

IMPROVING MEDICATION RECONCILIATION

CONTRA COSTA REGIONAL MEDICAL CENTER (CCRMC)

- ◆ Martinez, CA
- ◆ 143 beds
- ◆ www.cchealth.org/medical_center

CCRMC is a county hospital in the San Francisco-Oakland Bay Area.

STEEEP

Safe

Reduced opportunities for medication errors.

Effective

Developed by frontline clinicians with first-hand experience.

Patient-centered

Enhanced the coordination of patient care at transition points.

THE PROBLEM

Medication reconciliation—comparing a patient’s medication orders to all medications the patient has been taking—helps to avoid medication errors such as omissions, duplications, dosing errors and drug interactions. The Institute for Safe Medication Practice estimates that 50 percent of medication errors and 20 percent of adverse medical events could be eliminated with proper medication reconciliation.

For CCRMC, CEO Jeff Smith, MD, recognized in late 2004 that the hospital’s current quality improvement methodologies from the 80s and 90s were insufficient to achieve higher levels of improvement. With this level of executive sponsorship, Steven Tremain, MD, chief medical officer, was asked to develop a team to help redesign clinical processes. A top priority of redesign was meeting the requirements for medication reconciliation. director of ancillary services Stephanie Bailey was asked to lead a team in the rapid development of a medical reconciliation process that would quickly be adopted by physicians and nurses and establish a standard for on-going process improvements.

THE SOLUTION

CCRMC set out to establish a reliable process for medication reconciliation at all points of hospital-based care. At the same time, CCRMC sought to develop a repeatable process and an organizational mindset for continually developing and improving clinical activities and systems—quickly and effectively.

RESULTS

For longer than two years, more than 1,000 physicians, nurses and pharmacists across the hospital have adopted the new medication reconciliation process:

- » The proportion of pre-admission medications not reconciled on admission decreased from 25 percent at project initiation to 4 percent after full adoption of the new process.

- » The proportion of medications not reconciled at transfer dropped from 12 percent to 4 percent.
- » The proportion of patients with any hospital medication not reconciled at discharge was reduced from 36 percent to 2 percent.

The process for rapidly developing new systems has also been adopted by clinicians, along with the establishment of a mindset for continual improvement across all disciplines. For example:

- » At the initiative of a respiratory therapist, who clearly demonstrated the potential for leaks around a balloon seal, physicians and nurses were quick to adopt critical bundle elements in the efforts to prevent ventilator-associated pneumonias.
- » Staff nurses and physicians, on their own initiative, redefined the process for ensuring administration of Pneumovax at admission and achieved 94 percent compliance with the new process.

BACKGROUND

As the quality improvement champion for CCRMC, Tremain introduced the IHI’s 100,000 Lives Campaign to the CCRMC’s performance improvement committee, who then sponsored all six recommended interventions:

- » Rapid response teams;
- » Acute myocardial infarction care reliability;
- » Medication reconciliation;
- » Surgical site infection bundles;
- » Ventilator bundles; and
- » Central venous line bundles.

Tremain also applied for and received a grant from Blue Shield of California. He used 80 percent of the grant money to send team members to IHI meetings and classes and used the balance to backfill the floor nurses who would participate in the design of interventions.

Six months into the medication reconciliation project, Tremain submitted a progress report to Blue Shield of California Foundation.

TEAM MEMBERS

- » **Shideh Atai, PharmD**
Pharmacy Director
- » **Stephanie Bailey**
Director of Ancillary Services,
Team Leader
- » **Dana Colomb, RN**
- » **Mary Grace Costa**
Pharm Technician
- » **Oliver Graham, MD**
Hospitalist
- » **Terri Horvath, RN**
Clinical Informaticist
- » **Lisa Massarweh, RN**
Chief Nursing Officer
- » **Sung Park**
Pharmacist
- » **Jeff Smith, MD**
CEO
- » **Steven Tremain, MD**
Chief Medical Officer, Chief Medical
Information Officer, Senior Medical
Director, Contra Costa Health Services

PRINCIPLES OF PERFORMANCE EXCELLENCE

Eliminating Defects

To improve medication reconciliation, Tremain pulled together a team of frontline clinicians, including a nurse champion, a physician champion, the chief of pharmacy and a pharmacist. This team had the experience and insight needed to develop a practical system for reconciling medication errors, as well as serve as credible champions for change.

Bailey led the team as they created a new process for reconciling medication at each transition of care, from admission to transfers across inpatient care units to discharge. Their development process followed these key guidelines:

- » Design tools and systems for preventing errors based on the assumption that errors will occur. Even the most talented and knowledgeable humans make mistakes.
- » Medication reconciliation is a physician function, not a nurse function. Only physicians can order and change medications; they own the outcomes of adverse events arising from unreconciled medications.
- » Use a rapid-cycle improvement process, specifically the Plan-Do-Study-Act (PDSA) process.
- » Hold no more than one meeting per week, lasting no longer than 45 minutes; focus time on testing the new system on the floor, beginning with very small sample sets.

Using the rapid-cycle PDSA process, the team's work proceeded as follows:

1. The team developed a paper-based form for medication reconciliations so they could begin testing it at once, rather than

beginning with an electronic form that would extend the development time.

2. The team tested the form on one patient—the first admission on a Monday morning. Because this was just a test, not an actual implementation, no approval was needed.
3. The form did not work well, and the team revised it.
4. Over the next two weeks, the team tested and revised the form on one unit, revising it eight times in 14 days before full implementation on that unit.
5. At the end of the month, the team then implemented the form on a second unit. Before this implementation was complete, a third unit demanded that it be rolled out for them, ahead of schedule.

Because so much of the work to develop the new system was performed on the floor in testing, the total time investment for each of the team members was just one hour per week.

Reducing Process Variation

The new process has reduced process variation as it has reduced work. For example, the new medication reconciliation form doubles as an order form, simplifying work for the physician. Nurses no longer need to develop a new medication list from scratch for each patient admitted to the unit. Working off the same form also ensures consistency.

The new system also includes several elements that make it easy for staff to use while making it difficult or impossible to use the old system. For instance, the discharge summary form has been left the same, but the section for discharge medications is stamped out, with instructions for using the new, prepopulated medication form

The Patient Experience

CCRMC sought to deepen its organization-wide focus on the patient by helping physicians and the board recognize the significant impact that unreconciled medication orders have on patient safety. For physicians, stories helped to ignite their passion, such as stories of a patient who continued on an old prescription of a beta blocker while starting a new one and returned to the hospital with a critically low heart rate, or a patient with diabetes who added new insulin while continuing the old one and returned with hypoglycemia.

Having received recognition from the Institute for Healthcare Improvement, the Joint Commission, and Harvard Medical International, CCRMC now has a much greater share of attention from the hospital board of elected county supervisors. This has served the hospital well at budget time as it seeks the resources needed to continue to improve patient safety and quality of care.

Creation of a High-Reliability Culture

Today, three years from the launch of the first meeting, the change process has become embedded in the organization. Multidisciplinary teams continue to develop new systems to solve once-recalcitrant problems that challenged the hospital in the delivery of safe, quality patient care. Management has set safety and quality improvement as a goal; frontline staff are making the goal a reality.

CONTINUAL IMPROVEMENT

CCRMC now operates with a culture for identifying problems and taking the initiative to find solutions. Clinicians have embraced the rapid cycle improvement process and continue to develop new systems for improving patient care.