EHRs in a Web 2.0 World: Time to Embrace a Problem-List Wiki

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MANDATE FOR ELECTRONIC HEALTH RECORDS

The United States healthcare system is highly inefficient, with high costs and suboptimal quality.¹ Electronic Health Records (EHRs) can help address the dual problems of high costs and poor quality in health care by improving communication between providers and health care facilities, decreasing errors, preventing duplicate test ordering, standardizing care by improving adherence to guidelines and engaging patients in managing their own health.² Unfortunately, in spite of their promise, thus far, EHRs have failed to lead to significant improvements in outcomes in patient care.³

EHRs are multi-author documents, with contributions from multiple providers collaborating on the care of a patient. Presently, a patient's EHR consists of independent notes, with a new note created at each point of contact with the patient, rather than a shared, continually updated, well-organized summary of the patient record. To get a full perspective of the relevant health issues, providers must review all of the individual notes. Contrast this to a Wiki, where multiple authors pool their knowledge by collaboratively authoring shared documents on various topics. The Wikipedia, based on the Wiki model, has some pitfalls, but it hosts the world's information in an up-to-date, easily searchable format.

Why can't the EHR be more like a Wiki? The concept is not new; the benefits of a Wiki-like Problem-Oriented Medical Record (POMR) were outlined in the 1960s. Let us first examine some reasons why we have the current suboptimal model for documentation in EHRs. Then we will explore the model of a Wiki-like problem list in the EHR. We conclude by listing several drivers in the current healthcare landscape that may help achieve such a Problem-List Wiki (PLW).

REASONS FOR CURRENT SUBOPTIMAL EHR DOCUMENTATION MODEL

Financial Drivers

The core function of medical documentation should be to improve patient care through a shared, up-to-date medical

record that facilitates communication across the care team and with the patient. However, medical notes are also used to support billing and coding, protect against medico-legal issues and support quality measures. These secondary functions require providers to add documentation that may not be relevant for patient care. Because they are backed by financial incentives or risk, these functions can take precedence over the core functions of the EHR and even detract from them. Completing EHR notes has become akin to homework, where the top grade goes to those who document all the elements of a "review of systems," rather than those whose notes contribute the most to patient care. This homework is regarded as a chore, something that has no impact on patient care.

Automated Documentation Tools and Provider Time Constraints

EHRs have several automated tools to save time in documentation. Automatic import of laboratory values, and copying and pasting of notes and "macros" allow a large amount of data to be included in the progress note with minimal effort. Unfortunately, there are no such automations for capturing a provider's thought process. This can only be done by typing, voice recognition or dictation with transcription. These are time-consuming, or require special skills or expensive software. Time-strapped providers have no financial incentives to create cognitively rich notes.

Instead, the incentive to document all the required elements of the history and physical, to bill at a specific level of service and the need to close the chart in a timely manner so the bill can be issued drives the use of these automated tools. This leads to notes bloated with rich data, but with boilerplate assessments and plans that fail to capture the providers' thought processes.

Thus, multiple providers seeing a patient with heart failure, for example, may document duplicate information, and the key contribution of each provider tends to be brief and lost in the morass of automatically reproduced data. With multiple providers contributing bloated notes, there is a decreasing signal to noise ratio. Providers need to be aware of all relevant and updated information about the status of all health issues of the patient. Unfortunately, finding a note that meets these criteria is an exception rather than the rule.

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THE HISTORY OF PROBLEM-ORIENTED MEDICAL RECORDS

In a prescient paper on Problem-Oriented Medical Records (POMR) in 1968,⁴ Weed foresaw the role of multiple providers in creating computerized patient records. He suggested that the assessment and plan of each medical note should be organized by problems, with the first part of the note devoted to data aggregation and the second part to analysis of that data. He also recommended a unified problem list at the front of the chart, like a table of contents, updated by all members of the healthcare team each time they interact with the patient or the medical record.

His first recommendation has profoundly influenced how we organize our medical notes in the SOAP (Subjective, Objective, Assessment and Plan) format. His second suggestion to organize our medical charts around a unified problem list is very much like creating a wiki for a patient-centered problem list. Let us see what this PLW would look like.

A PROBLEM-LIST WIKI

A problem can be any symptom, unexplained finding, abnormal laboratory value, a concerning family history, a history of a surgical procedure relevant to current care, or an established diagnosis of a chronic condition. Patients could update their PLWs with their symptoms, concerns and histories. As providers manage each of these problems, they would update the entry in the PLW with their assessments and plans, rather than burying the information in individual notes. They could change unexplained findings into established diagnoses, combine two seemingly unrelated problems, mark irrelevant problems as inactive or resolved, update chronic problems with changes in plans and add key instructions for patients and other providers (Table 1). All this could be done collaboratively with the patient (e.g. in the exam room). To keep the PLW succinct and readable, the documentation not relevant to patient care would still be maintained in individual notes separate from the PLW. These notes could have hyperlinks to the updates made to the PLW at the visit, thus avoiding duplicate documentation work. The patient and providers can see the evolution of the PLW by viewing the versions created by each author over time.

While this may sound idealistic, much of this functionality has existed in EHRs for a long time. A PLW does not require a huge change in software, but rather a change in documentation workflow; many drivers are about to be aligned to incentivize this change.

DRIVERS FOR THE PROBLEM-LIST WIKI

Newer Delivery and Reimbursement Models

Primary Care Medical Homes (PCMH) encourage providers to work in teams to improve the continuity and quality of care

Table 1. An Example of How the Problem List Can Be Updated as New Information Becomes Available and Can Be a Central Source of All Relevant Information About a Patient

Event	Problem update
Patient prepares for visit with new physician and adds problems to the PLW	<ul style="list-style-type: none"> • Sugar (Diabetes) • Low blood count • Protein in urine • Kidney not working well
Day 1 PCP sees new patient with diabetes and finds elevated creatinine and anemia. A point of care urine dipstick test is positive for protein. Reviews log of home blood sugars. Orders additional lab tests. PCP updates the PLW	Diabetes Type 2 <ul style="list-style-type: none"> • Well controlled with Insulin Elevated Creatinine <ul style="list-style-type: none"> • Possibly diabetic nephropathy (dipstick proteinuria) • On stable dose of ACE-I • Awaiting records from Dr. A Anemia <ul style="list-style-type: none"> • Chronic per patient • Awaiting records from Dr. A and test results
Day 3 Prior records received from Dr. A confirm chronic but stable creatinine elevation and anemia and proteinuria. Test results for iron, vitamin B12 and folic acid now available.	Chronic kidney disease (Stage III) <ul style="list-style-type: none"> • likely diabetic nephropathy (proteinuria) • Nephrology consult: ACE-I dosing and need for additional workup Anemia secondary to nephropathy <ul style="list-style-type: none"> • Adequate Fe, B12 and Folate stores (2013) • EGD and C'scope 2012
Day 10 Nephrologists sees patient and does workup, initiates Erythropoietin treatment, and decides to continue ACE-I.	Diabetic Nephropathy (Stage III CKD) <ul style="list-style-type: none"> • Stable creatinine and K on ACE-I. • Consultant nephrologist Dr. X. Anemia secondary to CKD <ul style="list-style-type: none"> • Adequate Fe, B12 and Folate stores (2013) • EGD and C'scope 2012 • Epo to maintain Hb > 10

CKD Chronic kidney disease; EGD Esophagogastroduodenoscopy; PCP primary care provider; PLW Problem-List Wiki

for our patients. Accountable Care Organizations (ACOs) specified in the Patient Protection and Affordable Care Act (ACA) require reimbursement to be tied to provider teams collaborating to improve quality while containing costs, and not to level of documentation.

Open Charts

A number of institutions are allowing patients to see their own problem lists from the EHRs on online patient portals. This transparency can lead to more accurate and better organized problem lists, and may lead the way for patients and caregivers to contribute to the PLW.

Meaningful Use

Under the Health Information Technology for Economic and Clinical Health (HITECH) Act, providers can qualify for incentive payments for "Meaningful Use" of EHRs.⁵ Two of the "Meaningful Use" requirements are that providers need to "maintain a current and up-to-date problem list of current and active diagnoses" and that there be "capability

to exchange key clinical information among providers of care and patient-authorized entities electronically.” The requirements include adoption of International Classification of Diseases, Tenth Revision (ICD-10) for billing and coding by 2014, and Systematized Nomenclature of Medicine–Clinical Terms (SNOMED-CT) for clinical documentation and problem lists by 2015.

The financial implication of these changes is that healthcare institutions are restructuring their delivery systems and redesigning their workflows and documentation policies. Individual providers, disillusioned and frustrated with EHRs in their current form, are getting trained to adapt and adopt new ways to communicate, collaborate and document. This is the time to build consensus around documentation policies and incorporate standardized training for PLWs into the training for all specialists and members of the primary care team.

CONCLUSION

EHRs have failed to reach their true potential due to the drivers leading to a suboptimal documentation process. We have ended up with a “source-oriented medical record” that is focused not on the overall care of the patient, but on the financial and medico-legal needs of the individual provider or institution. With recent changes in the regulatory, health policy and economic landscape, the stars are aligned to finally move towards a collaborative, shared, patient-centered medical record.

Let us take this opportunity to work as a team with our patients to create and maintain a shared, up-to-date summary of their key health issues. Such a PLW has the promise to have our patients more engaged in their own health and help EHRs achieve their potential of improved care at lower cost.

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