Standardizing the Problem List in the Ambulatory Electronic Health Record to Improve Patient Care

December 2012

Authored by:

Jeff Hummel, MD, MPH
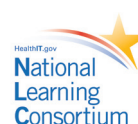Qualis Health
Seattle, Washington

Peggy Evans, PhD, CPHIT
Qualis Health
Seattle, Washington

wirec
Washington & Idaho
Regional Extension Center
www.wirecQH.org

A Qualis Health Program

QUALIS HEALTH

Regional Extension Center
Awardee of The Office of the National Coordinator for
Health Information Technology

HealthIT.gov
National Learning Consortium

Table of Contents

Figures

Executive Summary

Maintaining an up-to-date problem list is a core element of the Centers for Medicare and Medicaid Services (CMS) definition of electronic health record (EHR) "meaningful use" because an accurate problem list is essential to providing better individual patient care across multiple care sites, and serves as a foundation for population management. This requires healthcare organizations to have a standardized process in the EHR to ensure the problem list remains current, an aspect of chart management that in the past was left to individual providers. The change that standardization of the problem list represents can pose a major challenge to healthcare organizations of all sizes, and is therefore an issue best approached within the framework of change management principles.

This white paper seeks to accomplish three objectives:

1) Describe how the problem list can be leveraged to achieve better individual patient care and population management.

2) Understand the opportunities and barriers for a standardized problem list in the EHR.

3) Explain in detail how the change management principles of vision, skills, incentives, resources, and action plan can be used to assist organizations with developing processes to standardize problem list maintenance.

Introduction

Healthcare in the United States has entered a period of nearly continuous change as the industry responds to a combination of rising per capita healthcare costs and quality indicators that continue to lag behind international cost-benefit standards (1). One catalyst for change has been the introduction of health information technology (health IT), which has raised expectations for improved quality and safety at the same time that it has disrupted traditional practice patterns by increasing the volume, complexity, and potential uses of information for which providers and their care teams are responsible (2). A prime example of this is the problem list, which has expanded in use from a simple table of contents in a patient's chart to a core business process on which decision support tools, registries, and reporting systems depend to manage and measure clinical outcomes for performance-based reimbursement. On a human level this means that health IT, and in particular the EHR, has transformed a charting activity that historically each provider could manage on an ad hoc basis into a process for which healthcare organizations have a strong interest in standardizing to better use the information for individual patient care and population management. The challenge this represents is so great that it usually requires the skilled use of change management principles to be successful. Each healthcare facility, whether it is a clinic or a large integrated delivery system, must be prepared to meet this challenge if it is to compete in a world in which reimbursement is tied to the Triple Aim of improving the care experience of individual patients and achieving better population quality outcomes while reducing overall cost (3,4).

The Problem List: A Historical Perspective

The problem-oriented medical record (POMR) was developed by Dr. Lawrence Weed at the University of Vermont and spread to the rest of the country during the rise of family medicine as a specialty in the 1970s (5). The POMR was based on a clearly articulated vision for organizing clinical records in which the problem list would include all of a patient's problems, past as well as present, social and psychiatric as well as medical. Dr. Weed envisioned each problem list entry as a statement of the clinician's current understanding of 1) a diagnosis, 2) a physiological finding followed either by "etiology unknown" or secondary to an established diagnosis, or 3) a symptom, abnormal physical finding, or test abnormality. Management of the problem list required regular updating to either move problems from the level of symptoms and abnormal findings to a diagnosis, or to resolve a problem no longer requiring management. The intent was to provide an organizational structure to facilitate management across medical specialty and facility. Dr. Weed envisioned the problem list as playing a central role in computerized medical records, and he led early efforts to introduce information technology to healthcare. Today the POMR is an international standard for the organization of the entire medical record including chart notes for both inpatient and ambulatory services. The centerpiece of the POMR is the problem list, which is intended to serve as the table of contents and an index to a medical record regardless of the clinician's specialty or the patient's medical complexity.

The Changing Role of the Problem List

The widespread use of EHRs has significantly expanded the role of the problem list for a number of purposes that can be divided into two major categories, both of which are part of the Triple Aim:

1. **Better care experience for individual patients:** The problem list serves as an organizational tool to help clinicians give focused attention to identifying and managing individual medical problems and their related complications while treating the patient as a whole. It acts as a stabilizer during care transitions by serving as the basis for checklists pertaining to issues that must be addressed. As clinicians transition to working in multidisciplinary care teams to share the work of managing the growing burden of aging patients with multiple chronic diseases and the increasing volume of information in the EHR for which they are responsible, the problem list serves as a cue for care team members to pay attention to specific goals and implement interventions within their scope of practice. In addition the problem list serves as an input for decision support tools that alert clinicians to the presence of conditions that may complicate clinical decisions including the choice of medications. It also serves as a reminder to address problems that may seem less important to the clinician, but can have substantial effects on patients' quality of life (e.g. incontinence, hot flashes, erectile dysfunction, acne, etc.).

2. **Better health for populations:** The problem list also serves as the data definition for the inclusion of patients in high priority subpopulations needing specific interventions or follow-up care on the basis of a diagnosis. This, in turn supports a wide array of quality improvement tools ranging from chronic disease reports, decision support alerts, flow sheets, registry functionality, and dashboards used in evidence-based population management. Unlike encounter diagnoses which are associated with orders and visits, the problem list can be easily reviewed and its entries remain consistent over time until issues are resolved. As such, the problem list helps care teams quickly identify gaps in care for patients who have chronic illnesses, but are currently being seen by the clinician for an unrelated acute care issue.

In the past, each clinician could have a different approach to maintaining the problem list, and although the inefficiencies of this variation may have contributed to overall higher healthcare costs, those were not usually costs for which the clinician or the clinic was responsible. The challenge facing healthcare organizations today, regardless of their size, is that as healthcare delivery systems become accountable for clinical quality, unrestricted variation of this type is no longer an option. Variation in problem list management undermines the quality of care to individual patients by making it more difficult to see co-morbidities and understand the context of clinical decisions both within the care team and during care transitions. Problem list variation also undermines clinical quality in population management by reducing the reliability of registries, clinical reports and decision support tools, all of which are key components of the information infrastructure for measuring and managing clinical quality and the associated cost of care.

The Triple Aim: Care, Health, and Cost (6)
More specifically:
1) Improving the patient care experience
2) Improving the health of populations
3) Reducing the per capita cost of health care

Variation in problem list management undermines the quality of care to individual patients by making it more difficult to see co-morbidities and understand the context of clinical decisions both within the care team and during care transitions.

Understanding the Opportunities and Challenges of the Problem List: The Role of Standardization

Process standardization on a large scale, particularly when it involves the practice styles of individual providers, requires a high level of change management sophistication. One aspect of the change management strategy for problem list management is to understand that the conversion from paper records to EHRs has amplified old challenges and created new ones in maintaining the problem list, which, in the absence of process standardization, are a daily source of frustration for providers, as illustrated by the following examples:

1. There is tension between completeness of the problem list and its length, which can become unwieldy with a large number of entries.

2. Patients frequently receive care from multiple clinicians in different disciplines or specialties, each with their own perspective on the problem list, often using different EHRs. In this situation, it is common for a patient's problem list to vary by setting, which undermines the purpose of the problem list serving as a table of contents for the patient as a whole.

3. Clinicians are generally under major time constraints, and the effort required to update the problem list competes directly with other responsibilities that frequently take priority. It is common for clinicians to regard problem list maintenance as one more EHR list requiring double entry (7).

4. The problem list was designed to help track clinical concepts such as complaints, test abnormalities, or physical findings and combine them into a unifying diagnosis. This is challenging in part because the EHR nomenclature for diagnoses, symptoms, physical findings, and test abnormalities today is based on billing codes that are often poorly aligned with clinical concepts.

5. The EHR has ushered in new levels of transparency giving patients increased ability to view their own problem lists. For stage 1 of the CMS meaningful use criteria, the problem list is a required component for the clinical summary, e-copy of health information, e-exchange of key clinical information and e-access to health information, with further expansion into additional measures for stage 2. Transparency places additional responsibility on clinicians to assure the accuracy of the problem list and avoid or edit potentially offensive default labels attached to billing diagnosis codes.

6. Use of the problem list as the data definition for patients in a sub-population to be managed requires a shared understanding among clinicians of the range of diagnoses that are considered "inclusion criteria." As providers are given more coding options for diagnosis through SnoMed and ICD-10, the risk increases that a patient will be erroneously omitted from a population management program.

The EHR problem list is complicated to maintain. However, it has also opened the door to new opportunities for managing the problem list that can actually make the job easier in many ways. In 1970, Dr. Weed predicted far more rapid application of computers to the medical record environment than what actually occurred. His prediction was that computers would soon be used to process physical findings, symptoms, and test results into probability-based algorithms to assist in making diagnoses. Electronic records have not yet come that far in the past 40 years, but current functionality does allow problem list entries to be easily applied to an encounter diagnosis. Diagnostic terms familiar to clinicians can be used in the problem list and still automatically map to their corresponding billing codes. Editable fields in the problem list allow clinicians to maintain one or two sentence summaries of a problem list entry letting the reader quickly understand the state of a current work up, or the course of a chronic illness. And role-based access allows non-clinician care team members to alter the problem list, thereby sharing some of the burden of problem list maintenance that formerly fell entirely to clinicians.

> …success in using the problem list optimally does not hinge on adding new technology features. Rather, it resides in the ability of an organization to develop standard team-based policies, procedures, and workflows

As basic as these functionalities may seem, particularly in comparison to Dr. Weed's grand vision, success in using the problem list optimally does not hinge on adding new technology features. Rather, it resides in the ability of an organization to develop standard team-based policies, procedures and workflows. Without clear and accepted standards that address change management issues at an organizational level, it is very difficult to assure that the basic activities required to keep an accurate problem list up to date are carried out with each visit; but unless that happens the potential value of the EHR as a quality improvement tool will remain unrealized.

Applying Change Management Principles to Standardizing Problem List Maintenance

Problem list process standardization requires successful change management if it is going to help the organization with providing better care for individual patients and populations. The change management literature teaches us that for organizations to successfully navigate serious change in complex settings all of the following factors must be present (8):

1. There must be a **vision** for change. Without a vision, efforts to change can easily appear arbitrary and purposeless, resulting in confusion.

2. The organization must have within its workforce the **skills** required for the envisioned change. If key skills are missing, the result will be anxiety on a system-wide level.

3. There must be **incentives** for those making the change. If there is no incentive the result will be resistance.

4. The organization must have **resources** specifically dedicated to managing the change. Without resources the result will be frustration, burnout, and cynicism.

5. There must be a clear **action plan**. In the absence of a clear plan, efforts to change frequently become false starts or poorly coordinated efforts wasteful of organizational energy and resulting in burnout.
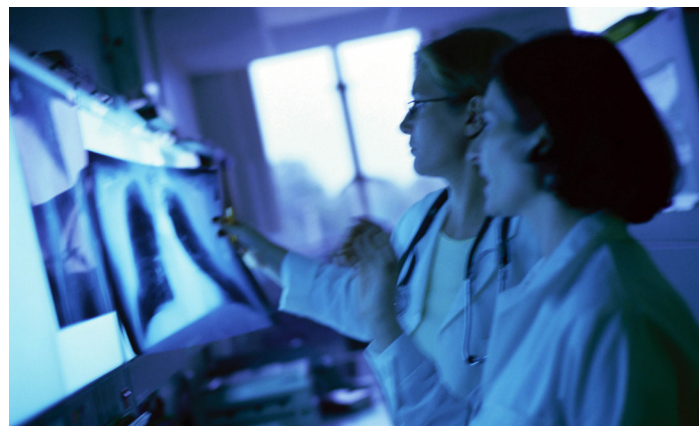
Efforts involving major change commonly lack multiple components, often leading to a toxic mixture of dysfunctional responses. The challenge for healthcare organizations regardless of their size is to use the principles of successful change management to guide their clinical workforce through the changes associated with standardizing problem list maintenance by articulating a clear vision, assuring the presence of necessary skills, offering appropriate incentives, providing adequate resources and executing a coherent plan. Through careful attention to each of these essential ingredients an organization can avoid the confusion, anxiety, resistance, cynicism and costly false starts that so commonly accompany such efforts.

Vision

Vision is the responsibility of leadership (9). However, leaders must actively seek out visionary ideas from informal opinion leaders within their organization because not all visionaries are drawn to, or are successful in leadership positions. The purpose of a clearly articulated vision is to create a shared understanding of the need for change. This means being able to succinctly describe the current state of problem list maintenance and document its associated negative effect on the Triple Aim, while at the same time articulating a vision for a future state including how it will be achieved. The resulting vision statement must then be translated into specific policies on which to base corresponding procedures as well as the plans to implement them.

The result should be a clear message so that everyone in the organization understands that the risk of continuing ad hoc problem list maintenance is unacceptable, the envisioned future state is desirable, and the way forward is well defined. This message must be consistent with the financial incentives of the organization and aligned with the activities of opinion leaders throughout the enterprise.

Skills

A number of new skills will likely be required for problem list maintenance. These include clinical skills, IT skills, and team skills, requiring clinicians and staff to function as a team. These skills don't just happen. They require specific training, and training requires commitment of resources. The organization must decide whether to use internal resources for training or to hire experts from outside. When internal resources are to be used, for example if clinicians are expected to train their care team members about clinical topics required to perform a task, it is essential for the organization to assure standardization of the training content. Care teams must also be given the time to do this work by either hiring staff to backfill for those in training so that patient care can continue, or by reducing productivity expectations for the care teams that are to be pulled off-line to be trained. For problem lists to support the goals of the Triple Aim, an organization must also have people with the skills required to create clinical reports from their information system that will support quality improvement projects based on what the clinical reports are saying. The more clearly each workflow associated with these activities can be defined, the easier it will be to identify existing gaps in the required skills and create plans to close those gaps.

Clinical Skills: Problem list maintenance may require non-clinician care team members to learn new clinical skills once their roles in the workflow are defined. For example, non-clinician care team members can be taught to recognize multiple entries on a problem list pertaining to a single problem, such as lower back pain, sciatica, and herniated lumbar disk, and bring it to the attention of a clinician who can often quickly decide on the best unifying diagnosis. Likewise, non-clinician team members can be taught to recognize common medications indicating the presence of a disease that is missing from the problem list.

IT Skills: Properly integrated health IT interacts with human workflows one of two ways in a user interface. Either a person puts information into the computer in a way the computer can recognize and process, or the computer delivers processed information to a person in a format that helps that person understand a clinical pattern and make a decision. Each of these interactions with the user interface requires specific skills. The person entering information must understand where, when, and how the information is to be entered. The person using information from the computer to make clinical decisions must understand where the key information is to be found and how to correctly document the decision that the information was used to support. For the problem list, this means clinicians must have the skills to pick the most appropriate choice from a short list of diagnoses. Likewise, every team member must understand how to use the parts of the user interface corresponding to their tasks in a new workflow. This skill is complicated by the fact that most EHRs have built in redundancy so that the same information may be entered in multiple places, not all of which have the same functionality for how the information is processed by the EHR.

The person(s) responsible for configuring the user interface must have the skills to understand the information that clinicians need for decision support, where in the workflow the information is needed, and how to best make that information available in an easily understood format (e.g., alert, flow sheet, graph, dashboard) without interfering with workflow.

Team Skills: Many clinicians have had little experience working in multi-disciplinary teams. Skills such as running team meetings, teaching non-clinician care team members and supervising clinical tasks may vary widely. Likewise, non-clinician care team members may have been trained to confine their activities to carrying out a clinician's orders and will require new skills to participate more actively in clinical management decisions. For all team members to work at the top of their licensure and play an active role, including sharing responsibility for not just the patient experience but also thinking about clinical quality and resource utilization, new skills will be required.

For example, the informatics team and clinical quality improvement leadership must decide on the range of problem list entries that will define a patient as being in a high priority sub population for each condition the clinic is actively managing for improved outcomes. Based on these definitions for populations, reports must be generated to use the problem list for population management. Someone in the organization must have the skills to translate the clinical concepts on which the reports are based into data definitions for the report writer. If a complementary report is used to identify patients without a diagnosis of diabetes on the problem list, but are likely to have diabetes based on active prescriptions to treat diabetes, someone on the care team must have the skills to make a list of every such order. Finished reports must be validated, a step that requires additional skills to compare the data in the report with information in patients' charts to identify and correct errors in the report.

The validated reports then produce the information that clinical quality improvement experts use to decide whether a goal has been met, or a quality gap exists that needs to be closed. If for example, a report reveals that a significant percent of patients with active prescriptions for metered dose inhalers do not have asthma on their problem list, an organization will need a specific set of quality improvement skills to modify the workflows to close this gap. These skills include workflow-mapping skills to understand the current state as well as the rapid process improvement cycle skills required to develop and test a future state, first on a small scale. After the future state has been sufficiently refined it requires skills to spread the change to the entire organization.

Incentives

One major incentive for changing behavior is monetary incentives. Many healthcare organizations have begun to modify clinicians' earning structures to reflect a growing emphasis on clinical quality and an increasing ability to measure it. Programs designed to improve quality for outcomes that are tied to salary incentives are likely to get the attention of clinicians. Most clinicians also usually respond favorably to innovations that will improve the financial health of the entire organization. Monetary incentives can be limited to the period of transition between the old way and the new. The new process may actually be easier than the old one once it is up and running, whereas it is the transition that is difficult. When the workflow change burden is borne by the entire team it is worth considering monetary incentives for all team members and not just the clinicians.

While monetary incentives are an important tactic for encouraging change, providers and their care teams are also motivated by other kinds of incentives as well.

One such non-monetary incentive is improved clinical outcomes for patients. The staff must not only understand how standardized problem list management is a core business process for this work, they also need to see documentation of actual clinical improvement in real-time as the change is implemented. This means that clinical quality improvement activities the problem list supports should probably happen at the same time the problem list management workflows are being redesigned, and documentation of clinical improvement should be openly shared with the care teams.

Another powerful non-monetary incentive is getting through the day with less wasted effort. EHRs have created a world in which it is simply not sustainable for the clinician to be the recipient of all information in the practice and for it to be the only the clinician's job to organize all the information required for clinical decisions. There is too much information requiring too many decisions. Clinicians have a strong incentive to work in teams and share some of the information management responsibilities to make the work both possible and more efficient. Many of the tasks involved in identifying patients whose problem lists need to be updated can be done by non-clinician team members and embedded in other workflows such as reordering medications or preparing for the huddle as shown below. The effort to do this work can be kept to a minimum by taking advantage of the mental activation that occurs during these other workflows.

Resources

Perhaps the greatest challenge in facilitating change is to understand and plan adequately for the resources a change will require. Resources can either come from additional revenue sources, or by reducing costs through waste elimination.

New Resources for Clinical Teams

In high volume settings many complex visits are down-coded due to inadequate documentation (e.g., the review of systems). However, for some visits, patients or support staff can enter this information directly into the progress note. Opportunities to offer additional services using creative innovations (anticoagulation clinics, sports physicals, etc.) often create revenue streams that can be reinvested to support core business processes such as problem list maintenance.

New Resources for IT and QI

In many environments there are growing numbers of usually modest monetary incentives for quality reporting or managing chronic disease outcomes. It makes sense from many perspectives to invest this money directly into the IT and QI infrastructure necessary to do this work, including maintaining accurate problem lists and writing quality reports.

Reducing Waste

Healthcare workflows are filled with non-value added activity that can be very difficult to see. The result of this waste is that people spend their time performing tasks that are of no value to the patient. Time spent on non-value added activity is unavailable for other tasks including core business process such as problem list maintenance.

Action Plan

Organizations need a clear action plan in order to coordinate problem list change management efforts. Action plans should include:

1) **Policies:** A first step in creating an action plan for standardizing the problem maintenance process is to develop guidelines for clinicians. The guidelines should specify the types of entries for which the problem list is appropriate. There is widespread agreement that those entries include:

   1. Chronic or recurring medical conditions likely to affect patient care for multiple visits

   2. Active problems likely to require ongoing medication or diagnostic monitoring over time

   3. Persistent symptoms affecting patient care over time

Action Plan Elements

Organizations need a clear action plan to coordinate problem list change management efforts. The action plans should include:

- Policies
- Procedures
- A Plan to Measure Change

There are a number of issues that the guidelines should also address because they are part of the variation seen when problem list maintenance is not standardized.

1. Documentation of information for which there may be another designated place in the chart, yet which constitute a problem from a medical perspective, such as tobacco use or a family history of colorectal cancer.

2. The use of dummy codes to signal that a patient has a controlled substance agreement or advance directives on file somewhere in the chart.

3. Documentation of social circumstances (e.g., lack of housing).

4. Suspected personality disorders in difficult patients that affect care management (e.g., somatization) without an established diagnosis.

5. Recording patients' opinions or choices that could influence clinical decision-making such as dietary preference, a predilection for non-allopathic medical practices or opposition to certain standard health maintenance recommendations like immunization.

6. Temporary episodic conditions (e.g., sinus infections, uncomplicated UTIs).

2) **Procedures:** Problem list policies are implemented through standard procedures and workflows to ensure accurate and reliable results. Adding to or removing items from the problem list represents a clinical decision placing this activity squarely within the realm of clinician tasks, and in fact Dr. Weed clearly intended for clinicians to maintain it as a chart organization tool. In the modern EHR world, non-clinician care team members share patient care activities and increasingly work in interdisciplinary teams. Like other clinical decisions for which clinicians are responsible, there are many ways that care team members (defined as medical assistants, licensed professional nurses, registered nurses, etc.) can assist in organizing information required to update the problem list, thereby increasing the efficiency and accuracy of the process.

A problem list entry should be considered current if it represents an accurate description of a patient's problem and includes a short up to date summary of the problem. There are two ways that an existing problem list entry may need to be modified as shown in Figure 1.

1. An appropriate problem list entry should be reviewed to determine whether it is a symptom, physical finding, or test abnormality that can be upgraded to a diagnosis, and whether the displayed label is appropriate. The short summary of the problem should be reviewed and updated if necessary.

2. For items on the problem list that don't belong there, the first question is whether the information belongs somewhere else in the chart, such as in the past medical or family history. Most of the time problems should be removed from the problem list by resolving as opposed to deleting them. Deleting a problem should be reserved for entries that were an error in the first place.

Figure 1: Decision logic for reviewing and updating items on the problem list.
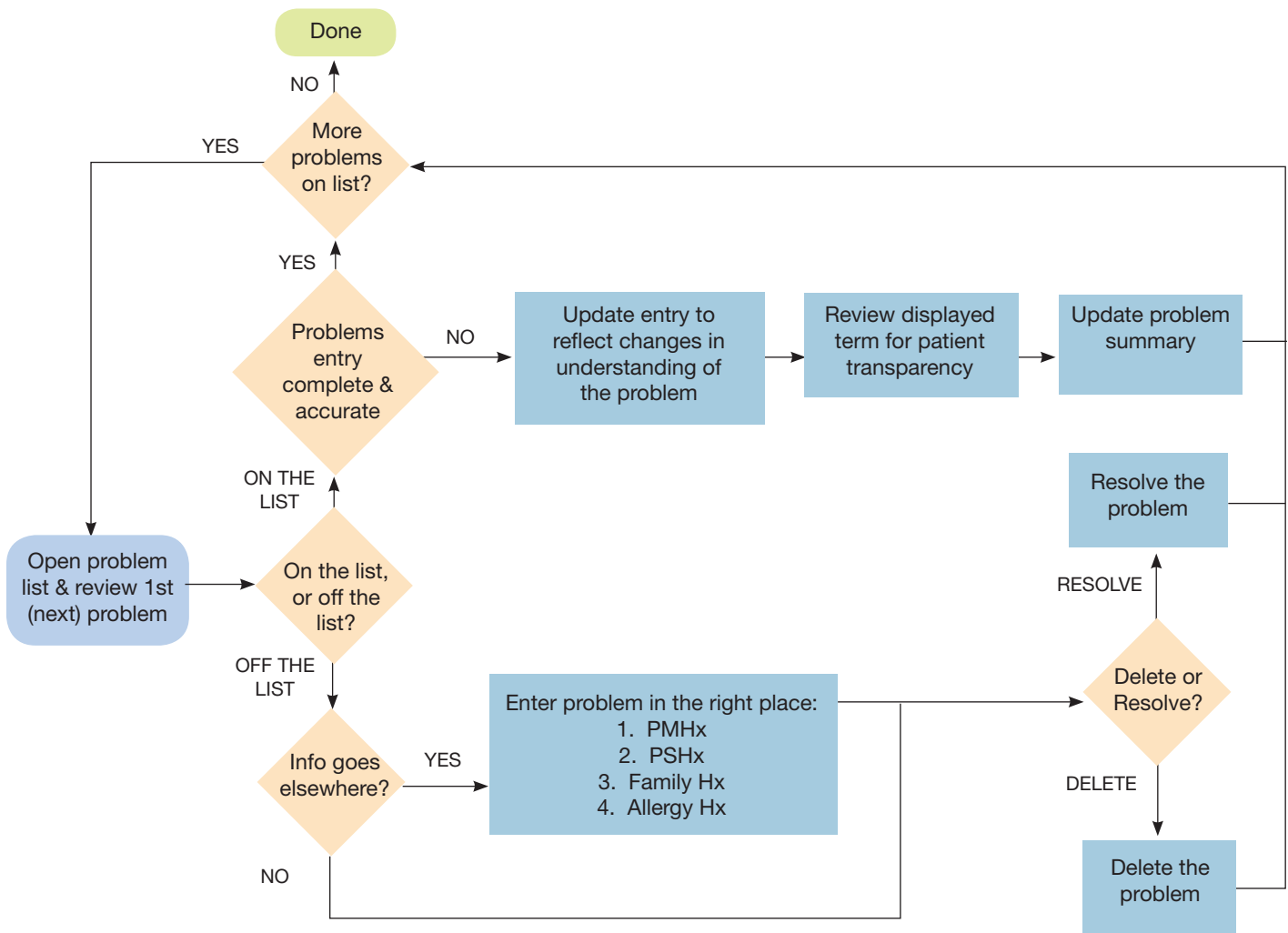

Although adding an entry to the problem list is a clinical decision that should ultimately be made by a clinician, there are many situations in which a non-clinician care team member may be the best person to identify a missing diagnosis and initiate the process of adding it as shown in Figure 2 (page15). Examples include:

a. A patient requests a chronic medication be reordered, but the condition for which it is prescribed is not on the problem list.

b. A consultant's note is received from a referral for a problem that is not on the problem list.

c. A transition of care document from an ED visit or hospitalization contains reference to a problem that is not on the problem list but is still an active problem.

In each of these examples a care team member can bring the apparent gap to the attention of the clinician, who in turn can make the decision to add it to the problem list.

Figure 2. Identifying items missing from the problem list from triggers.
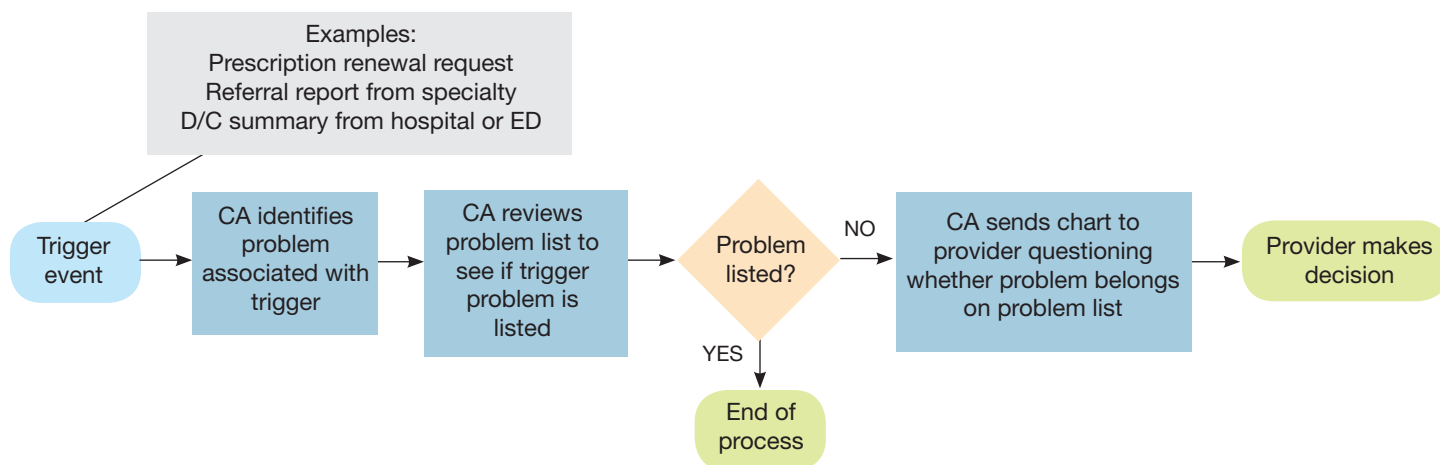
One feature of complex care teams that has developed recently is the "huddle," which is a short meeting of the team members in the morning before clinic. The purpose of the huddle is to quickly plan the care for every patient on the team schedule. This may include identifying crucial information (e.g., an imaging result), or other resources, such as an interpreter or social worker, that are essential for a productive visit. Huddles are an excellent time to identify gaps in a patient's preventive or chronic illness care that can be easily closed by the clinical assistant such as setting up an order for an immunization while the patient is roomed. In advanced huddles, a care team member often "scrubs" patients' charts in advance, meaning he or she looks quickly through the chart to identify obvious gaps according to evidence-based guidelines.

The clinical assistant (CA, often a medical assistant or licensed practice nurse), who scrubs the chart for the care team huddle can look for information suggestive of specific chronic conditions that are quality improvement strategy priorities (e.g., coronary artery disease or asthma) as shown in Figure 3 (page 16). The chart may reveal that the patient had a myocardial infarction in the past or was prescribed nitroglycerine and yet there is no entry for coronary artery disease on the problem list. The CA can bring this omission to the attention of the clinician during the huddle, at which time it can be added to the problem list.

Figure 3. Identifying items missing from the problem list while scrubbing chart for the huddle
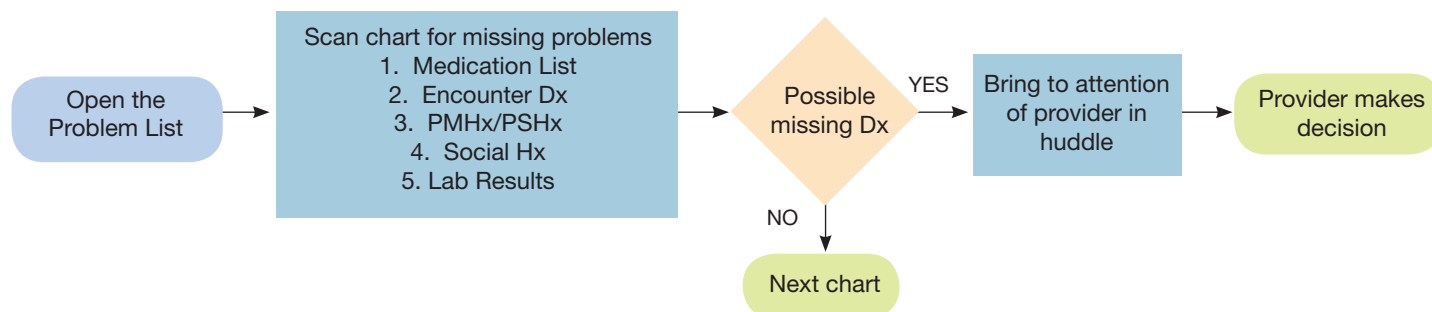
3. **A Plan to Measure Change:** Measurement is a key component of improvement methodology. Workflow changes, such as those outlined here, may or may not actually move an organization closer to the goal of more accurate problem lists. There are a number of ways to get some sense of how well problem lists are being managed, all of which are imperfect, but in combination can help determine whether efforts to improve problem list maintenance are moving in the right direction.

   1. Many EHRs have a button to attest that the problem list was reviewed during the visit, which can be used as a surrogate for reviewing the problem list. This may over or undercount the percent of problem lists updated during the visits depending on workflow issues, but can be used to show improvement.

   2. It is feasible, although not easy, to write a report using time/date stamps to identify the percent of patients whose problem list was altered in some way during a visit. Such a report would not address the accuracy of the list and would not distinguish between a problem list left unaltered because it was up to date and one that was not reviewed.

   3. It is feasible to write a report showing the percent of patients with problem list entries containing comments that provide a synopsis of the workup or the patient's course with the disease.

4. Population management programs that depend on a problem list entry as an inclusion criterion can use complementary reports to identify patients likely to have the condition based on vital signs, prescription history, test results and other clinical information. Those patients meeting the clinical criteria for the complementary report who do not have the corresponding diagnosis on their problem list are then reviewed to determine whether it should be added. The same concept can be used to identify the rate of discordance between a complementary report and problem list entries for such conditions as migraines, HIV, obesity, or hypertension, which can be used to track whether problem list accuracy is improving in general.

5. Patients can be surveyed to ascertain the percent that have reviewed their problem list and found it to be accurate. This could be done using the patient portal, particularly if patients were given guidelines for problem list management and asked to click a box if they were in agreement that their problem list was accurate.

Overall Best Practice Tips

- Organizations should develop policies for problem lists that address such issues as content of the problem list, role-based authority to update or resolve problems, as well as processes for problem list review in which patients are able to participate.

- The use of dummy codes on the problem list to support workaround for non-problem list related issues should be avoided.

- To be useful the problem list should be updated at every visit to reflect both acute and chronic problems along with historical information of resolved problems.

- Each specialty has a different perspective on a patient and a somewhat different interest in the problem list (10). Many organizations have found that it makes sense for primary care to be responsible for (to own) the problem list, although there should be a plan for specialists or hospitalists to own the problem list in special situations. This requires a shared understanding of problem list etiquette across all EHR users.

- Attention should be given to defining problem list codes used to identify patients belonging to high priority sub-populations, such as those with specific chronic illnesses, in a way that makes it easy for clinicians to choose the right codes.

- Care teams should explore ways for clinicians to share the responsibility for identifying patients with items missing from the problem list with non-clinician care team members in an effort to improve the quality of the problem list and reduce the amount of effort clinicians need to spend on this activity.

- As is the case with other information management tasks, it is important to take small steps and concentrate on the patients with the most complex problem lists who are seen most often. In this way, care teams will most rapidly benefit from the improved efficiency of well-managed charts.

Conclusion

The problem-oriented medical record, which became the standard for clinical charting over 40 years ago, has become even more important with the computerization of health information. In addition to supporting the original intent as a table of contents for the medical chart of each patient, the problem list directly powers an array of patient safety and quality improvement electronic tools that support the Triple Aim of providing better care to individuals, improving the health of populations and lowering overall healthcare costs. For this to happen however, organizations must implement system-wide standardized processes to assure that problem lists are kept up to date and accurate. This change requires careful attention to the principles and proficiency in the practice of change management. With a carefully-executed change management strategy, the promise of the Triple Aim, using health IT as the information infrastructure for practice transformation, can be within reach for care teams striving to improve care for patients.

About WIREC

Led by Qualis Health, WIREC provides vendor-neutral health IT consulting services related to the successful adoption, implementation, and utilization of EHRs for the purposes of improving care. We guide eligible healthcare professionals to achieve meaningful use of EHRs and qualify for Centers for Medicare & Medicaid Services (CMS) incentive payments. WIREC was selected through an objective review process by the U.S. Department of Health and Human Services' Office of the National Coordinator for Health IT (ONC). WIREC serves as a direct pipeline to the national Regional Extension Center program, leveraging our connection to a national collaborative of RECs while bringing local expertise to support providers across the region with technical assistance for successful EHR adoption. For more information, visit www.wirecQH.org.

About Qualis Health

Qualis Health is a national leader in improving care delivery and patient outcomes, working with clients throughout the public and private sector to advance the quality, efficiency and value of healthcare for millions of Americans every day. We deliver solutions to ensure that our partners transform the care they provide, with a focus on process improvement, care management and effective use of health information technology. For more information, visit www.qualishealth.org.

References

1. Pritchard C, Wallace MS (2011). Comparing the USA, UK and 17 Western Countries' Efficiency And Effectiveness In Reducing Mortality. *Journal of the Royal Society on Medicine,* Short Rep. July; 2(7):60.

2. Nutting PA, Crabtree BF, Miller WL, Stange KC, Stewart E, Jaen CR (2011). Transforming Physician Practices to Patient-Centered Medical Homes: Lessons from the National Demonstration Project. *Health Affairs,* 30, 439-445.

3. Berwick DM (1996). A Primer On Leading The Improvement of Systems. *BMJ,* 312: 619-622.

4. Reuben DE, Tinetti ME (2012). Goal-Oriented Patient Care – An Alternative Health Outcomes Paradigm. *New England Journal of Medicine*, 366(9): 777-779.

5. Weed, L.L (1970). *Medical Records, Medical Education and Patient Care: The Problem-Oriented Record as a Basic Tool.* The Free Press of Case Western Reserve University, Chicago. pp 15-40.

6. Berwick, DM, Nolan, TW, Whittington J (2008). The Triple Aim: Care, Health, and Cost. *Health Affairs,* 27(3), 759-769.

7. Wright A, Maloney FL, Flebowitz JC (2011). Clinician Attitudes Toward And Use of Electronic Problem Lists: A Thematic Analysis. *BMC Medical Informatics and Decision Making,* 11(36). http://www.biomedcentral.com/1472-6947/11/36

8. Knoster T, Villa R, Thousand, J (2000). A Framework for Thinking about Systems Change. In R. Villa & J. Thousand (Eds.), *Restructuring for Caring and Effective Education: Piecing the Puzzle Together* (pp. 93-128). Baltimore: Paul H. Brookes Publishing Co.

9. Reinertsen JL, Bisognano M, Pugh MD (2008). *Seven Leadership Leverage Points for Organization-level Improvement in Health Care* (Second Edition). Cambridge, Massachusetts: Institute for Healthcare Improvement. (Available on www.ihi.org) accessed 10/6/11.

10. Wright A, Pang J, Feblowitz JC, Maloney FL, Wilcox AR, McGloughlan KS, Ramelson H, Schneider L, Bates DW (2012). Improving Completeness of Electronic Problem Lists Through Clinical Decision Support: A Randomized Controlled Trial. *J Am Med Inform Assoc.* doi:10.1136/amiajnl-2011-000521.