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Organization for Optimization

Intervention Recommendations for Optimizing the Delivery of Ambulatory Primary Care and Mental Health Care in Navy Military Treatment Facilities

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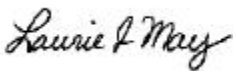

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Contents

Summary

This report reflects our thoughts and recommendations on ways that Navy Medicine can optimize the delivery of ambulatory primary care and mental health care in Navy MTFs, and ways to employ eHealth in doing so. It draws on our work with the Navy Medicine primary care and mental health advisory boards, but goes beyond that work to also incorporate general lessons and principles we have gleaned from the literature, from our site visits to Navy and other MTFs over the past 2 years, from data analyses we conducted in support of those advisory boards, and from some of our discussions with advisory board members. The focus of the report is on various interventions that Navy Medicine can make to better organize, manage, and integrate its primary care and mental health assets to best achieve optimization goals, including clinical eHealth applications for each board's respective area of health care. The purpose of this document is to support the optimization-related efforts of the Navy's Bureau of Medicine and Surgery (BUMED) and these two advisory boards.

In this report, we view optimization as a property of a system that refers to how effectively and efficiently the system transforms available resources to achieve its purposes (system goals) given its environmental context and constraints. As such, optimization is making the best (optimized) use of available resources (i.e., optimizing resource use) by combining, organizing, and structuring the use of its resources through an infrastructure that most effectively and efficiently uses them in the performance of system goal attainment processes. The central question this report addresses is: What are some likely interventions that Navy Medicine can take in building the infrastructure of ambulatory primary care and mental health in Navy treatment facilities to optimally allocate, integrate, organize, and use the human, physical, and technical resources directly or indirectly available to it to achieve the capacity, accessibility, effectiveness, satisfaction, and efficiency performance goals of optimization, within the context of and constraints set by its external environment?

Our conceptual approach and recommended interventions stem from the same dual premise that system issues require system solutions and that complex systems composed of multiple system levels require interventions at multiple levels. Navy Medicine is such a complex system, and the potential optimization interventions we suggest present a range of multilevel, system-related activities, that Navy Medicine, its primary care and mental health advisory boards, and its MTF commands can potentially undertake to better rationalize the organization, allocation, and use of the Navy's medical resources and assets. The optimization interventions that we recommend Navy Medicine consider adopting are to:

- Organize care within and between system levels
- Employ clinical governance
- Foster a collaborative clinical culture
- Conduct medical technology assessments
- Utilize clinical eHealth applications
- Integrate mental health and primary care
- Incorporate theories of behavior and behavior change into clinical practice
- Implement behavioral risk reductions programs
- Lay out physical space to optimize journeys
- Apply principles of advanced access to interface between primary and secondary care.

These ten potential optimization interventions require careful planning and execution. They, and all optimization efforts, face several barriers to successful implementation and require that Navy Medicine incorporate several critical success factors to help ensure successful implementation. Barriers include the following: the unstable and uncertain assignment of personnel, the personnel requirements of readiness, instances of incompatibility of the readiness and peacetime missions, general resistance to change, specific resistance of line and treatment facility commanders to change, the "leading, speeding, and bleeding" syndrome, and "Hamster health care" and the

"Kaiser reward." Critical success factors include effective leadership, the inclusion of key stakeholders, rational investment in infrastructure, employing the Plan-Do-Study-Act cycle, flexibility, balance, thinking "outside the box," and redesigning for the information age.

Navy Medicine is a force multiplier for Sailors and Marines. It accomplishes this objective through the application of population health concepts to protect and maintain their health as well as the health of their dependents, and carries this commitment to retirees/survivors and their dependents. Optimization is a means of optimizing population health by optimizing the use of available resources for achieving population health. By adapting and adopting interventions such as those presented in this report, and by avoiding the implementation barriers and incorporating the critical success factors outlined in it, BUMED can continue to make breakthrough advances in achieving its optimization goals and thereby being the force multiplier and custodian of population health that current leadership envisions.

Introduction

Background

As part of its overall strategy for implementing the Military Health System (MHS) Optimization Plan [1] and Population Health Improvement Plan and Guide [2], the Navy's Bureau of Medicine and Surgery (BUMED) has appointed advisory boards of clinicians, clinical support personnel, and administrative support staff from several clinical service areas to assist in its efforts to optimize them. The service areas so identified (and the month and year of the associated board's creation) are:

- Birth and the perinatal period (October 1997)
- Mental health (April 2000)
- Primary care (September 2000)
- Older adult care (August 2001).[1]

Under a series of contracts with BUMED beginning in April 2000, the Center for Naval Analyses (CNA) has been providing analytic support to the mental health (MH) and primary care (PC) boards since their inception.[2] CNA's support has included (a) analyzing Department of Defense (DoD) and civilian data related to the delivery of mental health care and primary care, (b) visiting a range of military medical

1. In December 2001, because of a rearrangement of priorities, BUMED ended the Older Adult Care Advisory Board and transferred its functions to the Primary Care Advisory Board. One member of the older adult board joined the primary care board and continues to represent older adult health and health care concerns.
2. CNA also supported the work of the Older Adult Care Advisory Board during its brief existence, and completed several analyses regarding older adult care for the Primary Care Advisory Board.

treatment facilities (MTFs) to compare how they deliver mental health care and primary care, (c) conducting literature reviews on topics related to the work of both boards, (d) bringing comparative information about the delivery of health care in the civilian sector to the attention of the boards, and (e) serving as a member[3] of each board to assist their work.

Under our current contract, in addition to the analytic support CNA provides to the MH and PC advisory boards, we are to produce a related report for BUMED on Organization for Optimization. This report is to comprise our thoughts and recommendations on ways that Navy Medicine can optimize the delivery of ambulatory primary care and mental health care in Navy MTFs, and ways to employ eHealth in doing so. It will draw on our work with the advisory boards, but it will go beyond that work to incorporate general lessons and principles we have gleaned from the literature, from our site visits to Navy and other MTFs over the past 2 years, from our data analyses, and from some of our discussions with the advisory boards. The focus of the report is on various interventions that Navy Medicine can make to better organize, manage, and integrate its primary care and mental health assets to best achieve optimization goals, including clinical eHealth applications for each board's respective area of health care.

In this report, we are not intending to duplicate the work that has already been done by and for the Office of the Assistant Secretary of Defense / Health Affairs (OASD / HA), TRICARE Management Activity (TMA), or BUMED regarding either optimization or eHealth. Rather we are intending to use that work to define the bounds and context for the ideas we present here, and to introduce some organizational principles and eHealth applications that, based on our experience and interpretation of the evidence, we believe further the goals of those efforts.

3. The CNA senior analyst project director for this project serves as a full participating member of both the MH and PC advisory boards.

Purpose and scope

The purpose of this report is to support the optimization-related efforts of BUMED and of BUMED's PC and MH advisory boards. As we stated above, its intent is **not** to duplicate the work on optimization already done by and for OASD/HA, TMA, or BUMED. Its intent is also **not** to duplicate any of the work we have already presented to the boards (and through them to BUMED), but rather to supplement and complement that work. Rather than summarize our prior work, our aim in this report is to introduce additional ideas that appear to have wide applicability for further optimizing the delivery of ambulatory primary care and mental health services in Navy MTFs.

We are basing this report (and our support to the advisory boards) on current MHS and Navy optimization policies. The February 1999 *MHS Optimization Plan Interim Report* [1] identifies the MHS optimization vision as seeking in part to "optimize the health of MHS beneficiaries by providing best value health services using best clinical and business practices." The stated purpose of optimization is

> First, to realign the staffing and resources allocation of the Direct Care System with the mission of the MHS. Second, to optimize the effectiveness and efficiency of the resultant staffing and resources to deliver the most health services to the maximum number of beneficiaries.

This is to be accomplished through a shift in "the fundamental philosophy of the MHS from INTERVENTION to PREVENTION, improving the health of our population so services are not required—but when they are, they'll be of the highest quality and immediately accessible."

The focus of this report is on further optimizing the delivery of ambulatory primary care and mental health services in Navy MTFs to those MTFs' priority beneficiaries. By priority beneficiaries we mean those who are enrolled in TRICARE Prime to a Navy MTF or who have a Navy Primary Care Manager (PCM) outside an MTF,[4] and thus whose health

4. Active Duty Sailors and Marines enrolled to their ship, regiment Battalion Aid Station, or other non-MTF facility may still receive care when needed in an MTF and are priority beneficiaries.

care is the prime responsibility of Navy Medicine. This is not to say that Navy Medicine does not have some responsibility for Navy personnel, their families, or Navy retirees (or survivors) and their families who are not priority beneficiaries.[5] However, such beneficiaries receive major portions of their health care from outside Navy Medicine and have not made the commitment to have their health care managed by a Navy PCM.

The next section of this report introduces and discusses the conceptual background of optimizing ambulatory primary care and mental health services in Navy MTFs. We then present our suggested intervention recommendations for moving toward optimization. Finally, we discuss what we see as some of the barriers to implementing these and similar optimization recommendations, along with what we see as some of the critical success factors that underlay any successful optimization efforts.

5. They may, for example, be enrolled in TRICARE Prime to an Army or Air Force MTF or to a civilian provider in a Managed Care Support Contractor's network, or they may not be Prime enrollees but receive their care (in a Navy or other MTF, in a contractor network, or outside a network) through TRICARE Standard or Extra or through TRICARE Prime Remote.

Background conceptual questions

The central question

The central question we explore in this report is: What are some likely successful interventions that Navy Medicine can take to help optimize (achieve optimized performance in) how it provides and organizes the delivery of ambulatory primary care and mental health services in Navy MTFs? Before turning to our suggested recommendations for such interventions in answer to this question, we consider a series of related questions that form the conceptual background.

What is optimization?

Optimization is a property of a system. It refers to how effectively and efficiently a system transforms available resources (inputs) through a series of actions (throughputs) into some products or services (outputs) to maintain itself and achieve its purposes (system goals) given its environmental context and constraints. It is making the best (optimized) use of available input resources to achieve system goals (i.e., optimizing resource use). It is achieved by combining, organizing, and structuring the use of input resources through an infrastructure that most effectively and efficiently uses these resources in the performance of throughput processes to produce the outputs that achieve system goals.

Note, however, that actual system outputs and performance do not always match intended outputs and performance; that is, a system can malfunction because of the unintended results of its infrastructure and how it transforms input resources into outputs. Every system is perfectly formulated (structured and organized) to produce that which it actually produces. If a system performs poorly (e.g., does not achieve optimization performance goals), it is structured and organized to perform that way and the system needs changing.

What are input resources and infrastructure?

As applied to Navy MTF clinics that deliver primary care and mental health services, input resources include human, physical, and technical assets. **Human** assets include the clinical and support personnel used in providing, delivering, or managing health services, as well as the beneficiaries who receive them. **Physical** assets include the available physical space and physical structures in which health services are provided. **Technical** assets include the medical equipment and devices, drugs and other pharmaceuticals, and medical or surgical procedures and techniques used in the care of individuals and populations, as well as the informational and telecommunication systems that support the delivery of that care—note that the latter includes eHealth applications.

Infrastructure refers to how a system combines, organizes, and structures the use of these asset resources to produce, provide, and deliver health care services. Infrastructure includes how clinical and support staff are organized into work groups and teams; staffing ratios and staffing mix; what tasks the staffs perform; how beneficiaries are utilized as part of the health care team; how physical space is divided, laid out, and used for various aspects of work flow; what medical technology is used and how it is distributed among and used by staff; and what business/administrative and clinical protocols are followed.

Note that acquiring and maintaining these assets, and building and operating this infrastructure, require another key resource: money or financial/economic assets. Any particular combination of resources and infrastructure used to achieve a given level of performance carries a cost. Optimization requires that the highest level of performance be achieved at the lowest possible cost.

What is optimized resource use?

If optimization is the optimized use of resources (by combining and using them in an optimized infrastructure), what is meant by optimized resource use? This question can be addressed in two ways. As mentioned above, optimization requires that the highest level of performance be achieved at the lowest possible cost; thus, optimized use is achieving this performance level while minimizing the cost of

resources required to achieve it. However, achieving this ideal optimized state (maximum performance for minimum cost) is unlikely, especially achieving it through one large-scale step. It is more likely that optimization will be achieved gradually by approaching it through a series of incremental steps. Looked at from this perspective, optimized resource use is improving the ratio of performance achieved for resources used under an incrementally optimized scenario relative to the ratio that obtains under an alternative (either a less optimized or the current status quo) scenario.

We illustrate this latter approach in the table below, which compares the level of performance and the resources required to achieve it for alternative ambulatory care delivery scenarios. Compared to its alternative, a given scenario can perform better, the same, or worse, and this performance can require less, the same, or more resources (and associated costs). Resource and performance results can combine in different ways, some of them being more optimized than others.

Resources (and associated costs)	Performance		
	Better	Same	Worse
Less	+++	++	–
Same	++	+/–	– –
More	–	– –	– – –

Scenarios that fall into the table's upper left quadrant area are more optimized than others and should be encouraged and promoted; scenarios that fall into the lower right quadrant area are less optimized and are to be avoided. Scenarios that fall along the upper-right-to-lower-left diagonal are neutral to negative and do not generally represent optimized states for Navy Medicine.[6]

6. Worse performance and more resources are generally to be avoided; however, it is possible to conceive of scenarios in which a 15-percent decrement in performance results from a 25-percent decrement in resources or in which a 15-percent increase in resources results in a 25-percent increase in performance. While such scenarios are improvements over alternatives, they are not optimized because optimization requires no increase in resources (costs) and no decrease in performance, regardless of improvement in the performance-resource ratio.

What are the performance goals of optimization?

By performance, we are referring to measurable system conditions that characterize the state of a system in carrying out its functions. In particular, for ambulatory PC and MH delivery systems in Navy MTFs, we are referring to the following five characteristics: (1) **capacity** (to deliver services to beneficiaries), (2) **accessibility** (of services to beneficiaries), (3) **effectiveness** (in achieving desired health outcomes), (4) **satisfaction** (of providers and beneficiaries), and (5) **efficiency** (resulting in cost savings or cost neutrality). Note that these performance characteristics are not independent of each other; achievement of one contributes to the achievement of the others, and a given contributing factor can affect more than one characteristic.

Capacity is the ability to deliver services to beneficiaries; the number of standardized or equivalent (case-mix adjusted) visits/encounters and services that can be provided in a given period of time (per day, per week, etc.) through the use of available human, physical, and technical resources and the infrastructure in which they perform. Increased capacity results in the ability to enroll and serve more beneficiaries (resulting in *actual* increased enrollment) and to schedule and make available more visits/encounters (resulting in *actual* increased number of visits/encounters). The optimization performance goal for capacity is to be able to "maximize the proportion of beneficiary services performed by the direct care system" [1, p. 9], including recapturing some services currently performed by the managed care support contract network.

Accessibility is the ability of beneficiaries to actually use the available PC and MH services that a Navy MTF's service delivery system is capable of providing. If capacity represents *potential* access (i.e., the *potential* services that an MTF can make available to beneficiaries), accessibility represents *actual* access (i.e., the *actual* services that beneficiaries use). Accessibility is also linked to effectiveness and percent efficiency: effective access is linked to achieving desired health outcomes through accessing services, while efficient access adds the dimension of resources used (and costs incurred) in achieving access [3]. Increased accessibility results from increased or improved ease of access (as barriers to access are reduced), as evidenced by such

indicators as shorter wait times for appointments, more convenient and/or increased clinic hours and times of appointment availability, increased availability of walk-in or same-day appointments, and shorter cycle times for patients to be seen after arriving at the clinic. Beyond the current TRICARE access standards, the optimization performance goal for accessibility is that needed health care services should be "immediately accessible" [1, p. 9].

Effectiveness is achieving desired health outcomes. The optimization model emphasizes prevention over intervention, and sees improving the health of the enrolled beneficiary population as paramount. This is to be achieved by combining the right resources (the right care [technical resources] to the right patient and by the right provider [human resources] in the right setting [physical resources] at the right time), building and applying the right infrastructure, and providing the right mix of preventive and care programs and services (see also Kindig, *Purchasing Population Health* [4]). The optimization performance goal for effectiveness is to optimize population health.[7]

Satisfaction is achieved by meeting or exceeding the expectations, needs, and/or preferences of system participants [the human resources of the system]. Thus, optimization must satisfy beneficiaries (who may be potential as well as actual MTF patients), clinical providers, and other members of the health care/clinic team. In addition to current TRICARE patient satisfaction standards, the optimization performance goal for satisfaction is to meet or exceed participant expectations, needs, and preferences to such an extent that they become and remain motivated to perform at levels and in ways that achieve and maintain the other optimization performance goals.

Efficiency is avoiding wasted effort and/or misuse of input resources such that the system can improve performance in the preceding four characteristics with no increase in and possibly a decrease in input resources used, resulting in overall cost neutrality or possibly cost savings. The optimization performance goal for efficiency is for clinics, MTFs, and the entire Navy Medicine health care system to perform better with the same resources, to perform the same with fewer resources, or, ideally, to perform better with fewer resources.

7. According to [1, p. 9], "Optimizing population health is the primary goal of the MHS."

What is the environmental context of Navy Medicine's optimization efforts?

In addition to the general environment in which all American health care (public and private, civilian as well as military) functions, Navy Medicine operates within the military-unique context of—and is subject to funding and/or policy and procedure constraints imposed by—the nation's military mission, military-related congressional direction, the Department of Defense (and especially the Office of the Assistant Secretary of Defense/Health Affairs, TRICARE Management Activity, and TRICARE lead agents), and military line commanders.[8]

Any Navy Medicine optimization initiative must be consistent with the context and constraints they set. For example, (a) Navy Medicine eHealth initiatives will need to reside on DoD-wide computing platforms and use DoD-wide software, portals, and protocols (e.g., the TRICARE Online eHealth portal that is under development); (b) Navy use of human resources for ambulatory PC and MH must follow DoD policies regarding readiness and the use of readiness-required personnel for delivering health care; (c) Navy MTFs located on naval bases and serving shore-based as well as afloat, underwater, airborne, or field-based commands must meet the needs of line commanders responsible for the those commands; and (d) Navy Medicine must interface with and obtain services from TRICARE managed care support contractors and their clinical networks according to the terms and conditions of the TRICARE contracts with those contractors.

Finally, the Federal Government directives for various agencies within departments to work together and avoid unnecessary duplication, and also for agencies across departments to work more closely together whenever feasible, both shape the environmental context of Navy Medicine and its efforts to form external partnerships with other health care providers. More specifically, these government

8. Part of the mission statement of the Military Health System (MHS) states that its purpose is "to support the Department of Defense (DoD) and our nation's security." Its vision statement reads in part: "The MHS is responsive and accountable to DoD, line leadership..."

directives instruct DoD health care to work more closely with the Department of Veterans Affairs (DVA) health system, and direct the health systems of the Army, Air Force, and Navy to work together.

The central question rephrased

Given the above discussion, we can now more precisely specify the central question of this report: What are some likely successful interventions that Navy Medicine can take in building the infrastructure of ambulatory PC and MH in Navy MTFs to optimally allocate, integrate, organize, and use the human, physical, and technical assets directly or indirectly available to BUMED in order to achieve the capacity, accessibility, effectiveness, satisfaction, and efficiency performance goals of optimization, within the context of and constraints set by its external environment?

These conceptual questions, and our answers to them, formed the basis of our approach to developing recommended interventions. We reviewed all of our data sources (the published literature, our field trip notes, our previous data analyses, and our work with the boards) to identify potential intervention recommendations, and then screened them against the optimization performance goals and environmental context constraints to select those that we believe are most likely to achieve those goals within those constraints. We present these recommended interventions in the next section of this report.

Intervention recommendations

In this section, we present our recommended interventions for optimizing the organization and delivery of ambulatory primary care and mental health services in Navy MTFs as set forth in the rephrased question on page 15. They are intended to help move ambulatory PC and MH delivery toward meeting the optimization performance goals laid out in the previous section. These recommendations are not exhaustive of all possible such interventions; they are illustrative of the kinds of interventions Navy Medicine can take. They are also not mutually exclusive; rather, they are complementary of each other, and implementing any of them would tend to reinforce the effects of implementing the others.

The PC and MH advisory boards (PCAB and MHAB) have each considered a number of potential interventions, with analytic support from and participation by CNA, and have developed draft or finalized committee opinions regarding them. The MHAB, for example, has considered staffing level and staffing mix of MH professionals for delivering MH services in Navy MTFs, the PCAB has considered advanced (open or same day) access appointing for Navy PC and the design of an ideal optimized Navy PC clinic, and both boards have jointly considered and recommended integrating MH and PC in Navy MTFs. These efforts, resulting in large part from CNA analytic support and participation, informed the current report and are incorporated into it. We have included as appendices the current working draft of the PCAB statement on an optimized Navy PC clinic (appendix A) and the joint MHAB - PCAB committee opinion on integrating MH and PC (appendix B). We take these statements and all of the work of these advisory boards as starting points and build on them in the recommendations we present here.

Organize care within and between system levels

Navy Medicine is unique within the MHS in requiring heterogeneity in the delivery of care to meet its multiple missions and the needs of its constituent patient populations. In common with Army and Air Force Medicine, Navy Medicine must respond to both its readiness/wartime and its peacetime missions. However, in contrast to Army and Air Force Medicine, Navy Medicine must do so while supporting both shore-based and afloat Sailors and Marines; forward-deployed active duty personnel; surface commands, undersea commands, air commands, and training commands; and bases that range from major concentrations of fleet and airborne assets to isolated duty stations. Although this heterogeneity of multiple missions requires a certain degree of heterogeneity in structure and delivery of care to achieve its optimization performance goals, we believe that Navy Medicine can benefit from introducing a more standard overall approach to how it organizes the delivery of ambulatory care to its priority beneficiaries within its MTFs.

In our site visits to Navy MTFs over the past two years, we observed many good organizational forms, structural elements, and care delivery processes,[9] but no overall, enterprise-wide approach to explicitly organizing care within and between system levels. By system level, we mean care delivery structures and processes of a given scope or scale that exist within a more or less hierarchical systemic organization of care delivery structures and processes of greater and/or lesser scale. Thus, health care structures and processes can be organized at the micro level of individual clinical providers, their support staff, and their patients; at the level of integrated teams of providers; at the level of networks of teams and extended clinical and social supports; at the

9. These include open access initiatives at NACC Pax River and BMCL Oceana, command-wide clinical product lines at Naval Health Care New England, a primary care directorate at NMC San Diego, primary care TRICARE Outpatient Clinics in the Tidewater area, internal PC-specialty care referrals and an external partnership with a local community hospital at NACC Newport, and inter-service cooperation between NMCL Pearl Harbor and other service MTFs in the region.

macro level of groups of networks; and at the enterprise level of an overall national or worldwide health care delivery system.

We recommend that Navy Medicine consider developing an enterprise-wide approach to and enterprise-wide standards for organizing care within and between such system levels for the delivery of ambulatory primary care and mental health care in its MTFs. This is not to say that Navy Medicine should adopt a cookie-cutter, one-size-fits-all approach to the organization of its treatment facilities, or that BUMED should employ an overly directive, top-down approach to implementing a new structure. This recommendation suggests that BUMED should develop a general approach with a set of performance standards to measure adherence to and achievement of the benefits of the approach, and that each Navy MTF Command should be given the leeway to implement this approach in a manner that best fits its situation but then be held accountable to meet the performance standards.

To assist BUMED in developing such an approach and standards, we offer the following comments on organizing and coordinating such care within and across system levels.

The delivery of Navy MTF-based ambulatory PC and MH should be organized through and coordinated across the following four hierarchical system levels:

1. Clinical Care Unit (CCU) composed of a licensed independent provider (LIP) clinician plus his/her designated support staff providing care to a defined priority patient population within a single Navy MTF MEPRS (Medical Expense and Performance Reporting System) clinic.

2. Clinical Care Team (CCT) composed of a grouping of several (three to five) CCUs plus additional designated clinical and managerial support staff within a single Navy MTF MEPRS clinic.

3. Clinical Care Network (CCN) composed of designated adjunctive clinical and nonclinical caregivers and care supporters both within and outside Navy MTFs that support and are

explicitly and deliberately integrated with designated CCTs within a defined geographic area (such geographic areas are to be defined based on a combination of clinical and economic feasibility considerations).

4. Clinical Care Cluster (CCC) composed of all of the PC or MH CCTs across a given region (where region refers to a "parent" MTF DMIS command and all of its "children" MTF DMISs and incorporating independent commands that are collocated in the same general region or in a geographically adjacent region) plus additional designated clinical and managerial support staff as required and economically feasible.

The first two levels of this hierarchical organization (CCUs and CCTs) mirror the design blueprint for an optimized PC clinic developed by the PCAB (see appendix A). That blueprint envisions core **PC units** composed of a primary care manager (PCM) serving an average enrolled patient panel of 1,250 beneficiaries (1,000-1,500 depending on specialty, discipline, and collateral duties) and being supported by a 0.5 FTE dedicated registered nurse and 2.0 FTE dedicated corpsmen, licensed practical or vocational nurses, or medical assistants engaged in direct patient care; and **PC teams** of four such units caring for a combined panel of about 5,000 beneficiaries[10] and being supported by a wider range of dedicated clinicians and support staff. With appropriate adjustments to fit MH practice, these two levels are appropriate for MH care as well.

The PCAB blueprint does not discuss the next two levels (CCNs and CCCs). The concept for these levels comes largely from the health

10. The suggested number of enrollees per PC CCT is 1,000 fewer than the 6,000 mandated by the Air Force Medical Operations Agency (AFMOA) for PC teams organized along the lines of the Air Force's Primary Care Optimization (PCO) model. However, based on field visits to selected AF MTFs employing the PCO model and several interviews with AF medical personnel, it is our observation that this is too ambitious a standard for the average MTF. This standard is achievable and effective in those MTFs that AFMOA maximally and stably resourced, but was neither achievable nor effective where staffing and other resources were limited or unstable.

care systems of the United Kingdom (the UK and its National Health Service, or NHS), Ireland, and Australia [5–9]. CCNs add breadth and depth to the care provided by CCTs by expanding on the clinical and social support that a CCT can provide. A given primary care or mental health network serves all of the primary care or mental health teams, respectively, within its defined geographic region; however, the network designates specific named members to work with specific teams rather than simply designating the network in general to serve the various teams. Network members may be individual clinicians (e.g., speech and language therapists, mental health professionals and counselors, family therapists, community pharmacists, dentists, or podiatrists), public or private agencies (e.g., Navy and Marine Corps family services agencies, and local public health, social service, or home health agencies), or facilities (e.g., Army, Air Force, or DVA health care facilities, private clinics, or community hospitals—the latter based on the external partnership model developed by NACC Newport and Newport Hospital). These networks help flesh out the full range of comprehensive care encompassed by PC and the often multifaceted and multidisciplinary approach required by MH.

CCCs function as directorates that pool the resources of PC or MH teams across a region for purposes of addressing issues of population health and quality. Such clusters draw from a large enough base of clinicians, and are responsible for a large enough base of enrollees, to support wide-scale population health efforts, broad-based clinical disease registries, and focused continuing education initiatives. Clusters may be geographically compact (as would be the case in the Tidewater or San Diego regions) or spread out (as would be the case for Naval Health Care New England [NHCNE]). They may also extend beyond Navy Medicine where appropriate to include assets from other uniformed services (e.g., as likely appropriate in the Hawaiian Islands with NMCL Pearl Harbor, Tripler AMC, and the 15th Medical Group-Hickam AFB), or from other federal agencies (e.g., as likely appropriate in the Las Vegas area with O'Callahan Federal Hospital which incorporates the 99th Medical Group-Nellis AFB and the VA Medical Center Las Vegas). Clusters are "governed" by representatives of their constituent teams, and are the seat of the clinical governance efforts described next.

Of the four hierarchical levels, the CCT is the central focus for direct clinical care: CCUs are constituent elements of a team, CCNs extend and support the care provided by teams, and CCCs are composed of constituent teams. A major advantage to having CCTs be the central level is that this approach strikes an effective and efficient balance between centralization and decentralization of clinical activity. Our field visits to selected Navy, Air Force, and Army MTFs impressed on us the greater diversity in size, structure, and mission of Navy MTFs. Army and Air Force Medicine both appear to follow a greater degree of centralization in decision-making and standardization in health care operations than is true for Navy Medicine. Navy health care seeks to balance centralized decision-making and decentralized operations held accountable to centralized operational standards, requiring more attention to the centralization-decentralization continuum. Organizing care along the four system levels and focusing clinical activity on the team should help BUMED achieve the balance that Navy Medicine requires to function optimally.

A quasi-experimental study of the Kaiser Permanente (KP) primary care delivery system in Georgia further supports this notion. In that study [10], three to five PC clinicians and their support staff were grouped into health care teams. Teams were self-directed and semi-autonomous yet functioned within the context of their local clinics, the statewide KP structure, and the overall national KP system. The size of these teams supported the growth of colleague relationships and allowed clinicians to jointly develop ownership of the care provided within the team. The study found wide variation in how teams organized themselves and the types of internal cultures they developed; yet this decentralized approach successfully fit within the overall clinical and organizational model characteristic of the KP managed care plan.

In a similar way, CCCs also allow a good balance between centralization and decentralization for wider clinical practice issues, such as sharing clinical information, developing area-wide health improvement plans (then operationalized and implemented by constituent CCTs), addressing issues of clinical quality, and developing practice protocols and guidelines.

Teams are small enough to maintain close, ongoing relationships with patients, yet large enough to achieve economies of scale and permit cross-scheduling/coverage for enrolled patients. In primary care, a single CCU with a panel of only around 1,250 enrollees is too small to efficiently support the interdisciplinary team recommended for PC by the Institute of Medicine (IOM) [11]. A panel of around 5,000 enrollees appears needed to efficiently support such a team. Thus, a grouping of three to five CCUs (ideally four) appears to be the most efficient size for a CCT. Too much larger than that and a PC team would lose the personal relationship that should exist between its members and its enrollees. A CCT composed of four CCUs allows all members of the team to be fully involved in the ongoing, continuous, comprehensive primary care of the enrolled population. Such teams also allow for the benefits of improved access through cross coverage. They can support the "wide range of talents and knowledge needed for primary care," yet are small enough to maintain "appropriate personal knowledge of the patient" [11, p. 121]. By contrast, the extended CCN contains clinical and social support personnel who have more intermittent and/or more focused contact with enrollees. Again, with suitable adjustments, this concept applies to mental health as well.

While efficiency requires several CCUs to group together into a CCT, effectiveness requires that teams not become too large. This means that in larger MTFs (e.g., the Naval Medical Centers, Naval Hospitals, and some of the larger independent or branch clinics), there may need to be more than one PC or MH team in a given MEPRS ambulatory clinic (e.g., Family Medicine, Pediatrics, Internal Medicine, PC, or MH) and very likely more than one team within the MTF. On the other hand, in smaller MTFs, there may be only one team per MEPRS clinic, or even only one team for the entire MTF. However, some MTFs may be too small (have fewer than the requisite number of enrollees, even adjusted upward for Standard and Extra beneficiaries) to support three to four PC or MH CCUs to form even one team. In the civilian sector, group and staff model managed care clinics (which approximate an MTF's outpatient service) that are too small to achieve and maintain efficiency are often either closed or consolidated with other clinics to gain efficiency. This is not always practical or possible for MTFs that serve mission critical purposes. A possible

alternative model to follow for such MTFs might be rural health care where small, geographically dispersed clinics are linked through modern telecommunications (eHealth) and "circuit rider" clinical staff. This model has long been adopted by Navy facilities in New England (and now organized into NHCNE), and appears to have been successful.

Employ clinical governance

We base this proposed intervention on the use of clinical governance by primary care groups/trusts in the UK) [12–17]. The UK's NHS defines it as "a framework through which NHS organizations are accountable for continuously improving the quality of their services and safeguarding high standards of care by creating an environment in which excellence in clinical care will flourish." (See, for example, [12 and 16].) Clinical governance places responsibility and accountability for population health and quality improvement in the hands of CCCs. To accomplish the aims of clinical governance, Navy Medicine—working with and through MTF commands—can charter PC and MH CCCs to engage in the following kinds of activities:

- Conduct needs assessments and develop plans (community based Health Improvement Plans) for responding to local health needs, and develop local Health Improvement Programs, including an outreach program integrated with secondary/tertiary care and with the CCNs within their region.
- Assess the knowledge, skill, and experience of clinicians and support staff within the cluster and develop continuing education programs to address any deficiencies found.
- Share knowledge, experience, and lessons learned regarding care of various conditions and patient types within (and between) clusters.
- Develop regional evidence-based clinical practice guidelines and practice protocols that fit with the cluster's specific clinical and nonclinical environment, and eliminate practice variation.

- Use data generated within the cluster to track and profile provider-level clinical practice, and feedback information to clinicians regarding their performance compared with peers.[11]
- Establish cluster-wide disease registries (and share/pool registry data with a central registry to which all clusters report) on which to base practice improvement initiatives.
- Track and profile prescription drug use (e.g., use of generics, drug utilization review, and adverse drug events) to improve pharmacotherapy within the cluster.
- Develop cluster-wide continuous quality improvement programs implemented by constituent CCTs.
- Support the identification and training of individual practitioners to become the cluster's "specialist" in the management of a particular condition or patient population or in a particular approach, and to whom the cluster can come for consultation.

Foster a collaborative clinical culture

In addition to designing within clinical care teams, team members should also address their culture. In the study of KP Georgia PC teams cited above [10], researchers found that, while each team addressed internal issues of the structure and processes of clinical care within the team, the teams also developed distinctive cultures that varied in degree of collaboration between team members. Analysis demonstrated that, compared with clinics that failed to develop collaboration, a collaborative clinic culture was associated with more favorable primary care outcomes including better access, higher patient satisfaction, and improved quality of care. In a large-scale British study, researchers also found that a cooperative culture within clinical care teams was a predictor of high quality PC [18]. BUMED, MTF commands, and clinical care clusters should identify facilitators of such collaborative cultures, and employ them to foster the development of such cultures within teams.

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11. Proper care needs to be exercised to protect clinician anonymity. This can be accomplished by providing clinicians access only to their performance and pooled peer data in aggregated format.

Conduct medical technology assessments

Medical technology assessment (MTA) is a process of reviewing and evaluating available clinical, health service delivery, and economic evidence regarding a medical technology to estimate its clinical and cost-effectiveness for indicated uses relative to alternatives—and to assess its net health, health care, and economic consequences—for purposes of informing clinical and health care decisions regarding that technology.[12] The NHS operates a centralized MTA process through its National Institute for Clinical Excellence (NICE). In the United States, the DVA operates such a program, and the Medicare program operates a scaled-down, modified program to assist reaching decisions on what technologies it will pay for. A general program at the federal level was briefly operated during the 1970s, and the federal Agency for Health Care Policy and Research (now the Agency for Healthcare Research and Quality) operated a program during the late 1990s, but both programs were abandoned by the government because of opposition from stakeholders. Several large, national health plans (e.g., the Kaiser Permanente health program and the Blue Cross Blue Shield Association) operate programs, and several states (notably Minnesota and Oregon [20]) have experimented with them as well.

Medical technology assessment programs can be conducted by CCCs as part of their clinical excellence activities (decentralized approach), or clusters can send representatives to a centralized Navy Medicine program (KP and Blue Cross approach). Under either model, clinicians from throughout Navy Medicine (the major stakeholders to the process) will be involved in the assessments to foster acceptance. CCC activity can also include developing clinical practice guidelines based on the results of MTAs, and tracking practice pattern adherence to them among their constituent CCTs.

12. A related concept to medical technology assessment, used more specifically for evaluating clinical procedures, is cost-effectiveness analysis (CEA). As currently developed, this analytic technique may be used as one dimension or evaluation criterion of medical technology assessment. For a recent discussion of CEA, see [19].

Utilize clinical eHealth applications

eHealth is the electronic and virtual bringing together and networking of people, organizations, and information, either locally or over a wide area, for clinical, managerial, commercial, or educational purposes, in order to improve individual or public health or health care, or the transaction of the business of health or health care, through enhancing or enabling interaction and exchanges of information, products, and services. Although eHealth has a wide range of potential uses, we have restricted our focus to its potential clinical uses in PC and MH. Such uses include supporting or facilitating diagnosis, treatment, prescribing, consultation, and preventive medicine and health promotion, as well as patient or provider reminder systems, clinical decision support, and mechanisms to extend or expand the patient-provider relationship and patient-provider interactions or to foster population health.

Any Navy Medicine eHealth initiative will need to be compatible with the infrastructure (e.g., TRICARE online, software, platforms, rules and protocols) developed by and for TMA/DoD, and our recommendations take this fact as a starting point. Step one in any Navy Medicine eHealth strategy is to deploy the TMA/DoD infrastructure as it develops and rolls out.

We recommend that, in addition to implementing the TMA/DoD backbone, Navy Medicine identify and evaluate the potential of specific clinical eHealth applications that can be used by PC and MH in Navy MTFs. Examples include:

- Supervised chat rooms for chronic illness and or mental health[13] patients, where patients can become support groups for each other under the supervision of a clinician "moderator" once privacy issues are adequately addressed
- Use of individually tailored computerized biofeedback or behavioral feedback for patients with various kinds of physical

13. A recent study found that such chat rooms prevented re-admissions for recently discharged MH patients.

or mental disorders to assist them in monitoring and correcting their behaviors[14]

- Using email reports to track acute infectious or other environmental vector-borne outbreaks
- Using secure eHealth web-based portals and/or onbase kiosks for patients, providers, and support staff to report patient safety violations with real or potential (near miss or close call) consequences that can be analyzed and addressed by CCTs and CCCs
- Automated internet and/or email messaging systems that CCUs or CCTs can use to send proactive reminders to patients to receive preventive health care, take medications, or engage in behavioral risk reduction activities
- Online health risk assessment tools that can link directly back to a PCM or primary MH professional and his/her CCU (again, taking care not to violate medical privacy rules)
- Online behavioral risk reduction programs that use the results of health risk assessments (especially online assessments as mentioned above) to tailor risk reduction activities to a person's risk behaviors, stage of change, feelings of self-efficacy, socioeconomic and occupational situation, and age and stage of life. Such programs can also use online "coaching" to help people develop achievable goals and track progress toward them.

Integrate mental health and primary care

Increasingly, there is a paradigm shift in health care away from seeing mental health and physical health as separate domains (the mind-body duality) and toward seeing them as parts of a single entity. This has led to efforts to more fully incorporate tenets and principles of psychiatry and psychology into general medical practice. In recognition of this, the *British Medical Journal* introduced a 14-part series on psychological medicine (integrating psychological care in general medical practice) in late June 2002. An editorial accompanying the

14. Recent research suggests that this approach may be effective with eating disorder patients.

initial article in this series stated: "It is becoming increasingly clear that we can improve medical care by paying more attention to psychological aspects of medical assessment and treatment" [21].

One way to achieve this is through the integration of a mental health professional into a general medical (PC) practice on a full- or part-time basis, as recommended by the PCAB and MHAB (see appendix B). Another approach is to improve the MH knowledge and skill of PC providers [22]. Either approach is likely to result in "recapturing" into Navy MTF PC clinics some of the mental health care currently being provided as a "carve out" by contract behavioral health providers outside the direct care system—especially for non-active-duty enrollees. A careful analysis needs to be conducted of the balance in clinical and cost considerations of serving these patients in the MTF rather than in the contract network. Although early diagnosis and treatment of psychological distress and mental illness within PC settings will help decrease the higher-than-average utilization (and thus cost) of enrollees with undiagnosed underlying or co-morbid psychological conditions [23, 24], whether this will cover the additional cost to the direct care system of providing these services "in house" is an unanswered empirical question.

Incorporate theories of behavior and behavioral change into clinical practice

This recommendation goes beyond integrating MH and PC to using socially and culturally sensitive and targeted behavioral interventions based on sociopsychological theories of behavior and behavior change (e.g., the Health Belief Model, social cognitive theory, stages of change, Theory of Reasoned Action)[25, 26, 27]. Since much effective health care requires behavioral change (or behavioral compliance with prescribed medical regimens) on the part of patients; better and more complete integration of behavioral theories into the care of and communication with patients is crucial. This approach more fully involves the beneficiary in his/her care as a crucial and integral part of the clinical team, but it must use evidence-based principles of behavior based in behavioral and social science [28]. Also, it must tailor behavioral interventions (doing what works for a given

beneficiary) by providing the clinician with the right information about the beneficiary at the point of care. Beneficiary surveys and health risk assessments plus clinical records can supply the needed information, and clinicians can access it through the computer using various eHealth applications.

Implement behavioral risk reduction programs

Closely related to the immediately previous intervention, introducing behavioral risk reduction programs is another approach that can be designed by CCCs and implemented by constituent CCTs. The targets of such programs include smoking, drinking and other substance abuse, physical exercise, healthy eating, and seat belt use. Current research suggests that functional disability can be postponed or reduced and that up to 70 percent of the physical decline that occurs with aging results from behavioral risk factors. These programs should be based in PC and involve PC team members, but they must go beyond brief remarks by the PCM to include evidence-based interventions tailored to the individual patient. Current research also strongly points to the effectiveness of goal setting, measured monitoring of progress toward goals, involvement of family and community, and the structured use of behavioral coaches on the health care team. Staff nurses, corpsmen, and medical assistants can be trained to serve as such coaches. Properly implemented, such programs can make clinically significant differences in population health. As a recent review of the literature on behavioral counseling concludes [29]:

> Behavioral counseling interventions in clinical settings are an important means of addressing prevalent health-related behaviors, such as lack of physical activity, poor diet, substance (tobacco, alcohol, and illicit drug) use and dependence, and risky sexual behavior that underlie a substantial proportion of preventable morbidity and mortality in the United States. Important advances in the ways primary care interventions have been packaged have resulted fom the past two decades of research. Most importantly, brief interventions designed to fit into everyday practice have been found to produce clinically meaningful changes in a population for a growing number of behavioral risk factors.

Currently, several such risk reduction efforts exist throughout Navy Medicine and within given Navy MTFs, but they do not constitute an integrated approach. With the recent implementation of an enterprise-wide Preventive Health Assessment initiative (OPNAVINST 6120.3), an opportunity exists to create an integrated and comprehensive Navy Medicine behavioral risk reduction program.

Lay out physical space to optimize journeys

The design and physical layout of primary care and mental health clinics in Navy MTFs can contribute to or detract from the delivery of effective and efficient care. Recent research and experience suggests that clinics should be designed and laid out from the perspective of a typical patient's "journey" through the clinic and a typical clinician's "journey" in providing care in the clinic. Evidence from a computer simulation study at Brooke Army Medical Center [30], for example, suggests that having the requisite number of exam rooms is a necessary but not sufficient contributor to the optimal delivery of care; having them close to each other (ideally, adjacent to each other, and even better with a clinical support staff room in between exam rooms as in the ideal Air Force PCO model) is required. Based on our observations during site visits to selected MTFs and anecdotal reports gathered during those visits, it appears that clinics that approximate this design approach (e.g., Brooks AFB and NACC Newport) achieve efficiencies that other clinics do not, and that provider and patient satisfaction is higher as well. This is consistent with the Institute for Healthcare Improvement's Idealized Design of Clinical Office Practice (IDCOP) model [31], and those clinics and integrated health care systems that follow its precepts have reported improvements in efficiency, effectiveness, and satisfaction.

Apply principles of advanced access to the interface between primary and secondary care

There is currently much interest throughout the MHS regarding what is known as "open access" or "advanced access appointing." This concept, developed several years ago at a Kaiser Permanente clinic in California by Dr. Mark Murray and others, seeks to address the twin

common problems of (a) clinics facing a constant backlog of appointments and (b) patients experiencing long waits for appointments. Following the central principle of "Do today's work today," advanced access requires that clinics work down their current backlogs so that their appointment books are clear, and then that they both manage and stabilize demand and match capacity to demand so that new backlogs do not develop (doing today's work today avoids new backlogs). Several MTFs throughout the MHS, including several Navy MTFs, have implemented advanced access appointing systems for one or more clinics (typically primary care). In an effort to standardize these systems across the MHS, TMA's Appointment Standardization Integrated Program Team (ASIPT) developed guidance for MTFs to follow for implementing advanced access, and TMA's Executive Director, Thomas Carrato, issued a memorandum to the Surgeons General of the Army, Navy, and Air Force in May 2002 advising them of this new guidance. Further, in a column on the TMA website in July 2002, Assistant Secretary of Defense for Health Affairs, Dr. William Winkenwerder, promoted open access and encouraged MTFs to try it. The PCAB reviewed this concept and developed a Committee Opinion in January 2002 recommending that Navy MTF PC clinics consider establishing open access approaches as part of their optimization efforts.

As initially conceived and developed, advanced access appointing is a concept mainly for primary care. However, as the TMA ASIPT points out, it may also be used in specialty care clinics. Further, in the UK, the National Primary Care Collaborative of the NHS's National Primary Care Development Team has suggested that the principles of advanced access are applicable to the interface between primary and specialty care. The Collaborative posits that the same principles that reduce delays in primary care can reduce delays from primary care to specialty and secondary care: understanding, forecasting, and managing demand; matching capacity to demand; and having contingency plans for times of overload. This requires cooperation between PC and specialty providers and clinic staffs in order to trace and then redesign, streamline, and manage the patient's journey across this interface. It also requires redesigning and streamlining the referral appointment process from PC to specialty care, allowing PC clinic

staff to directly make appointments to specialty clinics collocated in the same MTF or in nearby MTFs under the same command.[15]

PC can assist the application of advanced access across the interface with specialty care in a number of ways. Through such tools as the Population Health Navigator, PCMs can and do forecast the likely demand potential of their enrolled beneficiaries. Working in concert with targeted specialties, primary care CCTs can help expand this forecast to specialty care required by their enrollees. Specialty clinics could then match their capacity to meet this demand. PC and specialty providers (assisted where appropriate by case managers) can also develop care pathways and referral protocols, jointly agree on referral criteria, jointly manage the referral process, and jointly manage the referred patient. In selected instances, it may be possible for specialists to be integrated into PC clinics along the lines suggested for integrating MH and PC.

One note of caution regarding the applicability of advanced access for specialty care within Navy Medicine is that, because of local and enterprise-wide shortages of some specialties, there may not be enough capacity in several specialties to meet demand, even if that demand could be optimally managed.

15. We observed this process of direct appointing from PC to specialty care within the same MTF during our visit to NACC Newport, and it appeared to function both effectively and efficiently.

Barriers and success factors

The preceding ten optimization interventions that we recommend BUMED consider require careful planning and execution. These interventions, and all optimization efforts, face several barriers to successful implementation. To help overcome those barriers, BUMED will need to ensure that several critical success factors are in place. This section identifies what we believe to be some of the major barriers and some of the major success factors that will help overcome them.

Barriers to optimization

Unstable and uncertain assignment of personnel

The relatively frequent turnover of active duty clinicians, Hospital Corpsmen, and administrative staff at most Navy MTFs/clinics can impede many optimization efforts. Frequent PCS reassignments,[16] temporary duty assignments,[17] and retirements or resignations can hamper the development and performance of stable CCTs with cooperative clinical cultures, as well as the development and maintenance of the sustained patient-provider relationships required for effective

16. We heard numerous accounts at several of the Navy and Air Force MTFs that we visited of the detrimental effect of the PCS of key personnel on various initiatives under way at those MTFs. When initiative champions or those most highly and experienced in an initiative are reassigned, a lot of the energy, vision, and knowledge needed for the continuation and effective performance of that initiative is lost and is difficult and costly to replace.

17. A recurring concern cited during many of our field visits to ambulatory clinics in Navy MTFs was the frequent use of Hospital Corpsmen for other temporary duties, especially temporary guard or other security-related duties. This concern was more acute following 11 September 2001 when security was heightened at all military facilities.

primary care and mental health, for effectively incorporating theories of behavior and behavioral change into care protocols, for implementing behavioral risk reduction programs, and for successfully implementing advanced access appointing.

The personnel requirements of readiness

Navy Medicine maintains the level and mix of providers needed to meet its Total Health Care Support Readiness Requirements (THCSRR). This does not always result in the right level or mix of providers needed by Navy MTFs to deliver optimized clinical care to their enrolled beneficiary populations. For that, they may have to rely on billets above or outside THCSRR or on contract or civil service personnel—all of which may be unstable and/or unreliable sources of needed clinical personnel. The need for and uncertain supply of such personnel may also limit the flexibility of MTFs to introduce and successfully implement optimization initiatives.

Incompatibility of readiness and peacetime missions

In addition to personnel requirements, Navy Medicine's readiness and peacetime missions may present other potential incompatibilities, including readiness training and the separation of operational medicine from nonoperational medicine. These incompatibilities may also stand as barriers to optimization efforts.

Resistance to change

The ten optimization interventions discussed in this report all introduce change into existing Navy MTF systems, and systems (especially human social systems) are characterized by resistance to change.

Resistance of Line and/or MTF commanders

In addition to system-based resistance to change, Line and/or MTF commanders are likely to resist changes in resource allocation, capacity reductions or realignments, and other changes that they perceive to be detrimental to their careers or commands.

The "leading, speeding, and bleeding" syndrome [32]

Frequently, in an MTF's haste to be first in introducing a new initiative (leading), it can rush in before it has sufficiently developed the concept and implementation plan, laid sufficient groundwork, built the needed infrastructure, and obtained the needed buy-in from principals (speeding), thus resulting in financial and other types of loses (bleeding). Seeing an early initiator fail with a new idea can also be a detriment for others to try it or to receive support for it (if it failed once, so the thinking goes, it's likely to fail again).

"Hamster Health Care" and the "Kaiser Reward" [32, 33]

"Hamster Health Care" refers to the time pressure clinicians feel when asked to see more and more patients in a given day at the clinic, making them feel like a caged hamster running on a spinning wheel. The "Kaiser Reward" refers to efficient clinicians getting "rewarded" with more patients and more work (because they're so good at it). Clinicians feel stressed and pressed for time because of the explosion in information, expectations, technology, number and complexity of possible clinical interventions, and scope of care (behavioral, psychological, and social aspects).

Critical success factors

Effective leadership

Perhaps the most critical success factor is effective Navy Medicine leadership at the clinic, MTF, command, and headquarters levels, and leaders with the will and the ability to “just do it”—to do what it takes to overcome barriers, to communicate a vision of what optimization can achieve, and to inspire those they lead to work toward its achievement. Navy Medicine currently has many such leaders; others should be cultivated.

Inclusion of stakeholders

Effective leaders know that, to overcome resistance to change, they should include stakeholders who will be affected by that change in planning for it. The appointment of the PCAB and MHAB and other

clinical service area advisory boards is evidence that Navy Medicine is aware of this success factor.

Investment

Successful implementation of the interventions recommended in this report requires Navy Medicine to invest in building the human, physical, and technical infrastructure required by these interventions. The cost of building this infrastructure should be seen as an investment with future payoff rather than simply as a cost.

Employ the PDSA cycle

To successfully introduce an optimization intervention, Navy Medicine or one of its MTFs must adequately plan for its introduction (avoiding the "leading, speeding, and bleeding" syndrome). However, even that is not enough to ensure success. Success requires ongoing assessment and reassessment as characterized by the Plan ? Do ? Study ? Act (PDSA) cycle. As this cycle suggests, doing is not the final stage in the process; success requires assessing (studying) how one is doing and then taking better informed action based on that assessment. Further, as the concept of a cycle suggests, action is not the final step in the process either; a cycle repeats over and over, suggesting that reassessment and perfecting action is an ongoing task and requirement for success.

Flexibility

Navy Medicine needs to be able to easily adapt/adjust to changes in enrolled population demographics (size, composition, health status, etc) with available personnel, etc. It requires data systems that can detect changes as well as system flexibility to incorporate and adapt to those changes.

Balance

This factor refers to striking the proper balances between (a) high tech and high touch; (b) focus on (what's best for) the bottom line and (what's best for) the patient; (c) standards/uniformity/elimina-

tion of variation and flexibility/discretion at the point of care/service. Balance is needed between centralization and decentralization.

Thinking "outside the box"

Success depends on the ability to incorporate effective concepts that are outside "the way we do things" and/or that are developed outside Navy Medicine and the MHS.

Redesign for the information age

The solution is to get off the wheel and reorganize/redesign work to better fit with the current realities of clinical practice in the information age: work in teams, share information within and between teams, maintain personal communication and continuity with patients (use of email and the internet) to build/restore trust, which will allow clinicians "to use available time more productively" [34]. Email (electronic patient-centered communication, or ePCC) and brief telephone consults also allow clinicians to handle routine matters and free up more time for face-to-face care.

Conclusions

Navy Medicine is a force multiplier for Sailors and Marines. It accomplishes this objective through the application of population health concepts to protect and maintain their health as well as the health of their dependents, and carries this commitment to retirees/survivors and their dependents. Optimization is a means of optimizing population health by optimizing the use of available resources for achieving population health. In this report, we have sought to provide recommendations to guide the work of Navy Medicine's primary care and mental health advisory boards and the efforts of the Bureau of Medicine and Surgery in optimizing these two service clinical areas.

We began this report with a discussion of conceptual issues related to optimization. We posited that optimization is a property of a system, and then discussed how the Navy Medicine system needs to (a) optimally use its human, physical, and technical resources, and (b) build an optimal infrastructure if it is to achieve its optimization performance goals regarding capacity, accessibility, effectiveness, satisfaction, and efficiency. We then introduced a series of potential interventions that we are recommending BUMED and the PCAB and MHAB consider adopting. We based these recommendations on insights and ideas we gained during our past two years of work with these two advisory boards, as well as on literature reviews and field visits we undertook to support that work.

Our conceptual discussion and recommended interventions all stem from the same general dual premise that system issues require system solutions and that complex systems composed of multiple system levels require interventions at multiple levels. Navy Medicine is such a complex system, and, as our review of potential optimization interventions suggests, there are a range of multi-level, system-related activities that BUMED, its primary care and mental health advisory boards, and its MTF commands can potentially undertake to better rationalize the organization, allocation, and use of medical resources

and assets. These potential interventions include organizing and integrating care and care protocols within and across levels as well as within and across interrelated clinical specialties, incorporating clinical leadership through clinical governance, building teams and a collaborative team-oriented culture, using clinical and technological advances—including those related to eHealth—but first subjecting them to critical assessment and evaluation, and integrating clinical, behavioral, and social aspects of how typical patients and providers function within clinic environments into clinic design.

By adapting and adopting interventions such as these, and by avoiding the implementation barriers and incorporating the critical success factors outlined in this report, BUMED can continue to make breakthrough advances in achieving its optimization goals and becoming the force multiplier and custodian of population health that current leadership envisions.

Appendix A: Guidelines for an optimized Navy MTF primary care clinic

WORKING DRAFT FROM THE PCAB

Introduction

Navy Medicine/BUMED mission

The mission of Navy Medicine/BUMED has two parts:

5. Force Health Protection; fit & healthy Force prepared to 'fight and win' at home and abroad
6. To the extent possible, and within available resources, provide care for other DHP (Defense Health Plan) beneficiaries.

Target "customer base"

The population groups targeted to receive PC in NMPC clinics are:

- *Primary*—All enrolled/empanelled active duty and TRICARE Prime family members (the Force can't 'fight and win' if it's concerned about family members and if family members can't function physically and mentally).
- *Secondary*—Enrolled/empanelled TRICARE Prime/Plus Retirees and family members (keep the promise made to those who previously helped us fight and win; demonstrate to the current Force that they will be cared for when they retire).
- *Tertiary*—DHP beneficiaries.

Navy Medicine/BUMED goals

According to the Navy Surgeon General, the goals of Navy Medicine / BUMED relate to readiness, optimization, and integration (ROI), as described in the following:

a. *Readiness*—ready (i.e., trained, staffed, and organized) to achieve the mission

b. *Optimization*—optimize the balance between providing care to target populations (in priority order) within the direct care system versus through the managed care support contractor network. Do as much as is practicable with resources available to the direct care system through:

- Increased efficiency, that is, best (most cost-effective) use of available resources and utilization of personnel consistent with training and skill sets
- Use of best (most cost-effective) practices
  - Clinical (including population health, demand / disease management, clinical practice guidelines)
  - Business (e.g., capacity management and appointing)
  - Technological (including eHealth).
- Expand capacity to recapture care from the network; do more with same resources as determined by and consistent with Total Health Care Services Resource Requirements (THCSRR).

c. *Integration*—within Navy Medicine as well as between Navy Medicine and other parts of the DoN (especially the operational forces); also between Navy Medicine and other service branches, TRICARE and its civilian partners, and the VA.

Navy Medicine must fulfill its mission, serve its customer base, and achieve its goals at each of a nested series of system levels, that we refer to as the five M's:

1. Micro—the individual clinic-within-an-MTF level
2. Mini—the MTF level encompassing multiple clinics

3. Macro—the regional level encompassing a parent command and its branches/annexes, etc.
4. Mega—the enterprise level of BUMED/Navy Medicine
5. Maxi—the supra-enterprise level comprising the totality of the DoN.

The design of the optimal NMPC clinic focuses on the micro level but incorporates the integration of the clinic with the other levels of the health care system. The design should be flexible enough (and/or specify the variable parameters well enough) that the recommendations are applicable to a wide range of clinic and MTF types.

Outcomes of optimized primary care clinic

An optimized primary care (PC) clinic would have the following characteristics:

- Optimized health outcomes
- Cost-effective use of resources
- Satisfied patients
- Satisfied providers and support staff.

What is primary care and what is a PC clinic?

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. Primary care delivers comprehensive, coordinated, and continuous personal health care services to a defined patient population. Its core is a sustained patient-clinician relationship supported by a PC team composed of practitioners and support staff who together are best suited to meet the range of personal health care needs of the defined patient population. The team is an extension of the patient-clinician relationship, not an alternative to it. Exemplary primary care (based on the IOM definition) requires that one or more members of that team develop a close one-on-one relationship with the patient.

According to the IOM definition, episodic urgent medical care delivered through military sick call, an Acute Care Clinic (ACC), a Medical (or Military) Acute Care Department (MAC-D), and waterfront-based Regional Service Groups (RSGs) that is not appropriately communicated back to or integrated with the care provided by the primary care manager (PCM)—although a significant element of the medical care matrix provided by Navy Medicine—is **not** primary care.

Optimized PC clinic design blueprint

Elements of the building/facility design include:

- Two **adjacent**, standardized, well-outfitted exams rooms per PCM
- Layout of facility
  - — Facilitates function and communication between members of a PC team
  - — Ensures patient confidentiality
  - — Minimizes patient cycle time (improves patient flow)
  - — Provides ample waiting room facilities
- Safe, comfortable, and aesthetic environment.

Clinical staffing types, levels and productivity targets

The PCM function should be conducted by family physicians, general pediatricians, general internists, general medical officers, physician assistants, and nurse practitioners in a primary care setting.

Panel size, presuming optimized facility and staff support, follows:

- Family Physician (1,200-1,500)
- Pediatrics (1,200-1,500)
- Internists (1,000-1,300)
- General Medical Officers (1,200-1,500)

- Physician Assistants (1,000-1,300)
- Nurse Practitioners (1,200-1,500).

Enrollment must be adjusted in view of teaching, patient demographics, administrative, inpatient, specialty care, and collateral duties.

The following productivity targets presume optimized facility and staff and coding support:

- A PCM could conceivably have 1,540 bookable hours per year.
- Relative to the Primary Care Optimization Model (PCOM), there are 44 workweeks per year (52 total workweeks minus 4 weeks for leave and 4 weeks for TAD/CME).
- Beginning with a minimum 7-bookable-hour clinic day, resulting in a 35-hour workweek.
- One full-time equivalent (FTE) has no responsibilities aside from direct outpatient care, thus resulting in 1,540 bookable hours per year.
- A reasonably productive PCP/PCM will see an average of 3.5 equivalent visits per hour, resulting in 24.5 visits per day.
- Registered Nurses—0.5 FTE RN per FTE PCM in direct provider support.
- Corpsmen/LPN/MA—2 FTE HM/LPN/MA per 1 FTE PCM in direct provider support.

Primary care clinic staffing

The following points relate to PC clinic staffing:

- Built around 5,000 enrolled/empanelled patient building blocks to optimize provider productivity, sustained patient relationships, meeting access standards, and patient and provider satisfaction:
- 1 team = 4 **FTE** PCMs (mix appropriate to patient population demographics), 2 RNs, and 8 HM/LPN/MAs. This team is composed of 4 primary care units: 1 FTE PCM, 0.5 FTE RN, and

2 corpsmen/LPN/MAs. This unit should have a consistent membership to the greatest extent possible.

- Clinics that do not enroll/empanel at least 5,000 patients should be merged or consolidated with other PC clinic(s) in the same MTF for efficiency and effectiveness; if there is no other PC clinic in the same MTF, consider merging/consolidating MTF with another nearby within geographic and mission critical limitations.

Each clinic should have a clinic manager, and each team should have integrated support from:

- 0.25 FTE clinical pharmacist
- 0.5 FTE behavioral or mental health providers with their essential support
- 0.5 FTE Health Promotions personnel
- 0.5 FTE Coder
- 1 FTE Receptionist/Medical Clerk
- Case Managers and Nutritionists relative to patient demographics.

Appointing and scheduling

Guidelines for appointing and scheduling follow:

- Appointing should be to the patient's PCM By Name (PCMBN) or other PCM within the team if the patient's PCMBN is unavailable.
- Standardize and minimize appointment types (ACUT, ROUT, and WELL should be considered the maximum).
- PC clinics should closely assess their readiness to implement an advanced access appointing system.
- Follow-up, procedure, or routine referral care to be given within the MTFs networked through a given CHCS hub should be appointed in the PC clinic at the time of the initial visit.

- Develop local external partnerships with VA and private facilities (e.g., local hospitals) to expand PC capacity for OB, procedures, lab / radiology, PC hospitalizations, and so forth.

Roles and responsibilities for PC team members

The patient is the center of the primary care team. His/her role includes:

- Accessing the primary care clinic via appropriate methods and at appropriate intervals
- Being punctual or notifying the clinic of an inability to meet planned appointment times
- Ensuring that pertinent personal and medical data are available to the primary care team (e.g., self-maintained medical records, immunization / vaccination records, civilian medical records.)
- Participating in the development and execution of a diagnostic / therapeutic plan.
- Providing feedback to the team regarding their experience with the clinical services they have received.

PCMs coordinate patient care. They are responsible for providing or establishing access to all elements of primary care (as delineated in the core privileges of the identified primary care specialties) to include, but not be limited to:

- Initial assessment of acute complaints
- Management of chronic health problems
- Delivery of prescribed preventive health care measures
- Force health promotion
- Coordination of consultation to military and civilian health care resources as appropriate.

Team RN's responsibilities include but are not limited to:

- Triage
- Health promotion / patient education

- Basic case management
- Oversight of clinical nursing procedures
- Nurse-managed clinic presentations
- Initiating, managing, and screening of telephone consultations
- Routine prescription refills following locally established protocols
- Facilitation of patient flow via real-time schedule management
- Assisting with documentation of health care delivery on the DD2766
- HM/LPN/MA education and training
- Follow-up appointing.

Team HM/LPN/MA responsibilities include but are not limited to:

- Patient escorting
- Recording chief complaints
- Recording vitals
- Documentation of medications, allergies, tobacco and alcohol status, pain assessment, learning needs assessment, and post-deployment health questions
- Assisting with documentation of health care delivery on the DD2766
- Maintaining condition, equipment, and stock in exam rooms
- Exam standby
- Procedural assistance and performance
- Follow-up appointing

Receptionists/Medical Clerks contribute to the primary care team via:

- Patient reception
- SF600 generation

- DEERS verification
- Collecting third party insurance information
- Updating CHCS demographic/contact data
- Follow-up appointing
- Telephone call screening and telephone consultation generation
- Clinic information services
- Ensuring medical record availability
- Patient notification of schedule changes.

Coders contribute to the primary care team via:

- Feedback on documentation to the PCMs
- Education of PCMs regarding current coding and documentation rules.

Pharmacists contribute to the primary care team via:

- In-depth individual and group patient counseling regarding medications and devices
- Polypharmacy screening
- PCM drug information and education
- Therapeutic/clinical practice recommendations
- Collaborative disease state management programs
- Monitoring and follow-up of medical regimens.

Behavioral and Mental Health providers contribute to the PC team by:

- Providing timely consultative services within the primary care clinic
- Providing education to the primary care team regarding early recognition and effective management of behavioral/mental health disorders

- Assisting in psychopharmaceutical management of appropriate primary care patients
- Establishing joint plans of care for both individuals and groups of primary care patients
- Suggesting and / or providing mental health screening services
- Referring to and educating on available community resources.

Case Management contributes to the primary care team by:

- Assessing and coordinating care for high-risk, medically complex and socially fragile patients requiring interdisciplinary involvement
- Coordinating care for disease-specific populations
- Secondary screening of referrals for case management
- Coordinating the acquisition of durable medical equipment
- Regularly communicating the status of patients in active case management to the primary care team
- Generating and monitoring referrals to community resources
- Functioning as liaison between the primary care team and the inpatient case manager
- Collaborating with other civilian and DoD case managers
- Initiating and forwarding telephone consults related to case management
- Maintaining a case management database and generating reports from this data
- Facilitating and coordinating medical evacuation
- Educating primary care team on case management services.

Nutritionists contribute to the primary care team by:

- Providing disease / condition-specific nutritional counseling to both individuals and groups

- Providing healthy nutrition resources to all enrolled/empanelled patients
- Educating primary care team on current nutritional guidelines
- Providing follow-up care to individuals with identified nutritional concerns.

Health Promotions personnel contribute to the primary care team by:

- Providing disease/condition-specific counseling to both individuals and groups
- Promoting healthy lifestyle choices through individual and group counseling as well as marketing tools
- Developing newsletter for all enrolled/empanelled patients
- Coordinating and conducting the annual Active Duty Population Health Assessment
- Administering and/or managing the information obtained via the HEAR survey or other appropriate risk assessment tools, recommending action plans to the primary care team based on those results
- Coordinating tobacco cessation services
- Educating the primary care team on health promotions initiatives/guidelines.

Clinic Managers function within the primary care clinic as follows:

- Conduct appointment template analysis, including demand forecasting
- Ensure that demand management processes are implemented
- Modify patient flow to ensure as brief a cycle time as possible
- Supervise clinic personnel, both civilian and military
- Ensure implementation of best business practices
- Coordinate the monitoring and evaluation of data generated within the primary care clinic

- Arbitrate disagreements between clinic staff
- Ensure that mechanisms exist to promote a successful interface with the MCSC.

Continuity of care

Care interactions can and should take many forms. The interaction between the primary care team and the enrolled / empanelled patient may occur via:

- An in-clinic, face-to-face visit with the PCM
- An in-clinic, face-to face visit with another member of the primary care team
- An email-supported exchange of information between the patient and the team members
- A telephone consultation
- Accessing web-based health care resources that are provided and potentially monitored by members of the primary care team
- Group visits.

In settings where members of the primary care team are also engaged in inpatient care, strong consideration should be given to the development of protocols that will minimize the impact of inpatient responsibilities on delivery of outpatient care.

Choreography of the in-clinic patient visit

An in-clinic visit involves the following steps:

- The patient accesses the primary care clinic.
- The patient is given an appointment time to initiate his or her interaction with the primary care clinic.
- The clinic confirms the appointment with the patient.
- The patient presents to the clinic reception area and is checked in.

- The patient is escorted to the exam room by a team member. If an exam room is not immediately available, the patient is escorted to a waiting area and encouraged to take advantage of the health promotions materials there.
- Upon arrival in the exam room, the initial clinical intake information is obtained by the HM/LPN/MA. Health promotion activities may also occur.
- The PCM is notified of the patient's availability.
- The PCM sees the patient with HM/LPN/MA.
- The PCM engages other members of the team as appropriate.
- The primary care team, inclusive of the patient, develops a plan of care.
- Team members arrange follow-up and referrals as appropriate at the time of the visit.
- The patient is seen by the appropriate team members, coordinated by the team RN, to receive education and directions for additional services, such as health promotions, nutritional, case management, laboratory, radiology, and pharmacy care.
- The patient provides feedback as appropriate.

IM/IT systems in primary care clinics

The following systems should be used or made available in primary care clinics:

- A reliable and current electronic patient record should be available to ensure that all pertinent patient data are readily available to appropriate members of the primary care team.
- A composite database of patient data, sortable by PCM unit, should be available to facilitate population health initiatives. It should also be able to identify individual patient needs in support of clinical practice guideline utilization.
- Electronic appointing should be implemented as soon as it is available.

- Online eHealth applications should be provided and updated, through TRICARE Online as available and appropriate, consistent with patients' needs.
- Electronic media should be used to contact patients to provide reminders for appointments and preventive services.
- A robust IM/IT and telecommunications infrastructure should be ensured.

Primary Care / Mental Health Integration Statement

It is the collective opinion of the Mental Health Executive Board and Primary Care Product Line Advisory Board that the leadership of Navy MTFs integrate mental health services into primary care settings. The purpose of this statement is to promote and encourage demonstration projects that will optimize the provision of mental health services in the Navy.

The U.S. Surgeon General's December 1999 Report on Mental Illness states the need for integration with primary care. The November 2000 research report from the Center for Naval Analyses on Behavioral Health Care Delivery Models recommends that Navy Medicine implement a pilot program in various facilities that clinically integrates mental health with primary care.

Integration models include:

- Full or part-time staffing in the primary care setting with behavioral or mental health providers and support personnel
- Collaboration between primary care and mental health professionals to establish joint plans of care for the management of both individual and population primary care patients, including appropriate and timely referral to specialty mental health services, fleet and family support services, and self help networks
- Collaborative educational programs to enhance early recognition and effective management of behavioral/mental health disorders

Benefits associated with integrating mental health into primary care services may include:

- Improving patient access and appropriate entry into the mental health services system, including pastoral care, fleet and family support services, and self help programs
- Improving communication and coordination of care between primary care and mental health
- Reducing the stigma often associated with mental health care
- Managing the cost of care and supporting Population Health Initiatives through prevention and early intervention
- Providing greater opportunities for professional development and collaboration

This will enhance our ability to promote, protect, and maintain the health of those entrusted to our care.

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