Efficacy of Treating Behavioral Health Issues in the Military Health System's Primary Care Setting

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Background

In August 2013, DoD mandated integration of behavioral health personnel into Patient-Centered Medical Home primary care services (DoDI 6409.15). This move mirrors best practice in the civilian sector (IOM, 2006; Kathol et al., 2010) and is meant to:

- Decrease overall health costs
- Improve access to behavioral health care
- Improve patient outcomes

In an integrated primary care model, behavioral health providers act as consultants to their primary care colleagues to deliver combined medical and psychological healthcare in a coordinated fashion (Peek & National Integration Academy Council, 2013). In the Military Health System (MHS), Internal Behavioral Health Consultants (IBHCs; mostly psychologists and social workers) function within the primary care environment as part of the interdisciplinary primary care team.

IBHCs deliver brief (generally 15–30 minute), evidence-based interventions and continuity consultations for conditions ranging from pain management to depression to chronic illness management (e.g., diabetes, chronic pain). IBHCs work with patients to create health plans and goals to assist in functional and/or symptom improvement and provide feedback and recommendations to the patient's primary care physician and larger primary care team in order to engage other team members in supporting the patient and their health (Hunter, Goodie, Oordt, & Dobmeyer, 2017).

Administrative medical data can be an important element in monitoring and evaluating any health-focused intervention. IBHC encounters produce large quantities of administrative medical data stored in multiple relational tables, updated frequently, and provided at the population-level (traditional hallmarks of "big data"). The authors work closely with DoD and service-specific program leads to develop key metrics derived from program administrative data that can inform program-related decision-making and management.

Big Data Tip #1
Data is often considered "big data" if it is at the population level and/or satisfies the "three V" requirements – volume, velocity, and variety. That is, how much data there is (volume), how many types or formats of data there are (variety), and how quickly data is generated (velocity) (Laney, 2001).

Objectives

1. Describe how big data is used for program evaluation and evidence-informed decision-making within the MHS Patient-Centered Medical Home.
2. Discuss benefits and drawbacks of using administrative data in evaluations of health-focused interventions.
3. Apply monitoring and evaluation data from a secondary prevention program aimed at a high-risk (military) population in order to prioritize future primary prevention efforts and areas of inquiry.

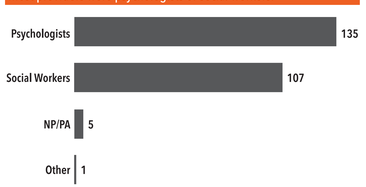
Methods

- Pulled demographic, utilization, and clinical outcomes data from all patients with at least one IBHC encounter in MHS in FY16Q04 (July – September 2016) as well as all clinical utilization and outcomes data for these patients if seen in the prior quarter (FY16Q03; April – June 2016)
- Data sources include the MHS Data Repository (MDR) and Clinical Data Repositories (through the Defense Health Agency's Health Services Data Warehouse)

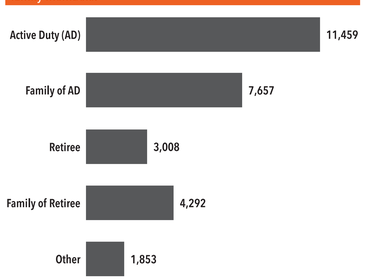
Results

Who was involved in the program?

Most providers were psychologists or social workers.



Most patients were active duty service members and their family members.



There were just over 43,000 encounters with IBHCs with nearly 30,000 patients in this quarter alone.

43,188 IBHC Encounters

28,269 Patients

Results (continued)

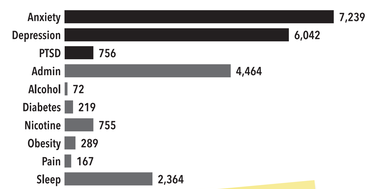
How and why did patients use the program?

Program guidance suggests that, in most cases, patients should see an IBHC one to four times during a treatment course. Data indicate a high level of compliance with more than 97% of cases meeting this standard. However, over 800 patients had five or more appointments during the quarter, suggesting potential model fidelity issues in a small number of cases.

Number of Patients with Specified Number of Encounters									
1	2	3	4	5	6	7	8	9+	Total
18,657 (62.9%)	6,404 (21.6%)	2,675 (9.0%)	1,094 (3.7%)	415 (1.4%)	190 (0.6%)	92 (0.3%)	37 (0.1%)	74 (0.2%)	29,638

Big Data Tip #2
Administrative data only tells part of the story – it highlights times when what we see in the data diverges from what we expected, but the data alone don't tell us WHY those differences occur. Here, we can't say why patients were seen more than four times – only that it happens, and, all things being equal, such a pattern of care is not what we expected to observe.

IBHCs saw more patients for mental health conditions (black) than for behavioral medicine conditions (gray).



Patients most frequently saw IBHCs for adjustment disorders, sleep-related issues, and general issues not related to a specific mental or behavioral health condition.

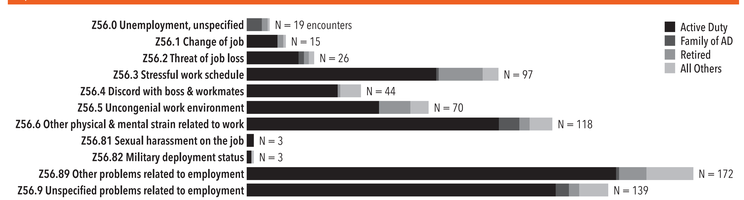
ICD-10 Code	Description	Rank	N	%
F41.9	Anxiety disorder, unspecified	1	3,997	9.2%
F43.23	Adjustment disorder with mixed anxiety and depressed mood	2	3,595	8.3%
Z71.89	Other specified counseling	3	2,813	6.5%
G47.00	Insomnia, unspecified	4	2,263	5.2%
F43.20	Adjustment disorder, unspecified	5	1,771	4.1%
F43.22	Adjustment disorder with anxiety	6	1,740	4.0%
Z73.3	Stress, not elsewhere classified	7	1,467	3.4%

Big Data Tip #3
Working with administrative data involves making choices. How do we operationalize what we want to measure using the available data? Here, we've described trends of diagnoses in the first position because, in the MHS, that position is meant to communicate the treatment focus for encounters – but considering the diagnoses in any diagnostic position might tell a different story.

What is the program's relevance to occupational health issues?

The Military Health System exists, in large part, to meet the occupational health needs of employees (i.e., active duty service members). In their clinical practice, Internal Behavioral Health Consultants overwhelmingly code adjustment and stress disorders that may reasonably be associated with workplace/occupational factors. In a small number of cases, administrative data (specifically, the use of occupational health diagnostic codes) points more clearly to the important link between work environment and health concerns.

Big Data Tip #4
Administrative data can help identify trends or issues we might not otherwise see. In this case, our examination of occupational health codes led us to explore their use in other settings. In the first six months of FY17, there were over 70,000 encounters in the MHS Direct Care system that used these codes. There could be important opportunities for occupational health inquiry here!



Did patients in the program get better?

- To examine changes over time, outcome scores from the three months prior to the monitoring period were included
- Paired sample t-tests were conducted to determine whether the distribution of outcome scores shifted significantly from initial to last administration of each measure
- The percentage of patients showing reliable change (Jacobson & Truax, 1991) on each measure illustrates changes at the patient level – specifically, whether the magnitude of change for each patient is statistically reliable

Individuals with an initial score outside the "normal" range (those with room to improve) showed statistically significant change for all measures.

Big Data Tip #5
Big data is BIG! It can be easy to over-power statistical analyses – especially simple tests for differences between two means. It's important to consider alternate ways of describing impact that move beyond simple statistical significance to get at functional or clinical relevance. Here, we reported both statistical significance and change against a "reliable change" threshold to help characterize impact.

Instrument	N	Time 1 Mean (*SD*)	Time 2 Mean (*SD*)	Mean Change	*t* (*df*)	*p* (2-tail)
BHM-20: Global Mental Health (GMH)	5,799	2.26 (*0.46*)	2.62 (*0.62*)	+ 0.35	–49.44 (5,798)	< .00**
BHM-20: Life Functioning	6,039	1.72 (*0.59*)	2.15 (*0.81*)	+ 0.43	–44.34 (6,038)	< .00**
BHM-20: Psychological Symptoms	4,074	2.34 (*0.42*)	2.75 (*0.63*)	+ 0.41	–44.93 (4,073)	< .00**
BHM-20: Wellbeing	5,683	1.37 (*0.54*)	1.86 (*0.81*)	+ 0.49	–48.68 (5,682)	< .00**
GAD-7	815	13.22 (*4.49*)	10.32 (*5.40*)	– 2.89	15.55 (814)	< .00**
Insomnia Severity Index	106	18.06 (*4.00*)	14.90 (*6.44*)	– 3.16	5.96 (105)	< .00**
PHQ-9	3,601	13.18 (*5.25*)	12.31 (*5.62*)	– 0.87	15.70 (3,600)	< .00**

Most patients demonstrated no reliable change on outcome scores. Patients whose initial scores were outside the normal range were more likely to evidence reliable improvement. Patients with initial scores in the normal range were more likely to show reliable deterioration on most measures.

4.3% of patients starting WITHIN the Normal Range show RELIABLE DETERIORATION on the BHM-20 GMH Scale

75.1% to 93.7% of patients evidence NO RELIABLE CHANGE on the BHM-20 GMH Scale, depending on their initial score

22.7% of patients starting OUTSIDE the Normal Range show RELIABLE IMPROVEMENT on the BHM-20 GMH Scale

Discussion

Using Big Data to Inform Program Evaluation and Decision-Making

- To evaluate this program, we leveraged big data from electronic medical records, which allowed us to better understand the patients and conditions treated by Internal Behavioral Health Consultants, as well as potential improvements patients experience in this model of care.
- For data to inform programmatic decisions, it is critical to make informed assumptions and choices in analyzing and reporting that allows the data to tell the story in a way that is accessible to program managers and stakeholders.

Pros and Cons of Using Administrative Data

- Using administrative data imposes constraints on investigators that prospective focused data collection does not. However, administrative data provides information about an entire population rather than a sample, and is less reliant on self-reporting, cheaper, and more readily available.
- Administrative medical data is collected during the course of clinicians' routine workflow – as such, it captures actual practice (or at least how practice is documented). Examination of this data allows program stakeholders to identify practices that may be problematic (e.g., the use of non-descriptive administrative diagnostic codes rather than codes that describe treatment focus clinically) and/or trends that can inform new lines of inquiry (e.g., the use of job-related ICD codes within the MHS).

Applying Monitoring and Evaluation Data to Prioritize Future Efforts

- Monitoring of this program and its effects on the patients served provides important information about the needs of this high-risk (military) population, which may allow for better targeting of primary prevention efforts and even future research.

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