validity. This systematic review found little emphasis or training on this in current primary care settings. • Key issues, including how to present mental health screens to pediatric patients that are not potentially damaging to therapeutic relationships, has not yet received systematic study.	Wissow LS, Brown J, Fothergill KE, et al. Universal mental health screening in pediatric primary care: a systematic review. *J Am Acad Child Adolesc Psychiatry.* 2013;52(11):1134-1147.e1123.

Additionally, there are many resources available to support the implementation of an integrated primary care behavioral health model. For instance, SAMHSA and the Health Resources and Services Administration Center for Integrated Health Solutions "promotes the development of integrated primary and behavioral health services to better address the needs of individuals with mental health and substance use conditions."[428] The Center supports a variety of integrated care models, including integrating primary care into behavioral health care and integrating behavioral health care into primary care.[429] In fact, SAMHSA offers a Primary and Behavioral Health Care Integration Grant program, which has awarded 100 community behavioral health organizations more than $26.2 million.[430]

The Center for Integrated Health Solutions has a program targeted at services for children and youth[431] and has identified five core competencies of integrated care systems for children with behavioral health conditions:

- Family and youth-guided teams with care coordination capability;
- Individualized and coordinated care plans;
- Use of evidence-based guidelines;
- Established and accountable relationships with other entities; and
- Data-informed planning.[417]

Care coordination is important for achieving a fully integrated system of care (see Appendix F for more information).

Adverse Childhood Experiences

According to SAMHSA, adverse childhood experiences (ACEs) are stressful or traumatic events that include abuse, neglect, violence, and other types of household dysfunction. Specifically, according to SAMHSA, ACEs can include:

- Physical, sexual, and/or emotional abuse;
- Physical and/or emotional neglect;
- Witnessing domestic violence of other family members;
- Substance abuse within household;
- Household mental illness;
- Parental separation or divorce; and
- Incarcerated household member.[432]

ACEs can also include environmental or economic factors, such as neighborhood violence, crime, or frequent financial hardship, such as trouble covering the costs of basic needs like housing or food.[433] Data from the 2011-2012 National Survey of Children's Health show that economic hardship is the most common ACE reported nationally, followed closely by parental separation or divorce.[433]

ACEs have been found to be related to the development and prevalence of a wide range of health problems, both in adolescence and adulthood.[432] The research examining the relationship between ACEs and risk factors for disease, disability, and early mortality are significant. The Division of Violence Prevention at the Centers for Disease Control and Prevention conducted a landmark study that looked at ACEs in over 17,000 participants and found that ACEs are not only common, but they can also cluster, with almost 40 percent of the sample reporting 2 or more ACEs and 12.5 percent reporting 4 or more.[432] Additionally, this study found that, over time, a person's cumulative ACEs score, or the number of ACEs they have experienced, has a strong, graded relationship to numerous medical and behavioral health problems throughout their life span. Prevention, as well as early identification, of ACEs can have a significant impact on health issues faced in later life.

Research has found that when a child is exposed to chronic, stressful events, their neurodevelopment can be disrupted. This can lead to an impairment in cognitive functioning and the ability to cope with negative emotions. Over time, negative coping mechanisms, such as

substance abuse or self-harm can develop, which can contribute to disease, disability, or premature death.[432] The association between ACEs and military personnel has not been as well established in the literature; however, more studies are now being conducted that examine the potentially unique relationship between ACEs and military service. Preliminary results suggest that enlisted military personnel who experienced multiple ACEs are at a higher risk for post-deployment PTSD. For example, a study by Leardmann, Smith, and Ryan found that childhood physical neglect was most strongly associated with post-deployment PTSD among male enlisted military personnel. Emerging research is now demonstrating that ACEs among military populations may increase vulnerability, and not resilience, to post-deployment PTSD, even after adjusting for combat and deployment related stressors.[70]

A summary of research regarding adverse childhood experiences and their impact on both physical and mental health is summarized in Table 24 below:

Table 24. Adverse Childhood Experiences (ACEs)[70,434-445]

Study Findings	References
• Seven categories of ACEs were studied: psychological, physical, or sexual abuse; violence against mother; or living with household members who were substance abusers, mentally ill or suicidal, or imprisoned. • **More than half of respondents reported at least one ACE and one-fourth reported two or more.** • **There was a strong dose-response relationship between the breadth of exposure to ACEs and the increase in risk factors for multiple leading causes of death in adults, including heart disease, cancer, and chronic lung disease.**	Felitti VJ, Anda RF, Nordenberg D, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. *Am J Prev Med.* 1998;14.
• The majority of respondents had experienced one ACE and approximately one-third experienced two or more. • The detection of one ACE should alert a clinician to assess a patient for the possibility of additional exposure. • **The number of ACEs has a graded relationship to both lifetime and recent depressive disorders.** • **Exposure to ACEs is associated with increased risk of depressive disorders up to decades later in life.**	Chapman DP, Whitfield CL, Felitti VJ, Dube SR, Edwards VJ, Anda RF. Adverse childhood experiences and the risk of depressive disorders in adulthood. *J Affect Disord.* 2004;82(2):217-225.
• At least one ACE was reported by 63 percent of respondents. • **Smoking was strongly associated with ACEs.** • **Improved treatment of exposed children could reduce smoking in later adolescence and adulthood.**	Anda RF, Croft JB, Felitti VJ, et al. Adverse childhood experiences and smoking during adolescence and adulthood. *Jama.* 1999;282(17):1652-1658.
• Adults aged 32 were assessed for 3 age related health risks. Those adults who were exposed to ACEs were at an elevated risk for all three health risks: major depression, high inflammation levels, and clustering of metabolic risk factors.	Danese A, Moffitt TE, Harrington H, et al. Adverse childhood experiences and adult risk factors for age-related disease: depression, inflammation, and clustering of metabolic risk markers. *Arch Pediatr Adolesc Med.* 2009;163(12):1135-1143.

Study Findings	References
• **Promotion of healthy psycho-social experiences can be a cost-effective prevention of age related disease.**	
• While adult alcohol abuse has been linked to childhood abuse and dysfunction, little research has been done to inform the contribution of multiple ACEs, in combination with parental alcohol abuse, to the risk of alcohol abuse in later life. • **ACEs showed a strong, graded relationship to adult alcohol misuse and abuse for persons either with or without parental history of alcoholism.** • **The risk of heavy drinking, self-reported alcoholism, and marrying an alcoholic increased two to four fold by the presence of multiple ACEs.**	Dube SR, Anda RF, Felitti VJ, Edwards VJ, Croft JB. Adverse childhood experiences and personal alcohol abuse as an adult. *Addict Behav.* 2002;27(5):713-725.
• Childhood maltreatment and dysfunction has been linked to a variety of changes in brain structure and function, which can affect health and emotional well-being. • **The cumulative exposure of the developing brain to trauma, maltreatment, and abuse can result in neurological impairment.** • **Experience of ACEs can cause children to develop both significant amounts of stress, as well as unhealthy coping mechanisms. High levels of stress have been found to be associated with a broad range of effects on physical health, including cardiovascular disease, obesity, asthma, and substance abuse.**	Anda RF, Felitti VJ, Bremner JD, et al. The enduring effects of abuse and related adverse experiences in childhood. A convergence of evidence from neurobiology and epidemiology. *Eur Arch Psychiatry Clin Neurosci.* 2006;256(3):174-186.
• There has been little research done on the effect of ACEs among exclusively minority samples. • **There is a strong association between ACEs and poor outcomes in early adulthood for minorities, and individuals with multiple ACEs were likely to have three or more poor health outcomes, compared to those without an ACE.** • **Greater levels of adversity were associated with poorer health and life satisfaction, as well as substance abuse and mental health issues.**	Mersky JP, Topitzes J, Reynolds AJ. Impacts of adverse childhood experiences on health, mental health, and substance use in early adulthood: a cohort study of an urban, minority sample in the U.S. *Child Abuse Negl.* 2013;37(11):917-925.
• Research has shown that ACEs are linked to multiple adverse health outcomes and are interrelated. • **ACEs with a sexual abuse component were significantly associated with adulthood cancer.** • **This association between ACEs and cancer in adulthood may be attributable to the association of ACES with risk factors for other chronic**	Brown MJ, Thacker LR, Cohen SA. Association between adverse childhood experiences and diagnosis of cancer. *PLoS One.* 2013;8(6):e65524.

Study Findings	References
diseases.	
• Over half of participants reported at least one ACE (57 percent), and 23 percent reported a disability. • The relationship between ACEs and disability remained strong after adjusting for other physical and mental health conditions. • **There is a strong, graded relationship between childhood exposure to abuse, trauma, and other household dysfunction and self-reported disability in adulthood.**	Rose SMS-F, Xie D, Stineman M. Adverse childhood experiences & disability in US adults. *PM R.* 2014;6(8):670-680.
• Both overall exposure and concurrent exposure to adversity were associated with poor health. • These health conditions can begin in childhood and continue on into adolescence. • **ACEs occurring during or close to early adolescence were associated with increased negative consequences.**	Flaherty EG, Thompson R, Dubowitz H, et al. Adverse childhood experiences and child health in early adolescence. *JAMA Pediatr.* 2013;167(7):622-629.
• The relationship between ACEs, deployment-related stressors, and mood and anxiety disorders has not been well established through research. • **After adjusting for the effects of deployment related traumatic exposures, ACEs were significantly associated with mood or anxiety disorders among active duty personnel within the past year.** • **While previous studies have suggested that exposure to ACEs might be an important resilience factor to cope with combat stress, this report suggests the opposite: that exposure to both deployment related trauma and ACEs increased the odds of mood and anxiety disorders.**	Sareen J, Henriksen CA, Bolton SL, Afifi TO, Stein MB, Asmundson GJ. Adverse childhood experiences in relation to mood and anxiety disorders in a population-based sample of active military personnel. *Psychol Med.* 2013;43(1):73-84.
• The likelihood of a positive screening for depression and/or PTSD was significantly higher for male soldiers who reported two or more ACEs. • **ACEs are a significant predictor of future mental health symptoms, beyond the expected contribution of combat-related trauma.**	Cabrera OA, Hoge CW, Bliese PD, Castro CA, Messer SC. Childhood adversity and combat as predictors of depression and post-traumatic stress in deployed troops. *Am J Prev Med.* 2007;33(2):77-82.
• Marines who reported two or more ACEs were at an increased risk for post-deployment PTSD, compared to those who reported no ACEs. • **Men who reported physical neglect in childhood were significantly more likely to be diagnosed with PTSD.** • **Prior trauma, specifically ACEs, has significant potential to increase vulnerability, rather than resilience, to post-combat PTSD.**	LeardMann CA, Smith B, Ryan MA. Do adverse childhood experiences increase the risk of postdeployment posttraumatic stress disorder in US Marines? *BMC Public Health.* 2010;10(1):437.

The Board was informed that eight questions about ACEs will be added to the Millennium Cohort Study in 2017, based on questions outlined in a July 2014 issue of Child Trends.[433,446]

E.2 Assessing Certification Requirements for Departmental Residential Treatment Centers

A residential treatment center (RTC) is a "facility or a distinct part of a facility that provides to beneficiaries under 21 years of age a medically supervised, interdisciplinary program of mental health treatment."[157,447] It is appropriate for "patients whose predominant symptom presentation is essentially stabilized, although not resolved, and who have persistent dysfunction in major life areas."[447,157] RTCs are clearly differentiated from acute psychiatric care, partial hospitalization, group homes, therapeutic schools, facilities that treat patients with a primary diagnosis of chemical abuse or dependence, and facilities providing care for patients with a primary diagnosis of mental retardation or developmental disability.[157,447]

Current Certification Requirements and Access to Departmental Residential Treatment Centers

Enterprise-wide Policies, Practices, and Capabilities

Although the U.S. Mental Health Parity Act of 1996, the Mental Health Parity and Addiction Equity Act of 2008, and the related provisions in the Affordable Care Act do not apply to the TRICARE program, "DoD fully supports the principles of mental health parity."[81] The Mental Health Parity and Addiction Equity Act of 2008 "prevents group health plans and health insurance issuers that provide mental health or substance use disorder benefits from imposing less favorable benefit limitations on those benefits than on medical/surgical benefits."[82] The DHA is "focused on ensuring the behavioral health of [its] Service members and their families" as one of its top priorities.[448]

TRICARE has recently taken steps to improve its mental health and substance use disorder benefits by pursuing the principles of mental health parity via the September 2016 TRICARE Mental Health and Substance Use Disorder Treatment Final Rule, which includes eliminating restrictions related to lengths of stay at RTCs for adolescents and children and changing the process for facilities to become TRICARE-authorized providers by making its regulations more consistent with industry standards.[81,385,448] This rule will be fully implemented after TRICARE Managed Care Support Contractors establish a network of providers for newly covered services, such as intensive outpatient programs, partial hospitalization programs, and RTCs, following the release of the updated TRICARE Policy Manual, which occurred in early June 2017. New networks must be established by July 13, 2017.[62]

Major changes in the Final Rule include efforts to:

> improve access to mental health and substance use disorder treatment for TRICARE beneficiaries, revise beneficiary cost-shares to align with cost-shares for medical and surgical care, and reduce administrative barriers to care by streamlining the requirements for institutional providers to become TRICARE authorized providers.[385,448]

The Final Rule also serves to eliminate complicated and restrictive certification requirements governing the authorization of RTCs, which functionally limited access to RTC care for children in many geographic areas. For instance, "less than one sixth of RTCs accredited by the Joint Commission [were] TRICARE certified, and only about one half of individual states [had] at least one TRICARE certified RTC."[385] The Joint Commission is an independent, not-for-profit organization "recognized nationwide as a symbol of quality that reflects an organization's commitment to meeting certain performance standards."[449] Prior to the enactment of the Final Rule, eligible RTCs needed to: (1) be certified pursuant to strict TRICARE standards set forth in 32 Code of Federal Regulations §199.6 and the TRICARE/CHAMPUS Standards for RTCs Serving Children and Adolescents with Mental Disorders,[157] (2) agree to execute a participation agreement with TRICARE, (3) be licensed to provide RTC services in the jurisdiction in which it operates, and (4) be accredited by the Joint Commission.[81,157,447]

The Final Rule now allows TRICARE to rely on accreditation by widely accepted national bodies approved by the Director of the DHA. Most of the accreditation requirements meet or exceed former TRICARE standards and relieve RTCs of the "detailed, lengthy, stand-alone TRICARE requirements (e.g., the qualifications and authority of the clinical director, staff composition and qualifications, and standards for physical plant and environment, amongst others)."[385] This will "allow the [DHA] flexibility in selecting and recognizing the authority of various accrediting bodies."[81,385] Recently published TRICARE Policy Manual sections for Accreditation and Standards specify recognition of the Joint Commission, the Commission on Accreditation of Rehabilitation Facilities, the Council on Accreditation, or an accrediting organization approved by the Director of the DHA. Further, the regional contractor may submit, via the TRICARE Regional Office, additional accrediting organizations for TRICARE authorization, subject to approval by the Director of the DHA.[156]

DoD believes that implementing these streamlined policies will both increase access, as more RTCs will be accredited, and decrease costs associated with duplicative and unnecessary certification by TRICARE.[385] With regard to quality, DoD plans to primarily rely on outside accrediting bodies, but participating providers "agree to grant the Department the right to conduct quality assurance audits," which are subject to the TRICARE Quality and Utilization Peer Review Organization Program in 32 Code of Federal Regulations 199.15.

E.3 Evaluating Quality of and Access to Behavioral Health Care

Current Policies, Practices, and Capabilities

Enterprise-wide Policies, Practices, and Capabilities

As mentioned in Appendix E.2, the TRICARE Mental Health and Substance Use Disorder Final Rule included efforts to improve mental health and substance use disorder treatment access. For instance, it:

- Eliminated quantitative and qualitative treatment limitations on mental health and substance use disorder benefit coverage;

- Aligned beneficiary cost-sharing for mental health and substance use disorder benefits with those applicable to medical/surgical benefits;
- Authorized psychiatric and substance use disorder intensive outpatient programs;
- Covered outpatient substance use disorder treatment by individual professional providers, opioid treatment programs, and office-based opioid treatment; and
- Covered non-surgical treatment of gender dysphoria.[81,385]

The Final Rule has also expanded access to intensive outpatient and partial hospitalization services, which were not previously covered. The Final Rule now allows for a spectrum of care, including intensive outpatient programs and partial hospitalization programs, which are endorsed by the American Society of Addiction Medicine, the Department of Health and Human Services, SAMHSA, and the Department of Veterans Affairs/DoD Clinical Practice Guidelines.[81,385]

Regarding quantitative coverage limitations, TRICARE coverage "is no longer subject to an annual limit on stays in inpatient mental health facilities of 30 days for adults and 45 days for children" or to a "150-day annual limit for stays at [RTCs]."[385] It also eliminated:

- The 60-day partial hospitalization and substance use disorder rehabilitation facility residential treatment limitations;
- Annual and lifetime limitations on substance use disorder treatment;
- Presumptive limitations on outpatient services, including:
    - The six-hour per year limit on psychological testing;
    - The limit of two sessions per week for outpatient therapy;
    - Limits for family therapy and outpatient therapy provided in free-standing or hospital-based substance use disorder treatment rehabilitation facilities; and
- The limit of two smoking cessation quit attempts in a consecutive 12 month period and 18 face-to-face counseling sessions per attempt.[385]

Service-specific and Defense Health Agency Policies, Practices, and Capabilities

Each Service has its own policies, practices, and capabilities regarding pediatric behavioral health care. As discussed previously, the Army's Child and Family Behavioral Health System, as described in U.S. Army Operations Order 14-44, augments and optimizes the Army's patient-centered medical home model by integrating behavioral health providers at each patient-centered medical home and implementing school behavioral health at on-post schools.[450] The Board was informed that the success of the Child and Family Behavioral Health System is associated with consistent leadership direction and the implementation of an enterprise-wide approach.[451]

Conversely, the Navy has no unified policy regarding pediatric behavioral health care; the care provided varies by MTF. The Board was informed that most care is referred to the network because of a shortage of behavioral health professionals at MTFs, especially child and adolescent psychiatrists. The Board was also informed that frequent relocations frustrate families and that enhanced case management is needed.[452]

In the DHA's National Capital Region Medical Directorate, each clinic has specific standards of practices, manages referrals, and tracks access to care and quality data; there is not an enterprise-

wide policy. The Board was informed that provider recruitment and retention is a challenge in the region.[453]

Direct Care Compared to Purchased Care Policies, Practices, and Capabilities

Medical Necessity

As discussed in Appendix B.2, TRICARE can only pay for care that is "medically or psychologically necessary"[94] and adequately meets the "hierarchy of reliable evidence."[95,96] However, care received in the direct care component does not have to meet the hierarchy of reliable evidence; instead, clinicians in the direct care component can provide any care within their scope of medical practice.[454] It is important to note that for children ages birth to 17, 93 percent of all mental health encounters took place in the purchased care component in FY 2016, meaning the services they received would have to meet the hierarchy of reliable evidence.[455]

Fort Belvoir Community Hospital

Fort Belvoir Community Hospital opened an Adolescent Inpatient Behavioral Health Unit on February 10, 2017, the first of its kind in DoD. The new unit, which will provide individual, group, and family therapy sessions, "strives to reduce the burden of mental illness on the estimated 1 in 4 affected adolescents and their families by offering evidence-based treatments in a caring and safe environment."[456] Treatment methodologies include cognitive behavioral therapy; dialectical behavioral therapy; accelerated resolution therapy; art, recreation, and yoga therapies; and coping skills training. Patients also receive medical, nursing, and psychosocial assessments; nursing care; medication management; a comprehensive inpatient treatment plan and discharge plan; and an individualized education plan.[456]

Access to Behavioral Health Care

The Board requested data on access to behavioral health care for MHS pediatric beneficiaries. The Board was interested in:

- The number and distribution of behavioral health specialists and subspecialists who provide care to children and the number of those who specialize in pediatrics;
- The percent of the pediatric population who live in a mental health professional shortage area;
- The top 10 admissions to RTCs, by clinical classification system (CCS) category, age, and sex;
- The top outpatient visits for mental health conditions by CCS category, age, and sex;
- The total number of admissions and individuals by age, sex, and treatment setting;
- Prescriptions and number of individuals for psychotropic medications by provider type (mental health versus primary care), age, and sex; and
- The number of referrals to behavioral health specialists and subspecialists for pediatrics.

Behavioral Health Specialists and Subspecialists

Data indicated that, between FY 2014 and 2016, approximately seven percent of behavioral health providers who provided care to children specialized in pediatrics.[K] Of the 7 percent who specialized in pediatrics, the majority of providers were child and adolescent psychiatrists (4 percent), followed by child and adolescent psychologists (2 percent).[457] Of those who do not specialize in pediatrics but provide care to children (93 percent), most were general clinical social workers (18 percent), psychiatrists (14 percent), mental health counselors (10 percent), and clinical psychologists (9 percent). These data exclude visits in the purchased care component for which there were no claims data, such as if a beneficiary was seen by a school psychologist or seen in the purchased care component and billed other health insurance.

Mental Health Professional Shortage Areas

Between FY 2014 and 2016, approximately 30 percent of the pediatric population in the MHS lived in a zip code designated as a mental health professional shortage area (HPSA),[457] which is defined as a shortage of mental health providers by the U.S. Health Resources and Services Administration. The HPSA designation applies to the entire population of the zip code, not just MHS beneficiaries. This designation considers the population to provider ratio, the percent of the population below the federal poverty level, the elderly ratio, the youth ratio, alcohol abuse prevalence, substance abuse prevalence, and travel time to the nearest source of care outside of the HPSA designation.[304] Because the majority of mental health care is provided in the purchased care component, approximately 30 percent of the MHS pediatric population could have more difficulty accessing mental health care. Across the nation, there is one mental health provider for every 529 individuals, including psychiatrists, psychologists, licensed clinical social workers, counselors, marriage and family therapists, and advanced practice nurses specializing in mental health care,.[458] Further, there are approximately 8,300 practicing child and adolescent psychiatrists in the United States compared to 15 million children and adolescents who are in need of a child and adolescent psychiatrist.[459]

Admissions to Residential Treatment Centers by CCS Category

For FY 2014 through 2016, the highest numbers of admissions and the highest numbers of bed days for RTCs were for mood disorders; attention-deficit, conduct, and disruptive behavior disorders; and anxiety disorders. Admissions for mood disorders were the most prevalent for all age groups and sexes.[110] Table 25 illustrates the top three CCS categories by age and sex.

[K] Provider specialty was determined by National Provider Identifier and the National Plan & Provider Enumeration System. Up to five specialties were appended.

Table 25. Top Admissions to Residential Treatment Centers by Age and Sex[110]

Age	Female	Male
1-4	None	Mood disorders
5-8	Mood disorders	Mood disorders
	Attention-deficit, conduct, and disruptive behavior disorders	Attention-deficit, conduct, and disruptive behavior disorders
	Anxiety disorders	Anxiety disorders
9-12	Mood disorders	Mood disorders
	Impulse control disorders, not elsewhere classified	Attention-deficit, conduct, and disruptive behavior disorders
	Attention-deficit, conduct, and disruptive behavior disorders	Disorders usually diagnosed in infancy, childhood, or adolescence
13-17	Mood disorders	Mood disorders
	Anxiety disorders	Attention-deficit, conduct, and disruptive behavior disorders
	Miscellaneous disorders	Anxiety disorders
18-20	Mood disorders	Mood disorders
	Miscellaneous disorders	Disorders usually diagnosed in infancy, childhood, or adolescence
	Anxiety disorders	Schizophrenia and other psychotic disorders

From Defense Health Agency Clinical Support Division, 2017, using TRICARE Encounter Data Institutional.

Outpatient Visits by Age Group and Sex

The top CCS categories for outpatient visits by age and sex for mental health conditions are illustrated in Table 26; the top visits were for disorders usually diagnosed in infancy, childhood, or adolescence (primarily autism); developmental disorders; attention-deficit, conduct, and disruptive behavior disorders; mood disorders; adjustment disorders; and anxiety disorders.[455] This varied widely by age and sex.

Table 26. Top Outpatient Visits for Mental Health Conditions by Age Group and Sex[40]

Age	Female	Male
1-4	Developmental disorders	Developmental disorders
	Disorders usually diagnosed in infancy, childhood, or adolescence	Disorders usually diagnosed in infancy, childhood, or adolescence
5-8	Disorders usually diagnosed in infancy, childhood, or adolescence	Disorders usually diagnosed in infancy, childhood, or adolescence
	Developmental disorders	Developmental disorders
	Attention-deficit, conduct, and disruptive behavior disorders	Attention-deficit, conduct, and disruptive behavior disorders
	Adjustment disorders	N/A
9-12	Attention-deficit, conduct, and disruptive behavior disorders	Disorders usually diagnosed in infancy, childhood, or adolescence
	Disorders usually diagnosed in infancy, childhood, or adolescence	Attention-deficit, conduct, and disruptive behavior disorders
	Adjustment disorders	Adjustment disorders

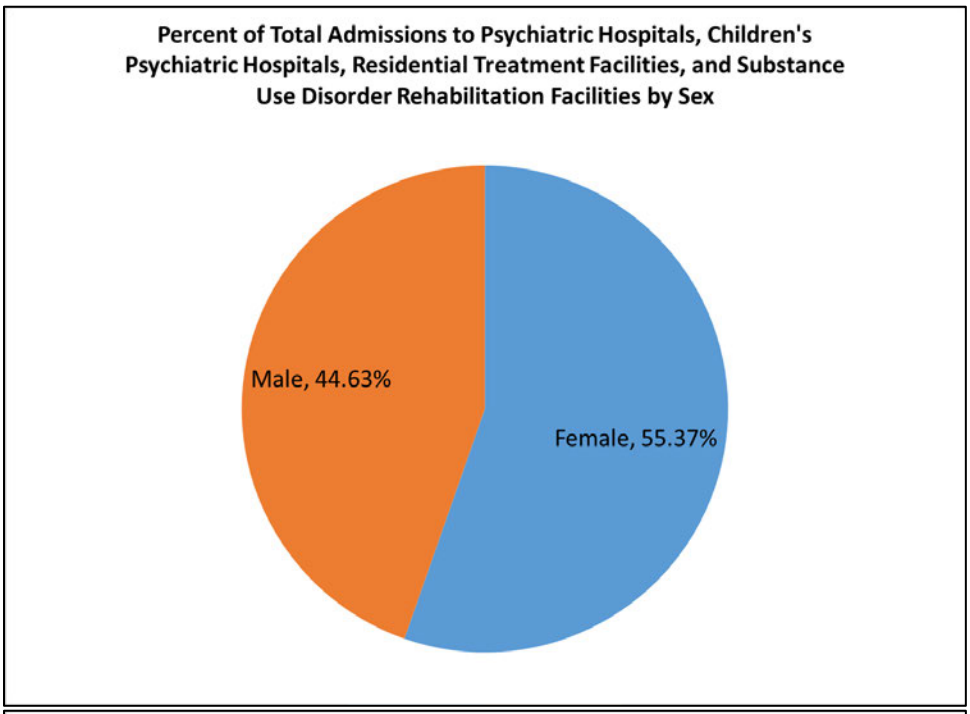
Age	Female	Male
	Anxiety disorders	Developmental disorders
	N/A	Anxiety disorders
13-17	Mood disorders	Disorders usually diagnosed in infancy, childhood, or adolescence
	Adjustment disorders	Attention-deficit, conduct, and disruptive behavior disorders
	Anxiety disorders	Mood disorders
	Attention-deficit, conduct, and disruptive behavior disorders	Adjustment disorders
18-20	Mood disorders	Mood disorders
	Anxiety disorders	Attention-deficit, conduct, and disruptive behavior disorders
	N/A	Disorders usually diagnosed in infancy, childhood, or adolescence

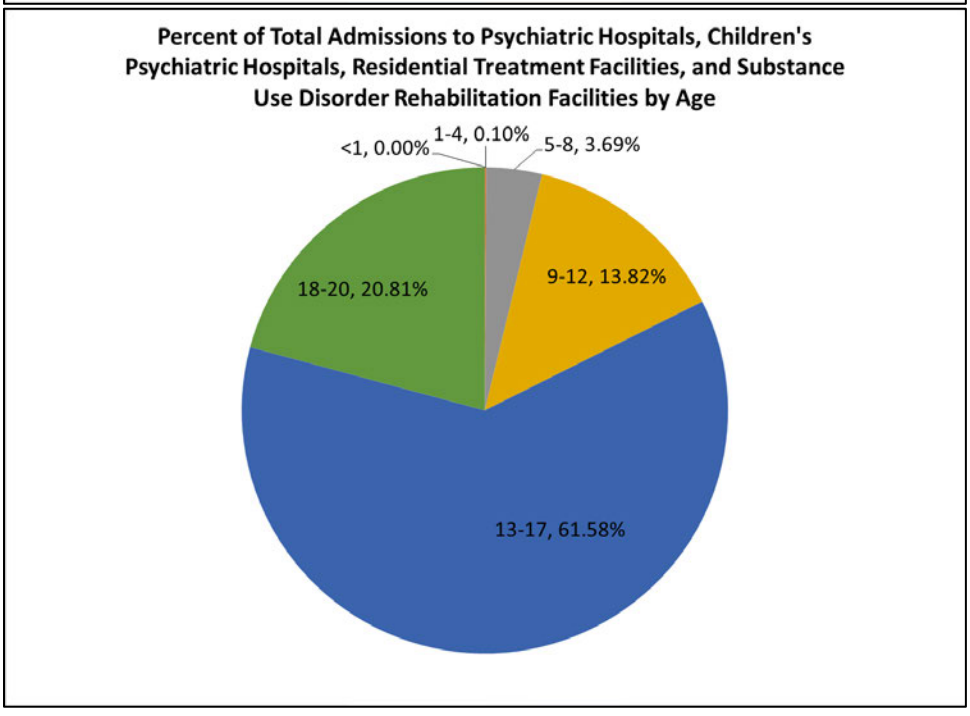
From Defense Health Agency Clinical Support Division, 2017, using Military Health System Data Repository TRICARE Encounter Data Non-Institutional and Comprehensive Ambulatory/Professional Encounter Record.

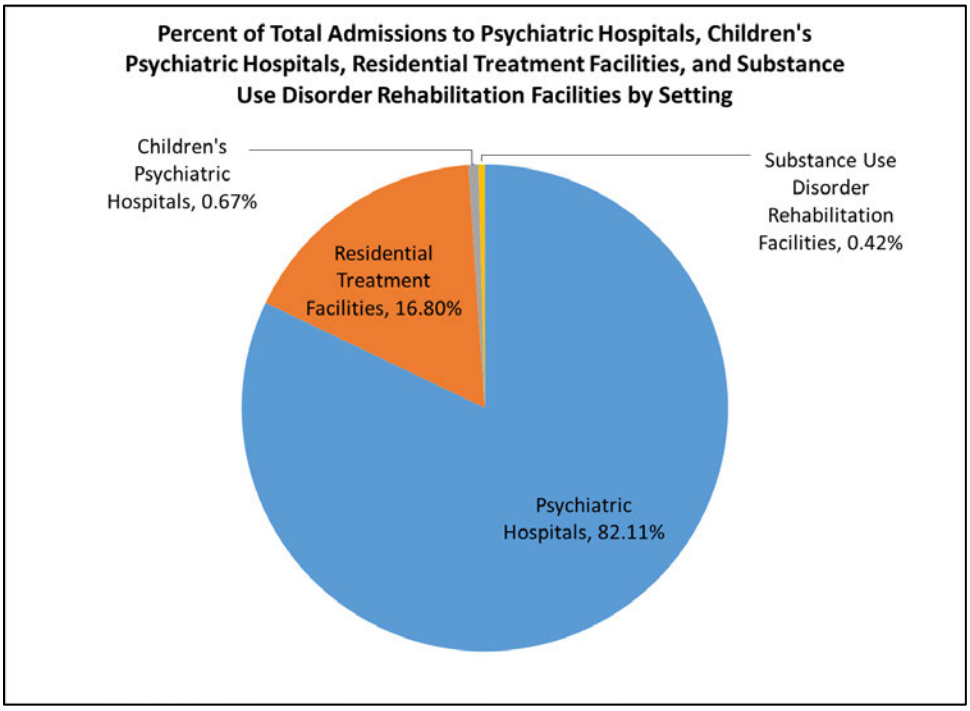
Admissions by Treatment Setting

For FY 2014 through 2016, slightly more females than males were admitted to psychiatric hospitals, children's psychiatric hospitals, residential treatment facilities, and substance use disorder rehabilitation facilities in the purchased care component. The majority of beneficiaries admitted were in the 13-17 age group, followed by those ages 18-20. Additionally, the majority of admissions for pediatric beneficiaries were to psychiatric hospitals, followed by residential treatment facilities (Figure 18).[457]

Figure 18. Total Admissions to Psychiatric Hospitals, Children's Psychiatric Hospitals, Residential Treatment Facilities, and Substance Use Disorder Rehabilitation Facilities[457]







From DHA Clinical Support Division, 2017, using Military Health System Management Analysis and Reporting Tool (M2) TRICARE Encounter Data-Institutional.

Psychotropic Medication Prescriptions

For FY 2014 to 2016, there were approximately 1.7 million total 30-day equivalent prescriptions for psychotropic medications to approximately 250,000 members of the pediatric population per year, a rate of approximately 7 30-day equivalent prescriptions per child receiving a prescription. Sixty percent (approximately 1 million) of the 1.7 million 30-day equivalent prescriptions for psychotropic medications for the pediatric population were from non-behavioral health providers; 40 percent (or approximately 700,000) were from behavioral health providers. Behavioral health providers prescribed approximately 10 30-day equivalent prescriptions per child receiving a prescription, compared to non-behavioral health providers who provided approximately 6 30-day equivalent prescriptions per child receiving a prescription.[52]

Referrals to Behavioral Health Specialists and Subspecialists

In FY 2016, the highest numbers of referrals from the direct care component to the purchased care component for a behavioral health specialist were for behavioral analysts, psychologists, and psychiatrists, followed by social workers and mental health counselors. In FY 2016, there were approximately 22,000 referrals to behavioral health specialists; the specialists listed above accounted for 20,000 referrals, with more than 1,000 referrals each.[309]

The highest numbers of referrals within the direct care component that resulted in an appointment at a behavioral health clinic were to child guidance clinics, which provide

"specialized evaluation counseling and treatment services for preadolescents and their families"[460] and "limited psychotherapeutic services,"[460] and to mental health clinics.

Quality of Behavioral Health Care

The DHA tracks two pediatric quality measures related to behavioral health care in the MHS: mental health follow up within 7 days and mental health follow up within 30 days for active duty and retiree dependents, including spouses, ages 6-20. These measures indicate the percentage of patients who had an outpatient visit, intensive outpatient encounter, or partial hospitalization with a mental health practitioner within 7 or 30 days of discharge from a hospitalization for a mental illness.[52]

In calendar year 2016, 51 percent of patients received a mental health follow up within 7 days, and 71 percent received a mental health follow up within 30 days.[52]

APPENDIX F. COORDINATION OF PEDIATRIC CARE

F.1 BACKGROUND

Appendix F of this report will address coordination of pediatric care; specifically, it will focus on the following objectives of the tasking:

- Measure the impact of permanent changes of station and other service-related relocations on the continuity of health care services received by children who have special medical or behavioral health needs.
- Assess other issues related to the evaluation and general improvement of health care for children within the Military Health System (MHS), including:
    - Data collection, data utilization, and data analysis that could improve pediatric care and related services, including the availability and maturity of pediatric specific outcome measures.
    - Best practices for coordination of pediatric care.[43]

IMPORTANCE OF CARE COORDINATION AND CARE FOR INDIVIDUALS WITH SPECIAL MEDICAL OR BEHAVIORAL HEALTH NEEDS

The definition of care coordination varies in existing literature; however, it typically involves an interdisciplinary approach to ensure access to health care and social support services, in which a care coordinator manages and monitors an individual's needs, goals, and preferences based on a comprehensive plan.[461] The main goal of care coordination is to help patients and families navigate health care systems in order to receive comprehensive care for complex medical and behavioral health needs.[462]

According to the Maternal and Child Health Bureau, children and youth with special health care needs are "those who have or are at increased risk for chronic physical, developmental, behavioral, or emotional conditions, and who also require health and related services of a type or amount beyond that required by children generally."[463]

Because children and youth with special health care needs require services from a broad range of providers and systems, these patients and their families have a greater than average need for high quality care coordination; however, as substantiated in both the literature and in practice, that need is largely unmet. Benefits of care coordination are widely established and accepted for adult patients, as most of the literature to date focuses on evidence gathered from adult and elderly study populations and did not include children who also require this type of care.[461] There is some early evidence that demonstrates the benefits of coordinated care for pediatric patients, though there are limited examples of it being operationalized effectively in the civilian system. Coordination of care, particularly within pediatrics, is an emerging area that can be an aspirational goal even in large health care markets. Issues such as payments, reimbursements, and geographic challenges can work against large-scale implementation of coordinated care models.

A sample of the literature that has examined pediatric care coordination is summarized in Table 27.

Table 27. Importance of Care Coordination and Care for Individuals with Special Medical or Behavioral Health Needs [65,464-469]

Study Findings	Reference
• **While short-term costs for families increased initially after the implementation of complex care coordination, long-term costs were lowered.** • **Both patient and provider satisfaction increased after increased care coordination, specifically satisfaction on the part of parents with the family centeredness aspect of care.** • Formal partnerships between children's hospitals and community hospitals in care coordination, together with family engagement and primary care providers, is a promising model for complex care delivery	Cohen E, Lacombe-Duncan A, Spalding K, et al. Integrated complex care coordination for children with medical complexity: a mixed-methods evaluation of tertiary care-community collaboration. *BMC Health Serv Res.* 2012;12:366.
• In a surveyed population of 1,632 pediatricians, 71 percent reported that they or someone in their practice serves as a primary care coordinator for children with special health needs, but fewer than one fourth always contact the school regarding the child's health and educational needs as part of care coordination, and only 18 percent always schedule time with the child's family to discuss finding a specialist. • **Two main barriers to care coordination were identified: limited time and lack of additional medical staff.** • **Even though most pediatricians believe they are providing adequate care coordination, many do not provide specific services, such as contacting schools, scheduling time with families to discuss findings, or meeting with discharge teams to discuss hospital to home transitions.**	Gupta VB, O'Connor KG, Quezada-Gomez C. Care coordination services in pediatric practices. *Pediatr.* 2004;113(5 Suppl):1517-1521.
• **Both emergency department presentations and hospital admissions were significantly reduced among children with complex care needs through 24/7 care coordination.** • **Significant reductions in hospital utilization led to subsequent cost savings.** • Increased satisfaction was reported by families when better coordination of complex care was delivered.	Peter S, Chaney G, Zappia T, Van Veldhuisen C, Pereira S, Santamaria N. Care coordination for children with complex care needs significantly reduces hospital utilization. *J Spec Pediatr Nurs.* 2011;16(4):305-312.
• Among parents who reported a need for complex care coordination, 41 percent felt that their needs were not being met in their health care setting. • **Children diagnosed with anxiety disorders, parents reporting stress, families with public or no health insurance or who were part of a lower income bracket were shown to be at higher risk of unmet need for care coordination.** • Family centered care and enhanced family support systems in primary care may help to reduce this unmet need.	Brown NM, Green JC, Desai MM, Weitzman CC, Rosenthal MS. Need and unmet need for care coordination among children with mental health conditions. *Pediatr.* 2014;133(3):e530-537.
• There is a lack of evaluative evidence regarding the development and implementation of care coordination in pediatric populations. • **Care coordination must include both the parents and the**	Wise PH, Huffman LC, Brat G. AHRQ Technical Reviews. *A Critical Analysis of Care Coordination Strategies for Children With Special Health Care Needs*. Rockville

Study Findings	Reference
clinician in order to be most effective. • Expanding reimbursement to clinicians for formal coordination activities is one option that may address the issue of costs barriers in implementing care coordination.	(MD): Agency for Healthcare Research and Quality (US); 2007.
• Children with complex health care needs have specialty care utilization rates, as well as higher unmet need compared to the general pediatric population. • Care coordination is associated with a decrease in family reported unmet specialty care need among children with special health care needs. • **The positive effect of care coordination is greater among low-income families.**	Boudreau AA, Perrin JM, Goodman E, Kurowski D, Cooley WC, Kuhlthau K. Care coordination and unmet specialty care among children with special health care needs. *Pediatr.* 2014;133(6):1046-1053.
• A network analysis was conducted to assess the extent to which a coordinated system of care for mental health exists for military dependents at a demonstration site. • Under managed care, the demonstration site showed a more coordinated care system, which produced significantly more positive effects for the target population. • **In the more coordinated system, fewer problems were reported, adequacy and delivery of care was rated more positively, and the service system performance and coordination was rated significantly more positively.** • **There was a positive impact on military children and youth who received care in this coordinated service delivery system.**	Heflinger CA. Measuring service system coordination in managed mental health care for children and youth. *Evaluation and Program Planning.* 1996;19(2):155-163.

F.2 Impact of Permanent Changes of Station and Other Service-Related Relocations

One of the many distinct challenges that military families face are the frequent geographic relocations, including permanent changes in stations (PCS), deployments, and other Service-related relocations. By definition, a geographic relocation will disrupt the continuity of care that is especially vital for children and youth with complex medical and behavioral health conditions. After each relocation, it is often necessary for families to begin a lengthy process of reestablishing care through referrals, authorizations, and long waitlists at each new duty station, as well as facing a potential shortage of pediatric subspecialists. This disruption can result in significant gaps in care that can have a cumulative and permanent negative effect on children with special needs and their families.[67]

Under TRICARE, the policy for transferring medical records for dependents is exclusively the responsibility of that Service member and their family. The Service member can request a transfer of medical records to the military treatment facility (MTF) that is closest to their new duty station. For medical records that need to be moved from an MTF to a civilian provider or facility, the Service member must complete a form provided on the TRICARE website.[320]

With the implementation of MHS GENESIS, the Department of Defense (DoD) hopes to address this gap in the transfer of medical records for both Service members and their dependents. MHS GENESIS will support the availability of electronic health records throughout the global MHS system, including the use of a Patient Portal that will facilitate a mutually accountable partnership between providers and families of pediatric beneficiaries. Additionally, with MHS GENESIS, DoD hopes to improve data access and sharing of health information not only within the direct care component, but with civilian organizations in the purchased care component as well.[20]

An existing enterprise-wide program that provides some level of coordination during relocations is the Exceptional Family Member Program (EFMP). The DoD Office of Special Needs oversees the EFMP, which is an administrative program and "supports military families with special needs by identifying and enrolling dependents in the EFMP, ensuring that special health care needs are considered during assignment coordination, and providing families with information on services, support, and assistance."[470] The enrollment process and the assignment coordination process are largely administrative in nature and completed by the Services' MTFs. However, depending on the Service, there may be family support programs located in base family centers, which provide information and non-clinical case management to family members with special medical and/or educational needs.[299]

Each of the Services administer their own EFMP under the oversight of the Office of Special Needs, and there is variability in the EFMPs between the Services. However, all active duty Service members who have dependents with special health care needs must register their family member to ensure that complex care needs are documented. Enrollment in EFMP is also required to access the TRICARE Extended Health Care Benefit, or ECHO (see Appendix D.2 for more information regarding the ECHO program).[299]

Service-level EFMPs have a limited case management role, with the exception of the U.S. Marine Corps EFMP. Approximately six percent of the eligible dependent population in the Marine Corps is enrolled in EFMP. After a Service member enrolls their dependent, a nurse reviews paperwork to determine the level of eligibility and approves enrollment. During a PCS or other relocation, a warm hand off is provided by an assignment specialist, which entails that specialist notifying family support services at both the old and new locations to ensure transfer of the case. The family is also encouraged to engage their TRICARE case manager to support the transition.[471] This coordination process is similar in the Army and Air Force, where a relocation is overseen by a Special Needs Coordinator, and in the Coast Guard, where a relocation is overseen by a Family Resource Specialist, both of which are considered non-clinical case managers.[472,473,474] The Navy uses a combination of EFMP Coordinators and non-medical case managers for their case management program.[475]

An assessment by the Military Special Needs Network found that these care management programs for special needs children, including the EFMP, are often inconsistently applied across military installations, regardless of Service. Some families have experienced a complete absence of case managers at their location and have to identify, research, and contact specialists on their own, sometimes traveling several hours each way to receive care. This lack of coordination can cause a significant and possibly medically dangerous gap in care for children with complex

medical and behavioral health needs.[66] Additionally, if a case manager is a non-clinical position, such as a Family Resource Specialist, they typically are not permitted to make clinical recommendations, leaving families on their own to determine the best course of action. Despite the fact that many families relocate to areas with a significant number of military and community resources, families can find it difficult to identify the resources pertinent to their needs and initiate care for their children without the direct assistance of a case manager.

The Military Special Needs Network has also reported that some families experience a lack of coordination between TRICARE network providers and case management programs. In these cases, a family may feel they received "a sendoff," rather than a warm hand off, when going through a geographic transition. This arises when a case manager, unfamiliar with local resources at the family's new location, does not connect the family to needed resources and establish appointments in advance; instead, the family may learn that there is a delay or waiting list to secure needed care for their child. There is little uniformity in hand-off processes for complex cases during PCS, which can add a tremendous burden to families who are already experiencing the stress of a PCS, deployment, or other geographic relocation, and can have negative consequences for a child with complex medical and/or behavioral needs.[66]

F.3 Best Practices in Coordination of Pediatric Care

Successful care coordination occurs when "care plans are implemented by a variety of service providers and programs in an organized fashion."[476] The Triple Aim of care coordination seeks to improve the patient experience of care, improve the overall health of populations, and reduce per capita costs of health care.[477]

A case study published in NEJM Catalyst (developed by the NEJM Group, which develops the New England Journal of Medicine) examined best practices from Partners for Kids (PFK), the nation's largest pediatric accountable care organization, developed through managing the care of Medicaid-eligible children with complex care needs in Ohio. The process of implementing a care coordination system included identifying the population in need of care coordination, training care coordinators (such as nurses and social workers), establishing policies for visiting children in their homes, and participating in clinical meetings with primary care providers. This case study also noted several challenges, including: large patient caseloads that slowed and complicated coordination, a shortage of qualified nurses and social workers interested in care coordination, lack of education about the importance of care coordination, and the continually evolving nature of care coordination that makes the impact difficult to measure.[478]

The most widely accepted model of care coordination consists of an individual care coordinator who is part of the care coordination team, but is not the primary care provider. They have face-to-face interaction with the patient and their family, as well as contact with the primary care physician and any specialists. Use of electronic care options are often employed to enhance both the contact of the care coordination team with the patient and family, as well as with other members of the care team. This can include telephone, email, instant messaging devices, and video chat.[477]

One area of care coordination that has been well established in pediatrics is within palliative care. Both primary care providers and specialists can be taught to recognize the need for palliative care and are able to provide that care while working with the child, their family, and the rest of the medical care team. Pediatric palliative care typically includes a primary care physician, as well as any specialists that are providing relevant care, and a separate care coordinator. These teams can also include a bereavement specialist, child psychologists, and child life specialists in order to address the complex psychosocial problems that are faced by children with complex and life threatening conditions. Palliative care is seen as an integrated model that extends throughout the course of illness and focuses on both life-extending therapy and quality of life care, which involves many different members of the care team working together. The integrated care model used in pediatric palliative care is viewed as a useful model to extend into other areas of pediatric care for children with chronic and complex medical and behavioral health care needs.[479,480]

In April 2016, the Navy Bureau of Medicine and Surgery, recognizing the growing number of health care systems moving toward value based care through better care coordination, launched a pilot study that implements integrated practice units, or IPUs. Under the IPU model, care is administered by simultaneously mobilizing a cross-organizational health team that is focused on a patient's clinical condition and makes truly coordinated care a possibility. This approach can improve both positive patient outcomes and provider and patient engagement, while managing costs. The Naval Hospital at Jacksonville was the chosen site for this IPU pilot and included a redesign of Naval Hospital at Jacksonville's care processes by national and regional experts. Four areas were selected for IPU implementation: lower back pain, diabetes with comorbidities, osteoporosis, and pregnancy. Additionally, mental health issues were recognized as an important area of health that often exists alongside medical conditions, and its treatments and outcomes were considered integral for all four IPUs. For each IPU, the medical teams worked with patients on developing evidence-based clinical pathways, emphasizing shared decision making, and collecting outcome measures. This focus on care coordination ensured that each patient had a single point of contact, while having their individual goals and needs drive their clinical care. Due to the fact that this pilot study was only recently implemented and will continue to run through October 2017, there is not yet quantitative data available that can be used to evaluate the successes and failures; however, both providers and patients have been reporting positive feedback regarding the IPU model. This will be an important pilot study for the MHS to continue to monitor and collect data that may be used to assist in a large-scale implementation of this care coordination model.[481]

The State Innovation Model Program is a federal grant program, located under the Center for Medicare and Medicaid Services, which is tasked with testing out an array of alternative payment and service delivery models for health care, specifically care coordination models. This program was established under the Affordable Care Act and is aimed at lowering costs for Medicare, Medicaid, and the Children's Health Insurance Program, while improving quality of care through better care coordination. The goal of this initiative is to test whether new models of care coordination have the potential to improve care and lower costs in these state-run programs. Additionally, the State Innovation Model Program will test if these new models produce better results when implemented in the context of a state-sponsored plan that involves multiple payers, broader state innovation, and larger health system transformation.[482]

In early 2013, the State Innovation Model Program awarded $300 million to 25 states in round one of the model design and testing phase. The majority of the models tested in each state expand the role of primary care and integrated care, using an enhanced primary care model such as the patient centered medical home (PCMH). These enhanced primary care models focus on care coordination and patient centered care management. Although experience with this type of model testing is limited in practice, three of the states that were awarded grants in round one, Maine, Vermont, and Oregon, have begun to release quarterly progress reports on their plans, and they all report being on track or surpassing their first year goals. Even though the initial outcome reports on these innovation models have been mostly positive, some states have reported difficulties and challenges in designing, implementing, and testing their Innovation Plans.[482]

Several states have reported issues in securing payer and provider collaboration, which is an often-reported issue in care coordination models. It can also take time to build consensus on the goals, strategies, and metrics of these plans, and states are finding that they must tailor these aspects to better accommodate different payers and providers. Despite these initial challenges and the limitations in the collection of preliminary outcomes data, the State Innovation Model Program has the potential to produce new, successful models of care coordination for large-scale implementation in complex health care systems, including the MHS.[482]

Patient Centered Medical Homes

The PCMH is defined as an established model of primary care that improves continuity of care and enhances access through patient-centered care and effective patient-provider communication. This concept was developed in 1967 by the American Academy of Pediatrics with the goal of delivering family-centered and coordinated primary care to children with chronic health care needs.[483] PCMHs have been associated with better health outcomes, reduced mortality, fewer hospital admissions for patients with chronic disease, lower utilization, improved patient compliance with recommended care, and reduced costs.[289] In the PCMH model, patients have a consistent relationship with their health care provider who delivers first contact, continuous, and comprehensive care. Policies such as open access scheduling, online appointments and online patient/provider communication, 24-hour nurse advice lines, and telephone consults are examples of innovative patient-centered approaches that the PCMH model uses to improve patient satisfaction and outcomes. Additionally, the PCMH model organizes a team of primary care managers (family physicians, internists, pediatricians, or general practitioners) into primary care management teams of three to five people to optimize communication, continuity of care, and accountability. Nurses, physician assistants, or midwives can also be a part of this primary care team under appropriate staff physician supervision and consultation.

The PCMH model encompasses five core functions and attributes: comprehensive care, patient-centered care, coordinated care, accessible services, and quality and safety. This model of the organization of primary care delivery has been well established and studied in adult health care; however, there is still a need for in-depth study into the use of the PCMH model in pediatrics. A sample of the literature to date is summarized in the table below:

Table 28. Patient Centered Medical Home and Coordination of Care[484-491]

Study Findings	References
• The medical home model emphasizes planned care, care coordination, family-centered approaches, and quality care. • The medical home model as a whole has not been systemically studied, but studies on the various components of the medical home model have found increased quality and reduced costs. • **Enhanced primary care using the medical home model can reduce hospitalization for children with chronic health conditions.**	Cooley WC, McAllister JW, Sherrieb K, Kuhlthau K. Improved outcomes associated with medical home implementation in pediatric primary care. *Pediatr.* 2009;124(1):358-364.
• Medical home care for children ensures that that have consistent care, a personal physician or nurse, and a family centered approach to care coordination. • Those children in fair or poor health were only half as likely to have a medical home as those in very good or excellent health. This indicates a need to target interventions towards the most vulnerable children. • **Having access to features of the medical home, including a regular source of care, enhanced access to physicians, and timely, well-organized care, can eliminate racial and ethnic disparities in access to quality care for children.**	Strickland BB, Jones JR, Ghandour RM, Kogan MD, Newacheck PW. The medical home: health care access and impact for children and youth in the United States. *Pediatr.* 2011;127(4):604-611.
• Despite the fact that access to a PCMH is a U.S. Maternal and Child Health Bureau performance measure, gaps remain in the number of children with access to a high-quality medical home. • **Families that desire team-based care, clear, written care plans, and care collaboration for their child with special health care needs are better served in the medical home environment.**	McAllister JW, Sherrieb K, Cooley WC. Improvement in the family-centered medical home enhances outcomes for children and youth with special healthcare needs. *J Ambul Care Manage.* 2009;32(3):188-196.
• The PCMH is a promising model to deliver behavioral health care services to children within a fragmented health care delivery system. • **Frequency of having a PCMH decreased with multiple behavioral health conditions.** • **Higher severity of depression, anxiety, and conduct disorders were associated with a decreased likelihood of a PCMH.**	Knapp C, Woodworth L, Fernandez-Baca D, Baron-Lee J, Thompson L, Hinojosa M. Factors associated with a patient-centered medical home among children with behavioral health conditions. *Matern Child Health J.* 2013;17(9):1658-1664.
• Both the American Academy of Pediatrics and the Affordable Care Act recommend extending the medical home model of primary care to all children, including those without special health care needs. • **For children without special health care needs, the medical home was associated with improved health care utilization, better parental assessment of child health, and increased adherence to positive health behaviors.** • **Having access to a medical home may decrease unnecessary child health services utilization, such as emergency department visits, which can lead to overall health care savings.**	Long WE, Bauchner H, Sege RD, Cabral HJ, Garg A. The value of the medical home for children without special health care needs. *Pediatr.* 2012;129(1):87-98.

Study Findings	References
• A planned and well-organized health care transition from adolescence to adulthood can maximize lifelong functioning and well-being for all youth, including those with special health needs. • Coordination of patient, family, and provider responsibilities can enable youth to optimize their ability to assume adult roles and functions. • **Children with special health care needs have specific primary care requirements within the medical home that demands additional considerations when planning the transition to adult care. It is important to determine whether the child will be a completely independent decision maker as an adult or if they will require support from a third party proxy. These considerations make a well-planned and organized transition team within the medical home even more important.**	Cooley WC, Sagerman PJ. Supporting the health care transition from adolescence to adulthood in the medical home. *Pediatr.* 2011;128(1):182-200.
• The Pediatric Alliance for Coordinated Care medical home model for children with special needs increases patient satisfaction, especially for children with the most severe level of needs. • This study also found some indications of both improved health and decreased burden of disease. • **Successful installation of a pediatric coordinated care medical home model met the following requirements: committed primary care leadership, additional financial resources, formal ongoing relationship with an academic medical center for training, consultation, and hospitalization, cultural and language expertise, and family buy in.**	Palfrey JS, Sofis LA, Davidson EJ, Liu J, Freeman L, Ganz ML. The Pediatric Alliance for Coordinated Care: evaluation of a medical home model. *Pediatr.* 2004;113(5 Suppl):1507-1516.
• Family centered care includes having shared decision making, open scheduling, and language and translation services that are transparent and open to both the provider and the patient and their family. • **Daily exposure, training, and practice are effective ways to incorporate small changes to make care more family centered.** • **One specific practice that was found to be successful when implemented was the presence of family members during bedside rounds or procedures.**	Cohen E, Kuo DZ, Agrawal R, et al. Children with medical complexity: an emerging population for clinical and research initiatives. *Pediatr.* 2011;127(3):529-538.

A 2009 policy released by the MHS required immediate implementation of a PCMH in primary care in all MTFs.[289] The *Military Health System Patient Centered Medical Home Guide* was developed in 2011 to help guide this implementation and establish principles and guidelines for the MTFs to follow.[492] Many of the key concepts in PCMH care are translatable to the MHS, such as the principle of a team of medical professionals under a physician team leader. This team approach to care is already widely accepted and valued within the MHS. Developed in 2011, the Army, Navy, and Air Force each have a Service-specific policy instruction regarding the implementation of PCMH that follows the general MHS policy memorandum. In 2017, the

DHA tri-Service Guidance found several areas of variation among the implementation of these policies across the Services and attempted to standardize how the PCMH model was established. Examples of the recommended changes include: adding 20 minutes to PCMH visits to better complete screening and address wellness needs, planning more convenient appointments for patients (i.e., early or late in the day before or after work/school), use of virtual phone visits with established patients, and booking specialty care appointments before a patient departs or within 24 hours.[39] These tri-Service enhancements are included in a new draft DHA 2017 policy and are designed to improve patient experience and eliminate variance among MTFs. While much of this policy is still in the early stages of development, successful execution of these changes in the way Services manage their PCMH policy could lead to a more positive patient experience, as well as increased satisfaction among providers.[492]

APPENDIX G. TERMS OF REFERENCE

These terms of reference establish the objectives for an independent review of the provision of pediatric care and related services for children of members of the Armed Forces.

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: The Military Health System acknowledges the importance of ensuring that children receive developmentally appropriate health care services from DoD, including:

- Pediatric clinical preventive services that align with national standards, guidelines, and recommendations;
- Health care interventions based on a uniform definition of "pediatric medical necessity;"
- Access to residential treatment centers;
- Access to coordinated pediatric primary and specialty care, which measure appropriate health outcomes;
- Access to high-quality behavioral health care, including intensive outpatient and partial hospitalization services; and
- Continuity of health care services for children who have special medical or behavioral health needs, especially during service-related relocations of members of the Armed Forces.

The Military Health System also acknowledges that there may be deficiencies in data collection, data utilization, and data analysis.

Regarding pediatric clinical preventive services, the Military Health System recognizes the importance of clinical preventive services in maintaining a medically ready force and continually strives to achieve and maintain high levels of compliance with selected recommendations in military members. As part of this effort, DoD has implemented robust processes to ensure recommended items such as immunizations, dental care, infectious disease screening, and other preventive services are tracked and accomplished in military members. However, it is not clear that dependents have received the same level of monitoring, access, and encouragement to complete recommended preventive services on a consistent and system-wide basis.

The Military Health System Review highlighted the Healthcare Effectiveness Data Information Set (HEDIS®) measures (which assess outpatient preventive services and health outcomes) "showed a high variability across the MHS." The Well-Child Visits metric in particular was one that fell below the National Committee for Quality Assurance 25th percentile benchmark. Also, a recent article in *Pediatrics*, the official journal of the American Academy of Pediatrics, compared coverage of universally recommended vaccines among military dependents and other insured and uninsured children. Data from the National Immunization Survey was used in conducting the comparison and show that 28% of military dependent children aged 19-35 months were not up to date on recommended immunizations for this age group compared to 21% of all other children (odds ratio: 1.4; 95% confidence interval: 1.2-1.6). Despite potential

methodologic issues with this study, the results raised concerns about the effectiveness of current DoD processes for ensuring children in this age group are properly vaccinated.

Overall, there may be opportunities to improve the provision of pediatric care and related services for children of members of the Armed Forces to better promote the health of this beneficiary population and potentially realize cost savings for the military health system.

Objectives and Scope: The Board and its existing Subcommittees should:

- Identify the extent to which children receive developmentally appropriate and age-appropriate health care services, including clinical preventive services, in both the direct care and purchased care components.
- Identify the degree to which the Military Health System delivers clinical preventive services that align with standards, guidelines, and recommendations established by the Patient Protection and Affordable Care Act; the Early and Periodic Screening, Diagnosis, and Treatment program; and organizations that specialize in pediatrics, such as the American Academy of Pediatrics and the American Pediatric Surgical Association.
- Determine what policies, practices, and capabilities DoD should implement to improve monitoring of compliance with pediatric clinical preventive services and immunizations in military dependents.
- Determine what approaches DoD should take to increase compliance with recommended pediatric clinical preventive services and immunizations in military dependents.
- Evaluate whether children have ready access to primary and specialty pediatric care.
- Address issues associated with the TRICARE definition of "medical necessity" as it might specifically pertain to children and determine whether the definition disadvantages children from receiving needed health care.
- Measure the impact of permanent changes of station and other service-related relocations on the continuity of health care services received by children who have special medical or behavioral health needs.
- Assess certification requirements for residential treatment centers of the Department to expand the access of children of members of the Armed Forces to services at such centers.
- Evaluate the quality of and access to behavioral health care under the TRICARE program for children, including intensive outpatient and partial hospitalization services.
- Assess other issues related to the evaluation and general improvement of health care for children within the MHS, such as:
    - Deficiencies in data collection, data utilization, and data analysis that could hinder pediatric care and related services, including the availability and maturity of pediatric specific outcome measures.
    - Best practices for coordination of pediatric care.

The Subcommittee 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 improving compliance with pediatric clinical preventive services recommendations in military dependents.

Methodology:

1. The Board and Subcommittee assessment will be conducted in compliance with FACA, Department of Defense Instruction 5101.04, and the DHB Charter.
2. The Subcommittee's assessment should focus on the provision of pediatric care and related services for children of members of the Armed Forces, including pediatric clinical preventive services.
3. The Subcommittee may conduct interviews and site visits as appropriate.
4. As appropriate, the Subcommittee may seek input from other sources with pertinent knowledge or experience.

The Subcommittee will review current policies, practices, and capabilities related to the provision of pediatric care and related services to military dependents. As needed, members will receive briefings from subject matter experts, DoD personnel involved in providing, supporting, or formulating policy on health care, and beneficiary advocates. The Subcommittee will review the literature and information received from briefings, conduct site visits as needed, and present their findings and positions 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 Subcommittee will complete its work within one year of receiving the tasking and report to the DHB in a public forum. The DHB will, in accordance with its Charter, report to the Assistant Secretary of Defense for Health Affairs, who has been delegated the authority to evaluate the independent advice and recommendation received from the DHB and evaluate, in consultation with the Under Secretary of Defense (Personnel & Readiness), what actions or policy adjustments should be made by DoD in response. The Subcommittee 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 Subcommittee and Board
2. Funding for this review is included in the DHB operating budget.

APPENDIX H. MEETINGS AND PRESENTATIONS

November 17, 2015 – Health Care Delivery Subcommittee Teleconference

Members reviewed the tasking, discussed suggested briefers and site visits, and received an overview of current challenges, initiatives, and opportunities related to the tasking.

Subject matter experts in attendance included:
- Dr. Paul Cordts, Deputy Director, Healthcare Operations, Defense Health Agency (DHA)
- Ms. Theresa Hart, Nurse Consultant/Program Manager, Perinatal, Pediatrics and Specialty Medical Programs, Clinical Support Division, DHA

January 14, 2016 – Health Care Delivery Subcommittee Teleconference

Members received an overview of Army, Navy, and Air Force pediatric/adolescent preventive services processes.

Subject matter experts in attendance included:
- LCDR Christine Davies, Navy Pediatrics Nurse Practitioner Assistant Specialty Leader
- COL Thomas Eccles, General Pediatrics Consultant to the Army Surgeon General
- CAPT Gregory Gorman, Associate Professor of Pediatrics, Uniformed Services University of the Health Sciences; Program Director, National Capital Region Pediatrics Residency
- Lt Col Shana Hansen, Adolescent Medicine, Joint Base San Antonio, U.S. Air Force
- Col Donald Lane, Maternal Child Consultant to the Air Force Surgeon General
- LCDR Kathryn Stewart, Navy Pediatric Nursing and Pediatric Nurse Practitioners Specialty Leader
- Lt Col Andrea Trout, Pediatrics Nursing, 355 Medical Group, U.S. Air Force
- Lt Col John Weatherwax, Pediatrics Nurse Practitioner, U.S. Air Force

February 10, 2016 – Defense Health Board Meeting
La Jolla, CA

Health Care Delivery Subcommittee Chair provided a tasking update to Board members.

February 16, 2016 – Health Care Delivery Subcommittee Teleconference

Members held a discussion with members of the Joint Immunization Working Group to review issues and opportunities to improve immunization tracking.

Subject matter experts in attendance included:
- CAPT Lynn Bailey, Chief Medical Officer, Navy Medicine West
- Lt Col Amy Costello, Deputy Chief, Immunization Healthcare Branch, Public Health Division, DHA
- Dr. Rebecca Hall, Program Manager, Aeromedical Services Information Management System, DHA

- Lt Col Heather Halvorson, Chief, Stakeholder Engagement Branch, Solution Delivery Division, DHA
- Col John Oh, Chief, Preventive Medicine, Air Force Medical Support Agency,
- LTC Keith Palm, Public Health Staff Officer, Public Health Directorate; Deputy Chief of Staff for Public Health, Office of the Army Surgeon General
- Ms. Tara Reavey, Chief, Policy and Program Management, Immunization Healthcare Branch, Public Health Division, DHA
- Dr. Margaret Ryan, Medical Director of the Pacific Regional Office, Immunization Healthcare Branch, Public Health Division, DHA
- CDR Shane Steiner, Preventive Medicine and Epidemiology, U.S. Coast Guard

April 7, 2016 – Health Care Delivery Subcommittee Teleconference

Members received an overview of the Military Health System (MHS) Population Health Portal capabilities regarding tracking of pediatric preventive services and immunizations and reviewed the Guiding Principles.

Subject matter experts in attendance included:
- COL Albert Bonnema, Chief, Information Delivery Division, Health Information Technology Directorate, DHA
- Lt Col David Carnahan, Chief, Enterprise Intelligence Branch, Information Delivery Division, Health Information Technology Directorate, DHA
- Dr. Rebecca Hall, Program Manager, Aeromedical Services Information Management System, DHA
- COL Margaret Yacovone, Chief, Immunization Healthcare Branch, DHA

May 3, 2016 – Health Care Delivery Subcommittee Teleconference

Members reviewed the draft report. There were no briefings on this teleconference.

June 2, 2016 – Defense Health Board Meeting
Falls Church, VA

Health Care Delivery Subcommittee Chair provided a tasking update to Board members.

June 14, 2016 – Health Care Delivery Subcommittee Teleconference

Members received an overview of pediatric preventive care metrics and quality improvement processes.

Subject matter experts in attendance included:
- Ms. Holly Crowe, Health Scientist, Clinical Support Division, DHA
- Ms. Theresa Hart, Nurse Consultant/Program Manager, Perinatal, Pediatrics and Specialty Medical Programs, Clinical Support Division, DHA
- Ms. Regina Julian, Chief, Patient Centered Medical Home, Healthcare Delivery, Clinical Support Division, DHA

- Dr. John Kugler, Chief, Clinical Support Division, DHA

July 14, 2016 – Health Care Delivery Subcommittee Teleconference

Members reviewed the draft report. There were no briefings on this teleconference.

August 9, 2016 – Defense Health Board Meeting
San Antonio, TX

Health Care Delivery Subcommittee Chair provided a tasking update to Board members.

August 25, 2016 – Health Care Delivery Subcommittee Teleconference

Members reviewed the draft report and discussed the revised tasking. There were no briefings on this teleconference.

September 27, 2016 – Health Care Delivery Subcommittee Teleconference

Members reviewed the draft report. There were no briefings on this teleconference.

October 18, 2016 – Health Care Delivery Subcommittee Teleconference

Members reviewed the draft report. There were no briefings on this teleconference.

November 9, 2016 – Defense Health Board Meeting
Falls Church, VA

Health Care Delivery Subcommittee Chair provided a tasking update to Board members.

December 9, 2016 – Neurological/Behavioral Health Subcommittee Teleconference

Members reviewed the tasking, the draft report timeline, and the draft report outline and discussed the definition of pediatrics, quality and access measures, and emerging factors in behavioral health care. There were no briefings on this teleconference.

December 13-14, 2016 – Health Care Delivery Subcommittee Meeting
Falls Church, Virginia

Members discussed the revised tasking and the definition of pediatrics. They received an overview of TRICARE programs and purchased/private sector care, medical necessity, and TRICARE pediatric population demographics, including the Study on Health Care and Related Support for Children of Members of the Armed Forces and new programs and benefits for pediatrics. Members also held an open session and received public comments.

Subject matter experts in attendance included:

- Ms. Theresa Hart, Nurse Consultant/Program Manager, Perinatal, Pediatrics and Specialty Medical Programs, Clinical Support Division, DHA

- COL Stephen Phillips, Deputy Chief, Clinical Support Division, Operations Directorate, DHA
- CAPT Edward Simmer, Deputy Director, TRICARE Health Plan, DHA

Public comments were provided by:
- Ms. Rachel Conley, Ombudsman, U.S. Coast Guard Headquarters
- Ms. Brooke Goldberg, Deputy Director, Government Relations (Military Family Issues), Military Officers Association of America
- Ms. Peggy Haun, Military Special Needs Network
- Mr. Patrick Johnson, Assistant Director, Department of Federal Affairs, American Academy of Pediatrics

January 23, 2017 – Neurological/Behavioral Health Subcommittee Meeting
Falls Church, Virginia

Members received an overview of the TRICARE Health Plan, the Study on Health Care and Related Support for Children of Members of the Armed Forces, pediatric behavioral health care quality and access data brief, the TRICARE Mental Health and Substance Use Disorder Treatment Final Rule, pilots and demonstrations, and emerging factors in pediatric behavioral health care.
Subject matter experts in attendance included:
- Dr. Jen Crockett, Director, Behavioral Health Services for Military Families, Behavioral Psychology, Kennedy Krieger Institute
- Dr. John Davison, Chief, Condition-Based Specialty Care Section, Clinical Support Division, DHA
- Dr. Michael Faran, Program Manager, Child and Family Behavioral Health System, Behavioral Health Division, Health Care Delivery Directorate Headquarters, U.S. Army Medical Command
- Ms. Theresa Hart, Nurse Consultant/Program Manager, Perinatal, Pediatrics and Specialty Medical Programs, Clinical Support Division, DHA
- LTC Chris Ivany, Army Director of Psychological Health
- Ms. Danielle McCammon, DHA U.S. Family Health Plan Program Office
- Dr. Patricia Moseley, Military Child and Family Behavioral Health Senior Policy Analyst, Condition-Based Specialty Care Section, Healthcare Support Branch, Clinical Support Division, DHA
- Ms. Dori Rogut, Senior Policy Analyst, Behavioral Health Benefits and Standards, Condition-Based Specialty Care, Clinical Support Division, DHA
- CAPT William Satterfield, Program Management Officer, Telehealth and Telementoring, Condition-Based Specialty Care, Clinical Support Division, DHA
- CAPT Edward Simmer, Deputy Director, TRICARE Health Plan, DHA
- Ms. Melissa Teves, Senior Director, Administration, Johns Hopkins U.S. Family Health Plan; Managing Director and Board Member, Johns Hopkins Representing the U.S. Family Health Plan Alliance
- LTC Todd Yosick, Chief, Readiness and Psychological Health, DHA

January 30, 2017 – Health Care Delivery Subcommittee Teleconferences

Members received an overview of MHS Governance, new programs and benefits for pediatrics, and the MHS Pediatric Quality Dashboard. Members also reviewed the draft report.

Subject matter experts in attendance included:
- Dr. Terry Adirim, Deputy Assistant Secretary of Defense for Health Services Policy and Oversight, Office of the Assistant Secretary of Defense for Health Affairs
- Ms. Theresa Hart, Nurse Consultant/Program Manager, Perinatal, Pediatrics and Specialty Medical Programs, Clinical Support Division, DHA
- COL Stephen Phillips, Deputy Chief, Clinical Support Division, Operations Directorate, DHA

February 9, 2017 – Defense Health Board Meeting
Falls Church, VA

Health Care Delivery and Neurological/Behavioral Health subcommittee chairs provided a tasking update to Board members.

February 14, 2017 – Neurological/Behavioral Health Subcommittee Teleconference

Members discussed the 2009 Defense Health Board report, *Defense Health Board Findings Pertaining to Autism Treatment*, as well as reviewed the draft report. There were no briefings on this teleconference.

February 27, 2017 – Health Care Delivery Subcommittee Teleconference

Members reviewed the draft report. There were no briefings on this teleconference.

March 3, 2017 – Neurological/Behavioral Health Subcommittee Teleconferences

Members received an overview of the MHS Pediatric Quality Dashboard, as well as reviewed the draft report.

Subject matter experts in attendance included:
- Dr. Terry Adirim, Deputy Assistant Secretary of Defense for Health Services Policy and Oversight, Office of the Assistant Secretary of Defense for Health Affairs

March 23, 2017 – Health Care Delivery Subcommittee Teleconference

Members reviewed the draft report. There were no briefings on this teleconference.

April 13-14, 2017 – Neurological/Behavioral Health Subcommittee Meeting
April 13-14, 2017 – Health Care Delivery Subcommittee Meeting
Falls Church, Virginia

Members received an overview of pediatric mental health policies and processes, the Office of Special Needs, the Patient Centered Medical Home Advisory Board, TRICARE 2017 contracts, MHS GENESIS, emerging factors affecting pediatric behavioral health, the Exceptional Family Member Program policies and processes, and the high reliability organization model.

Subject matter experts in attendance included:

- Col Andrew Cruz, Chief, Air Force Special Needs Program
- Dr. Marta Denchfield, Acting Chief, Behavioral Health Services Division, Special Needs Program Manager, Coast Guard
- LCDR Brent Dennis, Program Manager, Exceptional Family Member Program, Navy
- CAPT James Ellzy, Deputy Program Executive Officer-Functional, Program Executive Office, Defense Healthcare Management Systems
- Dr. Michael Faran, Program Manager, Child and Family Behavioral Health System, Behavioral Health Division; Health Care Delivery Directorate Headquarters, U.S. Army Medical Command
- LT Elizabeth Fleischer, Office of the Functional Champion
- LCDR Aidith Flores-Carrera, Child & Adolescent Psychiatry Fellow, Walter Reed National Military Medical Center
- Dr. Michael Freed, Chief, Services Research and Clinical Epidemiology Branch, Division of Services and Intervention Research, National Institutes of Mental Health
- Dr. Tristan Gorrindo, Director of Education, American Psychiatric Association
- Ms. Theresa Hart, Nurse Consultant/Program Manager, Perinatal, Pediatrics and Specialty Medical Programs, Clinical Support Division, DHA
- CDR Alexander Holston, Chief Medical Informatics Officer, Navy Medicine
- LTC Christopher Ivany, Chief, Behavioral Health Division, HQDA Office of the Surgeon General
- Ms. Regina Julian, Primary Care, Access, Experience and Clinical/Business Operations, DHA
- CAPT Michele Kane, High Reliability Coordinating Board
- Ms. Kristin Kroeger, Chief of Policy, Programs and Partnerships, American Psychiatric Association
- CDR Matthew Loe, Navy Exceptional Family Member Program
- Ms. Cat Mauro, Air Force Exceptional Family Member Program
- CAPT Margaret McKeathern, Chief, Child and Adolescent Psychiatry Service, Walter Reed National Military Medical Center
- Dr. Patricia Moseley, Military Child and Family Behavioral Health Senior Policy Analyst, Condition-Based Specialty Care Section, Healthcare Support Branch, Clinical Support Division, DHA
- Ms. Saundra Nichols, Air Force Exceptional Family Member Program
- Dr. Jennifer Oppenheim, Senior Advisor on Early Childhood, Lead of Project LAUNCH, Substance Abuse and Mental Health Service Administration
- COL Stephen Phillips, Deputy Chief, Clinical Support Division, Operations Directorate, DHA
- LTC Dennis Sarmiento, Army Mental Health

- Ms. Kim Schuler, Air Force Exceptional Family Member Program
- CAPT Edward Simmer, Deputy Director, TRICARE Health Plan, DHA
- Dr. Colin Stewart, American Academy of Child and Adolescent Psychiatry
- Ms. Jennifer Stewart, Marines Corps Exceptional Family Member Program Director
- Ms. Rebecca Tucker, Exceptional Family Member Program Special Needs Manager, Office of the Surgeon General, Army
- Dr. Ed Tyner, Associate Director, Office of Military Family Readiness Policy, Office of Special Needs
- Dr. Debra Waldron Senior Vice President, Department of Child Health and Wellness, American Academy of Pediatrics

May 15-16, 2017 – Neurological/Behavioral Health Subcommittee Meeting
May 15-16, 2017 – Health Care Delivery Subcommittee Meeting
Falls Church, Virginia

Members reviewed the draft report. There were no briefings at this meeting.

May 16, 2017 – Neurological/Behavioral Health Subcommittee Meeting
Falls Church, Virginia

Members held an open session and received public comments, with the Health Care Delivery Subcommittee and Military Family Readiness Council as invited guests.

Public comments were provided by:
- Mr. Jeremy Hilton, Advocate, TRICARE for Kids Coalition
- Ms. Patricia Johnston, Executive Director, National Association for Children's Behavioral Health
- Ms. Karen Ruedisueli, Government Relations Deputy Director, National Military Family Association

June 19-20, 2017 – Neurological/Behavioral Health Subcommittee Meeting
June 19-20, 2017 – Health Care Delivery Subcommittee Meeting
Falls Church, Virginia

Members reviewed the draft report. There were no briefings at this meeting.

June 26, 2017 – Defense Health Board Meeting
Falls Church, VA

Health Care Delivery and Neurological/Behavioral Health subcommittee chairs provided a tasking update to Board members.

July 13-14, 2017 – Neurological/Behavioral Health Subcommittee Meeting
July 13-14, 2017 – Health Care Delivery Subcommittee Meeting
Falls Church, Virginia

Members reviewed the draft report. There were no briefings at this meeting.

July 25, 2017 – Neurological/Behavioral Health Subcommittee Teleconference
July 25, 2017 – Health Care Delivery Subcommittee Teleconference
Falls Church, Virginia

Members reviewed the draft report. There were no briefings at this teleconference.

August 10, 2017 – Defense Health Board Meeting
Falls Church, Virginia

Board members voted to approve the report and its findings and recommendations.

APPENDIX I. ACRONYMS

AAP: American Academy of Pediatrics
ABA: Applied Behavior Analysis
ACA: Affordable Care Act
ACE(s): Adverse Childhood Experience(s)
ACIP: Advisory Committee on Immunization Practices
ADHD: Attention Deficit/Hyperactivity Disorder
ASD: Autism Spectrum Disorder
ASIMS: Aeromedical Services Information Management System
CCS: Clinical Classification System
CDC: Centers for Disease Control and Prevention
CFR: Code of Federal Regulations
CHAMPUS: Civilian Health and Medical Program of the Uniformed Services
CLABSI: Central Line-associated Bloodstream Infection
CTM: Comprehensive Treatment Model
DHA: Defense Health Agency
DoD: Department of Defense
DoDD: Department of Defense Directive
DoDI: Department of Defense Instruction
DSP: Developmental Social Pragmatic
DTaP: Diphtheria-Tetanus-Acellular Pertussis
ECHO: Extended Care Health Option
EFMP: Exceptional Family Member Program
EHR: Electronic Health Record
EIBI: Early Intensive Behavioral Interventions
EPSDT: Early and Periodic Screening, Diagnostic, and Treatment
FY: Fiscal Year
HCBS: Home and Community-Based Services
HEDIS: Healthcare Effectiveness Data and Information Set
HiB: Haemophilus influenzae B
ICD-10: International Classification of Diseases, Tenth Revision
IIS: Immunization Information Systems
IPU: Integrated Practice Unit
JOES: Joint Outpatient Experience Survey
JOES-C: Joint Outpatient Experience Survey - Consumer Assessment of Health Providers and Systems
MHS: Military Health System
MHS-CQIB: Military Health System Clinical Quality Integration Board
MHSPHP: CarePoint Military Health System Population Health Portal
MTF: Military Treatment Facility
NAL: Nurse Advice Line
NDAA: National Defense Authorization Act
OB/GYN: Obstetrician/Gynecologist
PCP: Primary Care Provider
PCMH: Patient Centered Medical Home

PCS: Permanent Change of Station
PCV: Pneumococcal Conjugate Vaccine
PDTS: Pharmacy Data Transaction Service
PHR: Personal Health Record
PRISM: Provider Requirement Integrated Specialty Model
PTSD: Post-Traumatic Stress Disorder
RTC: Residential Treatment Center
RV: Rotovirus
SAMHSA: Substance Abuse and Mental Health Services Administration
Td: Tetanus, diphtheria toxoids vaccine
Tdap: Tetanus, diphtheria toxoids, and acellular pertussis vaccine
U.S.C.: United States Code
USPSTF: United States Preventive Services Task Force
WHO: World Health Organization
VZV: Varicella-zoster virus

APPENDIX J. 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)

Katharine Austin, MPA, MPH
Report Lead/Analyst, Grant Thornton LLP (Beginning October 2016)

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

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

Sara Higgins, MPH, CSSGB
Analyst, Grant Thornton LLP

Lindsay Perlman, MPH
Analyst, Grant Thornton LLP (Beginning April 2017)

Aamir Syed, MHA
Project Director, Grant Thornton LLP

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

Margaret Welsh
Management Analyst, Grant Thornton LLP

Kathi E. Hanna, MS, PhD
Editor, Information Innovators, Inc. (Until September 2016)

Jean Ward
Defense Health Board Staff Assistant

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