

Short Report

Creation of an Operational Dashboard to Document Implementation of 4M's into Primary Care in a Geriatric Patient-Centered Medical Home

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Abstract

Many health systems have joined the Age-Friendly Health Systems movement to provide every older adult safe, high-quality care aligned with what matters most. Becoming an Age-Friendly Health System means that hospitals and health care systems reliably use a set of evidence-based practices known as the “4M’s” – What Matters, Medication, Mentation, and Mobility – to provide care for older, disabled and medically complex patients across all care settings. Implementing the Institute for Healthcare Improvement’s (IHI) 4M’s Age-Friendly principles into primary care is challenging because there is no best practice to identify documentation of delivery. Leveraging the electronic health record (EHR) may automate this process. Age-Friendly principles for primary care were discussed at IHI peer coaching webinars, and PDSA cycles employed among clinic staff to define each of the 4M’s for the Vanderbilt



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Geriatric Practice: 1) Mentation – Mini-COG and PHQ2 extracted from nursing intake, 2) Medication – extracted from medication review, provider reconciliation, 3) Mobility – extracted from activities of daily living (ADL) mobility questions in nursing intake, and 4) What Matters Most – identifying patient portal messages. A dashboard within our EPIC electronic health record (EHR) was built based on these identified fields, allowing clinician drill-down to display more detail as needed. An operational dashboard for an EHR has potential to help inform clinician delivery of 4M's care in the primary care setting.

Keywords

Age-friendly healthcare; electronic health record; dashboard

1. Introduction

Many health systems have joined the Institute for Healthcare Improvement's (IHI) Age-Friendly Health Systems (AFHS) movement to provide every older patient safe, high-quality care aligned with what matters most. Becoming an Age-Friendly Health System means that hospitals and health care systems reliably use a set of evidence-based practices known as the "4Ms" – What Matters, Medication, Mentation, and Mobility – to provide care for older, disabled and medically complex patients across all care settings. When applied together, the 4Ms represent a broad cultural shift to patient-centered care consistent with the mission to focus on what matters most to individuals [1].

Implementing the IHI's 4Ms Age-Friendly principles into primary care is challenging because there is no best practice to notify clinicians of appropriate patients or to identify documentation of delivery. Leveraging the EHR is a potential way to automate this process. Dashboards represent information management tools which use data visualization to identify patients and display performance indicators to facilitate tracking of performance. We describe our experience in an outpatient geriatric patient-centered medical home (PCMH) developing an operational dashboard, harnessing the electronic health record to provide real-world data in a user-friendly smart sheet presenting pertinent information with drill down capability to display individual patient detail as needed. The Geriatric PCMH is a university medical center practice of 1051 patients certified by the Centers for Medicare and Medicaid Services (CMS) as 1) utilizing clinical decision support tools, 2) demonstrating evidence-based care, 3) participating in shared decision making with patients and staff, 4) engaged in continuous practice performance measurement, and 5) providing population health management [2].

2. Materials and Methods

Age-Friendly principles for primary care were discussed during participation in national virtual IHI peer coaching webinars, and several iterative Plan-Do-Study-Act (PDSA) cycles employed among clinic staff to define each of the 4M's for the Vanderbilt Geriatric PCMH: 1) Mentation – being aware of cognitive impairment warning signs to prompt evaluation of cognition; prevent, identify, treat, and manage depression and delirium; identify and manage changes in mood or mental health. We identified the Mini-COG and PHQ2, 9 extracted from nursing intake documentation. 2) Medication – high-risk medications are reviewed and documented, described, and avoided. If medication is

necessary, the medication does not interfere with what matters most to the patient, their mobility, or mentation. We searched for EHR medication review, and documentation of provider medication reconciliation. 3) Mobility – identify mobility limitations and ensure that each older adult moves safely every day to maintain function and do what matters. We chose ADL mobility questions and falls assessment extracted from the nursing intake, and 4) What Matters Most – what matters is asked, documented, and care aligned with health outcomes and care preferences. We searched for patient portal messages as utilization of a patient portal in an integrated health system relates to functional engagement between the patient and clinician. An Epic radar dashboard build was based on these identified data fields. Clinicians utilizing the EHR were involved in every stage of the development of the dashboard, providing usability recommendations as well as direct feedback on dashboard prototypes presented by the development team over a two-year period, with improvement in the accuracy of the data display.

This work is determined as a quality improvement project by the Vanderbilt IRB.

3. Results

The EHR documentation of 4M care over a six-months operation period for the clinic population is displayed in Table 1. For the Geriatric Clinic population of 1051 patients, over a 6-month period (7-1-21 to 12-31-21) 465 patients made 726 visits. Within that time frame 94% of visits addressed all elements of 4M care, with a small proportion of visits addressing only 1-3 elements of 4M’s care. Figure 1 displays the clinic population-level data and Figure 2 shows patient-specific data. Both tools are made available in the EHR to the clinician at the time of the visit.

Table 1 Utilization of EHR Elements defined for 4M’s N (%).

	Mentation	Medications	Mobility	What Matters Most
Visits: 726	Mini-COG: 78 (11%)	Medication review: 726 (100%)	ADL: 677 (93%)	Patient questions: 636 (88%)
	PHQ-2,9: 705 (97%)	High Risk Meds: 456 (63%)	Fall risk assessment: 651 (90%)	Portal messages: 610 (64%)
Number of 4Ms Addressed	All Elements	3 Elements	2 Elements	1 Element
	684 (94%)	28 (4%)	9 (1%)	4 (0.05%)

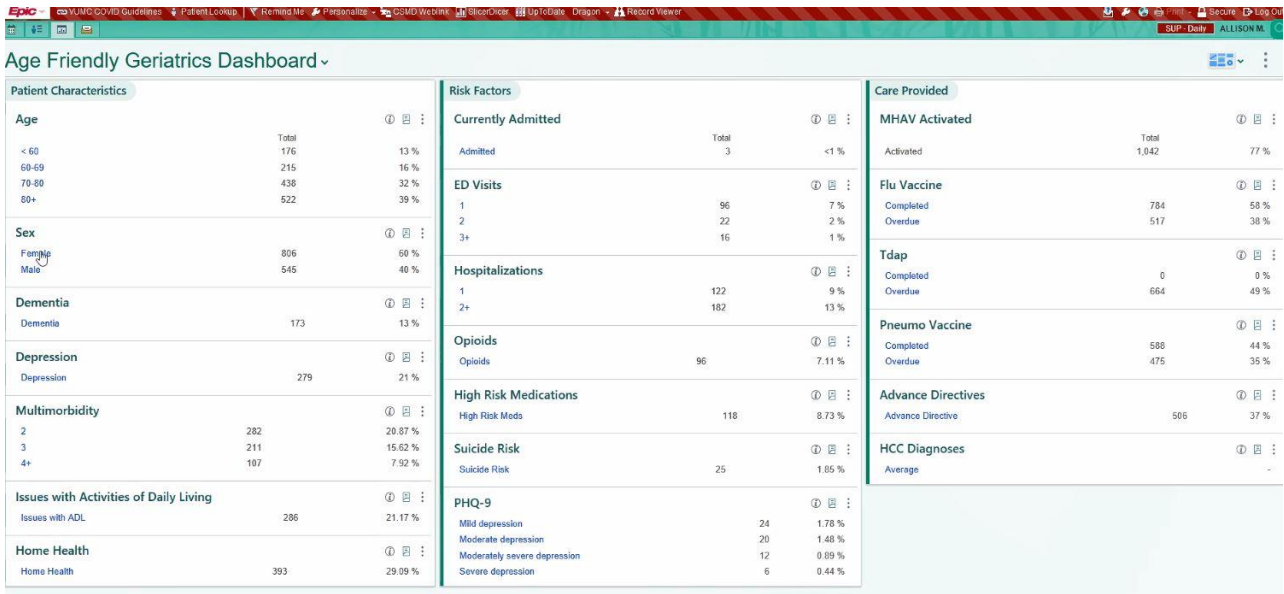


Figure 1 Population Level dashboard. Displays descriptive information for the clinic population, including 4M-specific data as well as other utilization data.

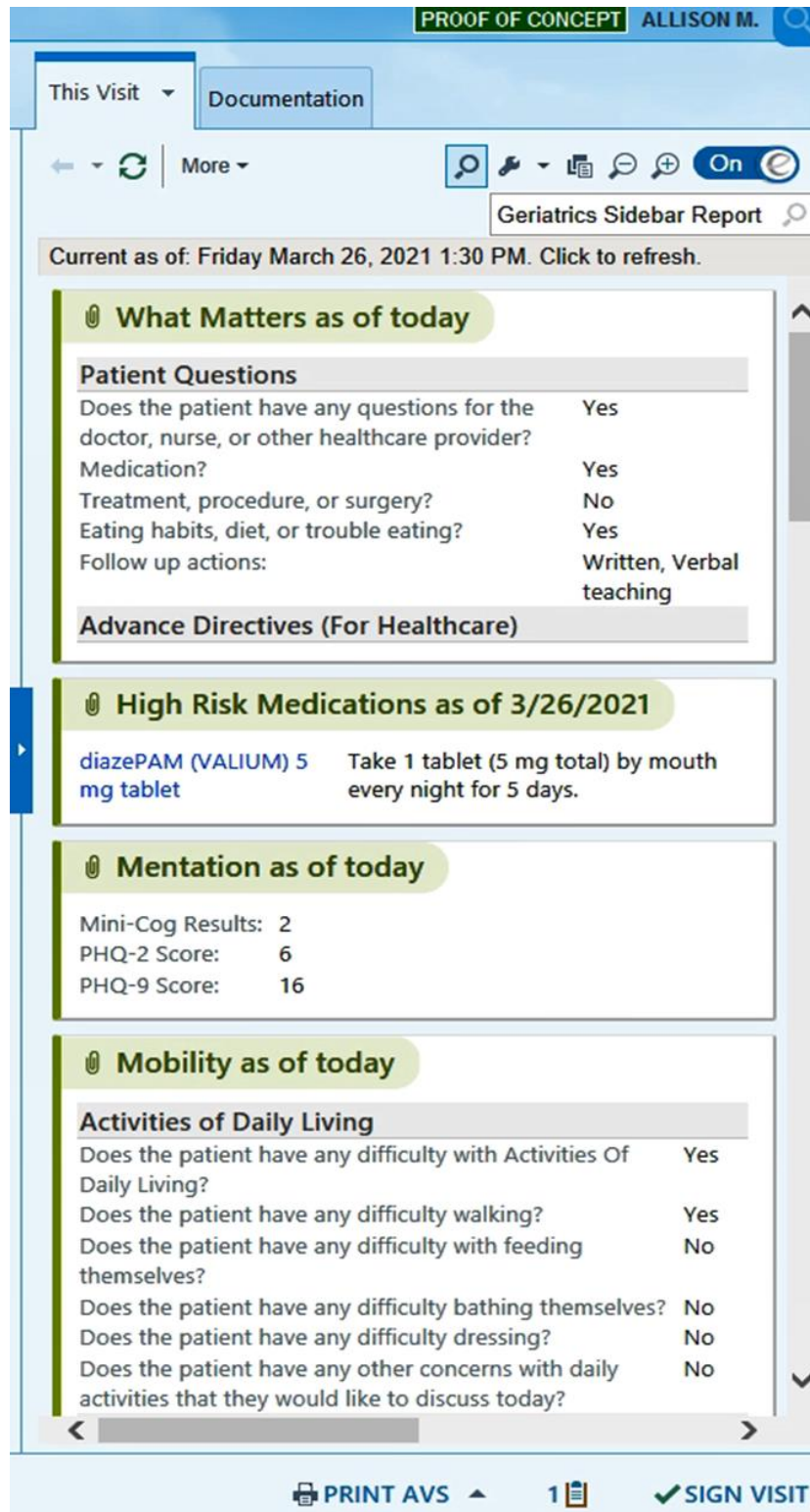


Figure 2 Patient Level Dashboard. Displays individual patient-specific 4M data to the clinician.

4. Discussion

Leveraging the EHR to display simultaneous documentation of 4Ms for a primary care population may facilitate improved provider-driven interventions to provide 4Ms care to older adults. This is

analogous to the Agency for Healthcare Research and Quality's (AHRQ) utilization of the Common Elements for Event Reporting–hospitals (CFER-H) in developing the National Patient Safety Data Dashboard to support safe inpatient care [3]. As data visualization tools, dashboards may be powerful tools to inform clinical activity and help busy clinicians promote age-friendly patient-centered care for all levels of care, including inpatient, outpatient, home care and long-term care geriatrics quality improvement and are capable of displaying many other geriatric care parameters. Dashboards may be helpful for further documenting association between 4Ms care and other important clinical outcomes, although study of downstream clinical benefits of dashboards remains an emerging science.

The patient portal is potentially a rich data resource with potential to be a vehicle for improved communication between patients and providers [4], facilitate preventive care and chronic disease management [5-8], and to measure patient-reported satisfaction and shared decision making in primary care [9].

4.1 Limitations

Automated indication of 4M care is dependent on defined search characteristics. What Matters Most is defined in our search as patient portal engagement, but specific message content is not examined. Further examination of content using natural language processing (NLP) may reveal additional data and help refine the tool. While many health systems have advanced portals and their use is expanding to include patient education and chronic disease management, disparities in access and digital health literacy present challenges to their use by patients.

5. Conclusions

A university-based patient-centered medical home demonstrates a focused attention to age-friendly care. An operational dashboard for an EHR has the potential to help inform delivery and monitoring of 4Ms care. Further dashboard development may be driven by its clinical utility.

Author Contributions

James S. Powers, project design, data analysis, manuscript preparation. Shana Atkins, project design, coordination, manuscript review. Allison B. McCoy, search methodology, dashboard design, data collection, manuscript review.

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Competing Interests

The authors have declared that no competing interests exist.

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