Healthcare Analytics in Navy Medicine
Perspectives and Methods for Decision-Making

FOCUS ON MEDICAL HOME PORT

Patient-Centered Medical Home

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Medical Home Port (MHP) is Navy Medicine's adaptation of the civilian Patient-Centered Medical Home (PCMH) concept of care. PCMH transforms the delivery of primary care into an integrated and comprehensive suite of services. Revitalizing our primary care system is an important foundation to achieving high quality, accessible, and cost efficient healthcare for our beneficiaries.

Navy Medicine's Medical Home Port

Medical Home Port (MHP) is a commitment to total health. For the Marine down range, MHP allows their doctor to be better prepared to provide the best care possible both in garrison and in combat. For the Sailor, MHP provides timely access in person, on the phone, or via secure messaging. For the families, MHP conveniently packages integrated care with a familiar healthcare team. No matter who the customer, MHP is founded in ensuring that patients see their assigned provider as often as possible and can access primary care easily, rather than seeking primary care in the emergency room. Endeavors such as provider continuity and access have been shown to improve the quality of life and quality of care for patients cared for in a Patient-Centered Medical Home (PCMH) model of care.

MHP transformation is designed to take primary care in Navy Medicine from the traditional fragmented, acute, and episodic care system it has been, to one anchored in team-based, highly efficient, and collaborative practice. It empowers all members of the team to operate at the top of their skill set, using clinical practice guidelines and decision support technology to improve the delivery of healthcare. MHP focuses on producing health, rather than producing healthcare. It simplifies templates and appointing and improves access to care through advanced access scheduling. MHP finds the way to say "yes" to our patients, rather than saying "no" and turning them away. We walk away from outdated sentiment such as "one problem, one visit" and seek richer, patient-centered visits.

The relationship with the PCM and their small team of providers, nurses, and clerical staff is paramount and valued in the PCMH model. These teams, typically four to five providers in size with their associated support staff, take ownership of their enrolled population and strive to maximize their health and satisfaction. Unnecessary use of healthcare services is avoided through appropriate demand management and the use of new venues to deliver health outside of traditional face-to-face visits. Patients get the right care from the most appropriate person at the right time. When practices focus on producing RVU's, regardless of the return on investment for the patient's health, we drive more care downtown without improving health or satisfaction. Many of us who focus on PCMH now believe that when we change our focus to doing the right work and concentrating on the health of our patients, the business of medicine will follow. Among strategies we will employ are: secure email, nursing visits, and when appropriate, telephone consultation.

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Implementing the MHP

BUMED established in 2011 a program management office (PMO) to oversee policy and implementation of MHP across Navy Medicine. To date, the PMO has traveled to two-thirds of Navy facilities in an effort to provide onsite training regarding the MHP model and to share strategies already proven successful at several sites. We are beginning to see metrics move substantially at places like Pensacola, Oak Harbor, Charleston, and San Diego. We will visit the remaining MTFs in the next few months and are excited to watch the transformation as it unfolds. However, full transformation to the MHP model and realization of anticipated benefits could take two to four years even under the best resourcing and leadership environment. It is important to recognize that ***"medical home is a journey, not a destination"***, and we will continue to seek improvements to the performance of our MHPs for years to come.

Meanwhile, MHP aligns well with the MHS quadruple aim—perhaps the best strategic vision we have had in my years of service. It has at its very heart the ability to improve the experience of care for our patients and our staff through improved access to care, satisfaction, and continuity. It improves quality through proactive population-based health management, rather than passively waiting for patients to obtain care when their health is already suboptimal. MHP and the personalized partnership it imparts with patients will ensure our warriors and their families are ready to perform the operational commitments we will continue to support. Perhaps the most important outcome, in today's resource-constrained world, will be the potential for a properly executed MHP to assist Navy Medicine in controlling the growth of healthcare costs. The rising costs of healthcare are not sustainable, and if left unaddressed, they will force Navy Medicine to make tough choices in the next few years.

Challenges for the Future

It is undeniable that the way ahead is exacting, but we believe that Navy Medicine will rise to the challenge. First and foremost, a difficult transformation of culture must ensue, as MHP will require a change in how patients and healthcare professionals interact with one another. It will also require a change in what Commanders and Resource Managers emphasize in measurement. Moreover, it will require a change in dialogue. Providers and their teams will be held accountable for the outcomes and costs associated with their enrolled patients, but we must no longer encourage them to do non-valued work. MHP will require, in some facilities, additional or adjustment of staffing skill sets in the primary care environment to facilitate team-based care.

Furthermore, hospital Commanders and their Resource Manager will need to look hard at current costs associated with providing care and weigh their options to spend new money versus strategically reinvesting existing resources to support the MHP. We know that current population-based health management information technology systems do not provide adequate decision support tools to assist MHP practices in managing the health of their assigned population. Network security makes it difficult to deliver in a timely manner commercially available products that might answer questions on these issues. In this matter, we will continue to seek a more efficient alternative.

Finally, acknowledging the shortcomings of the prospective payment system (PPS), new strategies to finance military medical treatment facilities must be explored. Like civilians, we need payment reform in our own system that will incentivize health outcomes and efficiency versus the production of healthcare widgets. We will need to balance our role as production lines in specialty care against our role as an insurance plan for our enrollees. The mandate by payers to become an Accountable Care Organization (ACO) is emerging as a major initiative on the national level. There are three core principles associated with being an ACO:

1. ACO's are provider led and are founded in a strong primary care base that is accountable for quality and costs across the full continuum for a population of patients.
2. Payment in ACO's is tied to quality improvements that also decrease cost.
3. ACO's reliably and progressively participate in more sophisticated performance measurement.

As one of the Nation's largest healthcare organizations whose single payer is the Department of Defense

(DoD), alignment to become a strong ACO supports the future preservation of full fighting capability. Focusing on ways to reduce unnecessary costs and to control the unsustainable inflation of the per member per month (PMPM) costs of caring for our enrollees must become strategic priorities as unprecedented cuts to DoD loom on the horizon.

There are currently seven military treatment facilities in the MHS (two are Navy) that are part of a performance pilot to test a hybrid reimbursement model for primary care that includes sub-capitation, a care management fee and pay for performance for improved quality and control of costs (PMPM) in the PCMH environment. Several of the sites involved are beginning to demonstrate that this model has promise for improving performance in key areas that will lower per capita costs (reducing ED utilization, overall utilization rate, etc.) Coincidentally, a recent visit by TMA to Group Health Cooperative revealed they have begun using a capitation model with pay for performance. Group Health has many similarities to our organization and like the MHS, they are looking for a new way forward as an ACO.

CAPT Padden is currently the Director of the Medical Home Port Program Management Office for Navy Medicine.

SKILLS AND METHODS

– *MEASURING THE PATIENT-CENTERED MEDICAL HOME*

This article provides an overview of the PCMH concept of care and the diverse measurement aims achieved through well-crafted PCMH measures. A brief description of current industry PCMH criteria and measurement sources is also provided, as well as a summary of the current effort by Navy Medicine to evaluate and monitor the Medical Home Port initiative. Future PCMH measurement challenges are also discussed.

With current budget deficits and rising health care costs, the attention of the healthcare industry has shifted back to primary care and the full utilization of its capacity. The Patient-Centered Medical Home (PCMH) model of care is emerging as a centerpiece to health reform in the U.S. because it is intended to improve the value of healthcare by strengthening the clinician-patient relationship by replacing episodic care with coordinated care and a long-term healing relationship. Growing evidence shows that healthcare systems that focus on primary care engender better quality, lower cost, less inequality in healthcare and health, as well as better population health when compared with systems based on other approaches to healthcare. As described in this issue's lead article, Navy Medicine has recently incorporated this model into their Medical Home Ports. However, the need to appropriately monitor and measure the impact of PCMH is a growing challenge for all organizations attempting to transform practice to this model of care.

PCMH Concept and Measurement Aims

PCMH is generally defined as a group of providers and practitioners within a community who seek to improve the health of that community's population. Four key aspects of PCMH models include:

- The fundamental tenants of primary care—first contact access, comprehensiveness, integration/coordination, and relationships involving sustained partnership
- New ways of organizing practice
- Development of practices' internal capabilities
- Related healthcare system and reimbursement changes

PCMH optimizes both the fundamentals of primary care and new and emerging ideas about practice and reimbursement systems. In order to evaluate and monitor this model of care within the diverse context of many PCMH settings, measurements of both processes and outcomes from multiple perspectives must be developed. The goal of PCMH measurement can also be diverse and include any or all of the following aims:

- Evaluate baseline status and change
- Guide development and improvement through a change process
- Certify practices as PCMHs
- Guide reimbursement and investment
- Generate new knowledge

NCQA Criteria for PCMH

With the support of various foundations, the National Committee for Quality Assurance (NCQA) has developed

the PPC-PCMH standards, which are self-reported criteria that assess how a practice functions as a medical home (www.ncqa.org). NCQA's PCMH Criteria are used to designate NCQA-recognized medical homes. The NCQA has recognized over 1,500 practices at three designation levels, which lasts for three years. The NCQA standards for PCMH recognition include six categories of self-reported measures:

- Enhance access and continuity
- Identify and manage patient populations
- Plan and manage care
- Providing self-care support and community resources
- Track and coordinate care
- Measure and improve performance

These NCQA standards and their related self-reported measures have become the *de facto* industry standard for determining whether an individual practice is functioning as a medical home model of care. The Navy has also implemented similar criteria in its Medical Home Ports and uses these civilian standards for this model of health care delivery.

Other Potential Sources of PCMH Measures

Though not developed specifically for the Medical Home concept of care, there are other important sources of measures used to assess both the comprehensiveness and effectiveness of primary care. These sources primarily assess primary care from the patient perspective using patient sample surveys. These measurement sources include: the Components of Primary Care Instrument (CPCI), Primary Care Assessment Survey (PCAS), Primary Care Assessment Tool (PCAT), the Clinician Group Consumer Assessment of Healthcare Providers and Systems (CG-CAHPS), Consultation and Relational Empathy (CARE), and Consultation Quality Index (CQI) instruments.

Scorecard Development for Medical Home Ports

Currently, the Medical Home Port Program Management Office is working to develop its own PCMH measures in an attempt to evaluate baseline status and change attributable to the implementation of the PCMH concept of care. The PCMH measurement domains proposed in this strategic dashboard will coincide with the MHS Quadruple Aim—experience of care, population health, per capita cost, and readiness. Three specific measures that have been prioritized for this effort are PCM continuity, 3rd next available acute and routine appointments, and ER utilization. It is also anticipated that the measures developed for this strategic dashboard will guide future reimbursement policy related to Medical Home Ports.

Future Measurement Challenges

As both the healthcare industry and Navy Medicine move forward in developing appropriate measures that address various PCMH measurement aims, the following challenges must be overcome to ensure long-term positive transformation of a healthcare system using the PCMH model of care:

- Evaluation efforts must recognize the long time horizon needed to see the full health and economic effects of the PCMH model.
- Measures of cost-benefit and return-on-investment must recognize that upfront investment in primary care infrastructure, which has typically been underfunded in the past, is needed to enable the PCMH to serve as the fundamental basis of a high value healthcare system. As a result, short-term costs may actually increase.
- Measures of productivity should be redefined so that production is measured in terms of optimized health outcomes, rather than producing healthcare. This facilitates better alignment of payment incentives with improved health outcomes.
- Measures are needed that reflect complex primary care functions such as care integration/coordination, comprehensiveness, and the personalization of care—fundamental tenants of primary care.
- Measures should evaluate multiple perspectives and recognize multi-level effects. For example, the health value of primary care may accrue at the patient and population levels, but the economic effects may accrue at the practice and system levels.

DATA AND INFORMATION SYSTEMS

– *DEVELOPING AN INDICATOR FOR MEDICAL HOME COHORTS*

This section describes the development of a Medical Home enrollment indicator that will be added to the MHS Data Mart (MDR) and MHS Mart (M2) in the near future. Currently, there is no centralized source for identifying and monitoring MHS-, Service- and region-wide Medical Home enrollee populations.

The fundamental basis of assignment into Medical Home enrollment involves two key components. First, the patient must be enrolled in DEERS in Prime. Second, the beneficiary must be empanelled in CHCS to an MTF Primary Care Manager (PCM) affiliated with an MTF Medical Home MEPRS Code. Below is a description of how these two components will be combined to create a Medical Home enrollment indicator in the MDR and M2.

Identification of Data Sources

To begin to define the Medical Home cohort, CHCS data will initially be harvested from all 100-plus CHCS reporting locations. Data elements retrieved will include the person identifier, MTF of enrollment, PCM, PCM - MEPRS Code affiliation, and effective dates. Results from all sites will be concatenated and, then, analyzed for internal consistency (i.e., enrollment differences between the various CHCS reporting locations), as well as for consistency with the official reported enrollments in DEERS. There are common enrollment discrepancies between CHCS and DEERS. For example, in the CHCS data, many patients are found to be reported as enrolled to more than one MTF at the same time. Furthermore, when the data are compared with DEERS, there are also many beneficiaries where the MTF data simply do not correspond favorably with DEERS. For example, local CHCS data commonly show patients enrolled to an MTF, but DEERS shows the beneficiary legally enrolled to a network PCM. These inconsistencies are incompatible with capitation for medical home, for measurement of quality, and many other key characteristics of reporting that are required. Therefore, the definition of the Medical Home cohort will be first determined by the DEERS enrollment status of each beneficiary (MTF, PCM, Start and Stop Date) and, then, by the PCM -MEPRS code affiliation noted in CHCS (identifies the Medical Home cohort) for only those records that correspond favorably with DEERS.

Strategy for Information Dissemination

Currently, the funding for PCM Medical Home reporting has not been identified. However, HA/TMA staff are still considering reporting strategies in hopes that money can be found to implement the reporting plans. To achieve this goal, there is both a short- and long-term strategy. Both strategies use the cohort definition described above.

Short-Term Solution: the short-term strategy is to use the MDR to prepare the medical home enrollment file and to use this file to append a new data element "Medical Home Enrollment Indicator" to the DEERS Person Detail file in M2. This file already contains a list of all eligible beneficiaries, along with their enrollment MTF, PCM, and other key demographic and Service-related data elements. The DEERS Person Detail file was selected instead of the M2 TRICARE Relationship (Enrollment) file because it contains an empty data field, which provides an appealing low-cost solution.

Long-Term Solution: the longer-term strategy for medical home enrollment is more robust. With this strategy, users will have data elements in each detail data file in M2 that will identify the PCM-MEPRS code affiliation of enrollment—not only for Medical Home enrollees but for all MTF enrollees—and the accreditation level of the associated Medical Home. The availability of these data elements within each detail data file will enable users to fully understand the care generated by Medical Home enrollees, including the associated costs and utilization, as well as to monitor quality of care and outcomes for the cohort.

NEW KNOWLEDGE

– NOTED PUBLICATIONS

The following article provides an overview of PCMH interventions in the U.S. and summarizes key findings related to cost, quality and access to care.

Outcomes of implementing patient-centered medical home interventions: a review of the evidence from prospective evaluation studies in the United States

Grumbach K. and Grundy P. The Patient-Centered Primary Care Collaborative, November 2010.

In this updated report, the authors have reviewed available research evidence from prospective, controlled study Patient-Centered Medical Homes (PCMH) interventions in the United States, which are designed to enhance and improve primary care. The authors focused on cost outcomes and quality outcomes in integrated delivery, private payer, and Medicaid sponsored PMCH initiatives. In their findings, they found repeated high correlation between investments in primary care PCMH and improved quality of care, as well as reductions in expensive hospital and emergency department utilization. The report provides a summary of key findings on cost related outcomes, as well as background information (e.g., evaluation and design, cost and utilization outcomes, return on investment) on PCMH models used in the United States.

The following trends were present in the majority of the PCMH programs among the intervention cohorts (versus the controls) evaluated in this report:

- Reduction in PMPM (per member per month) total costs
- Reduction in hospital admissions per enrollee
- Reduction in emergency department visits per enrollee
- Overall increased quality of care (measured by various metrics), especially with respect to preventative care

Read more about this publication at www.pcpcc.net/files/evidence_outcomes_in_pcmh.pdf.

TIPS AND TRICKS:

– CONDITIONAL FORMATTING IN EXCEL

Like many Excel features, conditional formatting has become much more intuitive and accessible as versions have evolved. In Excel 2007, the range of conditional formatting options has been greatly expanded and is straightforward to learn. This section provides additional information on this feature in the latest version of Excel.

Using Conditional Formats

At its simplest, conditional formatting allows Excel users to set up cells to change formats (colors, fonts, etc.) based on the value within the cell or even the relationship of a cell to a specified range of cells. For example, in a column of numbers, conditional formatting rules can be established to turn all values that are less than zero to be shown in a bold red font. Though this basic form of conditional formatting is useful, Excel 2007 has greatly expanded the options available to users and made them easier to have them as a feature in analytic reports. Generally, the best way to incorporate conditional formatting into a worksheet is to highlight the range of cells and then click on the "conditional formatting" menu in the "Styles" section of the "Home" ribbon.

The two most useful applications for conditional formatting tend to be in data validation and in report development. For data validation, the application of conditional formats can be of enormous value in quickly scanning through a large column of numbers to find aberrant values. Once comfortable with the feature, it can be tempting to overload reports with conditionally formatted values, but this should be used judiciously so as not to distract from the main message. Conditional formatting is a fun and easy way to add richness and variety to an Excel workbook.

Formatting for Relative Value

The most commonly used set of formats is labeled as **Highlight Cell Rules**. From this menu, rules can be established to format cells based on the value within that cell. The next set of conditional formats available is referred to by Excel as **Top/Bottom Rules**. This al-

lows a cell to be formatted based on its value relative to the values in other cells. Formats can be applied to cells which are: the highest or lowest of a group of cells, defined by absolute number, or characterized by percentile. Alternatively, cells can be formatted based on whether they are above or below the average value for a group of cells.

Formatting for Emphasis

While slightly different in presentation, another family of conditional formatting rules can be used to add emphasis to a data set. **Data Bars** embeds a stylistic bar graph directly into the cell. The **Color Scales** option depicts relative levels with gradations of colors. Finally, **Icon Sets** enhances the data value with symbols such as arrows, stop lights, or other icons. With **Icon Sets**, there is an option to show only the icon, which is often a cleaner way to display summary information.

Managing and Editing Formatting Rules

Excel refers to a group of defined formats as "rules". All rules that are active for a given cell can be reviewed and edited by choosing the last item from the menu, **Manage Rules**. From this dialog, rules can be created, modified or deleted. An important feature of this dialog box is the drop-down menu at the top: "Show formatting rules for." While the default for this menu is the currently selected cells, this option can be used to view all rules in effect in an entire worksheet. From the **Manage Rules** dialog, rules can also be edited. Here, the parameters can be tweaked or the cutoffs for constructs such as color scales or icon sets can be managed.

Once a set of rules has been established, the entire set of rules can be copied to another location in any workbook in the same manner as copying traditional formatting. This can be done either by use of the "Format Painter" or by using the "Paste Special" feature and pasting formats only. Conditional formatting also travels with a cell when its contents are pasted in the traditional manner.

CONDITIONAL FORMATTING – EXAMPLE

In the comparison table below, the "Data Bars" option is applied to a sample of findings concerning hospital admissions and emergency department (ED) visits from the Grumbach *et al.* article discussed in the *New Knowledge* section.

Step 1: Highlight the range of cells and then click on the "Conditional Formatting" menu in the "Styles" section of the "Home" ribbon.

Step 2: Highlight the "Data Bars" conditional formatting rules and select the desired color and gradient scheme to generate the table below.

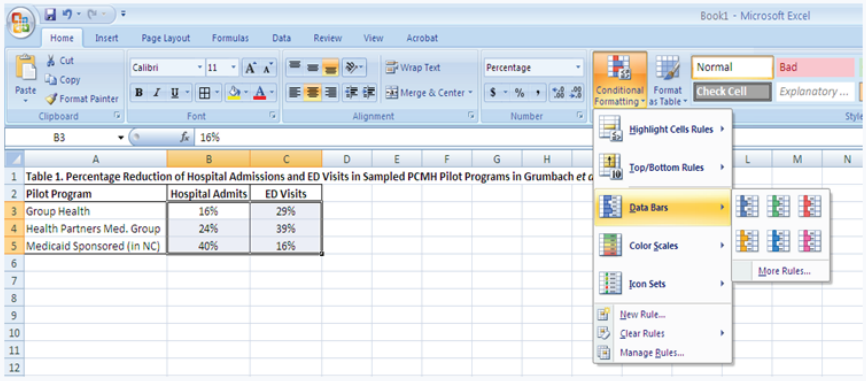

Table 1. Percentage Reduction of Hospital Admissions and ED Visits in Sampled PCMH Pilot Programs in Grumbach *et al.*

Pilot Program	Hospital Admits	ED Visits
Group Health	16%	29%
Health Partners Med. Group	24%	39%
Medicaid Sponsored (in NC)	40%	16%

KNOWLEDGE SOURCES

– *RECOMMENDED SERIALS*

Analytics is ultimately applied to evaluate and effect change within our healthcare system. The following journal is recommended reading for those who wish to broaden their capabilities by acquiring a foundational understanding of current topics and issues in health services research, policy, and practice.

Medical Care Research and Review (MCRR) is a peer-reviewed journal that provides essential information about the field of health services to researchers, policy makers, managers, and practitioners. MCRR publishes peer-reviewed empirical and theoretical research, examining such issues as the organization and financing of healthcare delivery, the impact of health policy and practice changes, patient safety and quality of care, health information technology adoption and application to health delivery, access to care, healthcare disparities, and insurance coverage trends. The focus of the MCRR articles covers: particular research policy topics that comprehensively synthesize relevant theoretical and empirical literature across several disciplines; methodologically rigorous empirical research that provides a significant contribution to previous knowledge; and articles that present new data and trends in the healthcare field. Regular sections include:

- Empirical Research
- Data and Trends

MCRR is published bi-monthly. A subscription is necessary to receive the journal and to access current and archived articles online at http://mcr.sagepub.com. The website also offers the *OnlineFirst* feature, which releases electronic versions of articles before they are available in print.

IN THE NEXT ISSUE...

The next issue of *Healthcare Analytics in Navy Medicine* will focus on financial management and operations in Navy Medicine. A discussion of how successful financial operations and the audit process provide accurate and reliable data will be featured. The issue will underscore financial audit awareness, but it will also highlight best practices in contracting, process improvement, and other areas.

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