A Compendium of

Initiatives and Lessons Learned

MHA
MISSOURI HOSPITAL ASSOCIATION

Executive Summary

The goal of every hospital is to maximize patient-centered, efficient quality of care, while reducing financial costs and penalties. The "Triple Aim" approach is intended to improve the individual experience of care, improve the health of populations and reduce per capita costs of care for populations. Today, the transformative changes in health care are challenging, yet Missouri's hospitals are poised to build on the success of the Hospital Engagement Network. This work continues, and a focused strategy to reduce variation and improve care is underway. The Missouri Hospital Association and Missouri hospital leaders and providers are poised to lead the effort in every Missouri community for better health, better care and lower costs.[i]

This spring, MHA introduced a new award, the Aim for Excellence Award, intended to recognize Missouri hospitals' innovation and outcomes related to the Triple Aim approach. The goal of the award is to identify achievement, disseminate successful models and motivate improvement in member hospitals. Recognizing that hospitals have different resources, the award was divided into three categories.

1. critical access and rural hospitals
2. small and large metropolitan statistical area hospitals
3. care collaboratives or health care systems

In its inaugural year, 22 applications were submitted for judging. Judges included external Missouri funding, academic and health-related partners. Based on overall aggregate scores, three member organizations were identified as category winners, and three organizations were chosen for honorable mention. These six hospitals, along with other high-scoring applicants, have agreed to share their quality improvement journey. We encourage readers to review the following initiatives and the lessons learned. Peer-to-peer networking can inspire hospitals to identify effective strategies and innovate to meet the needs of their own patients and organization goals.

Please note that compendium content is derived from hospital applications and, in some cases, has been condensed.

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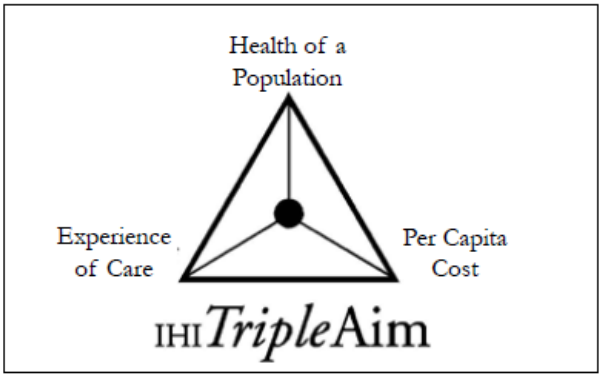
Care Coordination

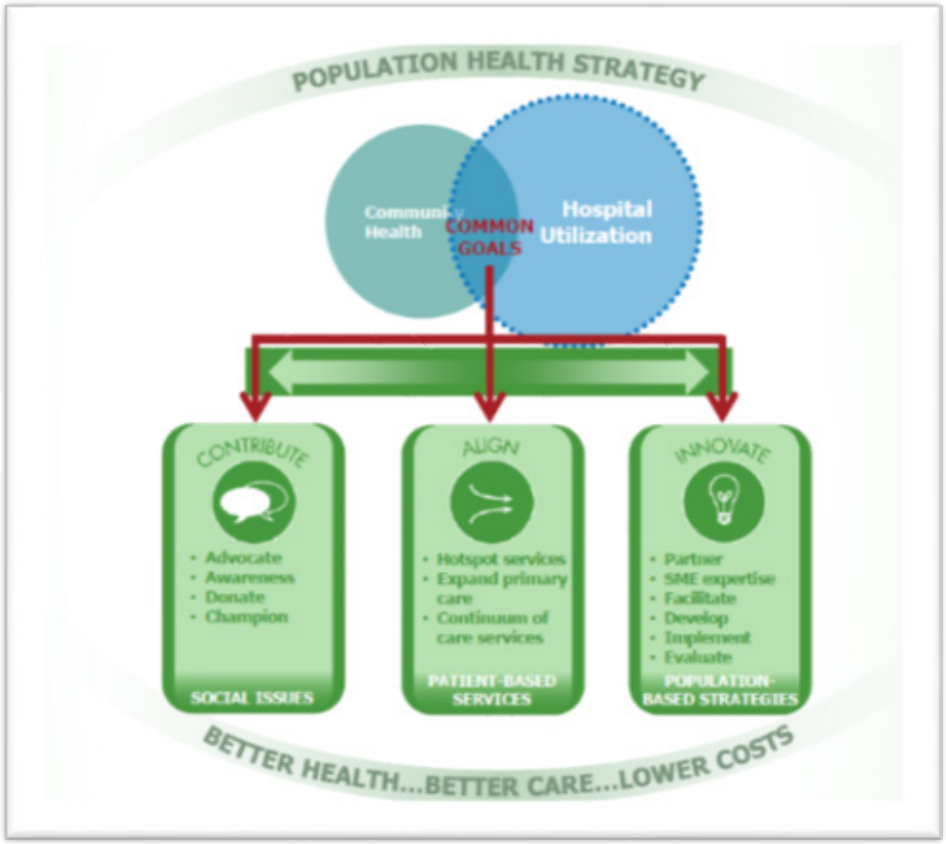
Care coordination is the management of communication and transactions between multiple health care providers who care for the same patient. This collaborative concept is vital when managing a patient with one or more complex chronic diseases as even a small change in treatment, medication or therapy could lead to unfortunate outcomes. A complete transfer of clinical information among providers across all settings, as well as access to patient education tools for individuals with differing levels of health literacy, are critical requirements of care coordination.[ii]



Source: Institute for Healthcare Improvement, 2012.[iv]

Providing excellent care that is coordinated among various providers and community settings is the tenet of population health and value-based care. New regulations by the Centers for Medicare & Medicaid Services, such as the Comprehensive Care for Joint Replacement Model and proposed regulations for discharge planning requirements for hospitals and certain post-acute providers, assume responsibility and financial risk for care coordination.[iii]

MHA has developed an improvement strategy and resources to help with care coordination, centered on the Triple Aim framework. When hospitals focus on providing better health, improved quality of care and lower costs, they develop reliable processes that naturally support improved care coordination.



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Care Coordination — Critical Access and Rural Hospitals

Care Coordination — Critical Access and Rural Hospitals

WINNER

Golden Valley Memorial HEALTHCARE

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Goal

In early 2013, our organization undertook a comprehensive, interdisciplinary quality and safety improvement project to reduce Catheter-Associated Urinary Tract Infections by 25 percent through implementation of evidence-based policies, processes and protocols. Baseline CAUTI rate per 1,000 device days was 5.4 with a 25 percent reduction goal at or below 4.0 per 1,000 device days from April 1, 2013, to March 31, 2014.

Improvement Strategy

Based on baseline data, the quality steering team approved CAUTI reduction as a key improvement project for all inpatient units, designated resources, identified staff and external stakeholders for an improvement team, and recommended participation in American Hospital Association/Health Research & Educational Trust-Hospital Engagement Network Comprehensive Unit-based Safety Program CAUTI Cohort. The timeline for the project was set at one year.

The Plan-Do-Study-Act rapid-cycle improvement strategy was the primary improvement approach used by the team.

1. **PLAN** – The planning done by the team included:
   a) Gathering/analyzing baseline data for the organization, as well as state and national benchmarks;
   b) Reviewing current policy and practice in comparison to evidence-based practice guidelines from the Centers for Disease Control and Prevention, Association for Professionals in Infection Control and Epidemiology, and other hospitals participating in HRET-HEN to identify opportunities for improvement and align organizational policy and practice with EBP guidelines;
   c) Identifying the specific improvement interventions needed to ensure organizational alignment with EBP (four E's of engage, educate, execute, evaluate);
   d) Developing strategies and measures to use throughout the project to monitor progress of policy/process change and compliance, as well as patient outcomes;
   e) Outlining the timeline for improvement intervention tests and full strategy implementation.
2. **DO** – After careful planning, the team quickly took action to:
   a) Revise organizational policy to align with EBP, nursing documentation templates and computerized physician order entry;
   b) Develop CAUTI prevention bundle, education/competencies for staff inserting catheters and performing catheter care/maintenance, education for providers on medical indications for catheter and requiring that all orders identify the patient's medical need for catheter, education for patients/family members. The "Do" step also involved testing interventions on a small number of patients or in one unit to test effectiveness and impact before "spreading" housewide. Certain interventions included test periods that were relatively short to allow for more rapid PDSA cycles.
3. **STUDY** – Ongoing data collection throughout the CAUTI improvement project was required so that the team could assess if the strategies and tactics were achieving project goals.
4. **ACT** – The team used results to make decisions related to spreading improvement strategies to all areas or if additional/different strategies needed to be developed. The improvement interventions implemented specifically for the CAUTI improvement project were based on the four "E"s.

ENGAGE: Involved the team identifying all groups/stakeholders that needed to be included and actively involved, and presenting them with the case for CAUTI improvement and prevention strategies. The team used creative ways to share unit-specific data to ensure CAUTI improvement and prevention was a high-profile priority throughout and further engage staff/providers in adopting EBP strategies.

EDUCATE: The team identified educational needs of staff, providers, health occupation program students and patients. Education included CAUTI data, policy/processes/protocol revisions, teaching correct indications for catheter use, insertion and maintenance (CAUTI Prevention Bundle), documentation and ordering, and poor practices that contribute to increased risk of CAUTI. Education included mandatory in-depth instructional sessions on the above topics for all appropriate staff, return-demonstration competency verifications, including emergency department and operating room, since the majority of catheter insertions occur in these areas. Other education tactics included posters, emails, computer-based self-paced learning modules, one-on-one conversations with co-workers, providers, students and patients, and participation in CUSP CAUTI cohort calls/webinars.

EXECUTE: Included identification/monitoring of measures of success, education, implementation of the CAUTI Prevention Bundle, rigorous monitoring/validation that staff/providers were compliant with revised policy/processes/protocols, and providing coaching to staff/providers identified as noncompliant. Small, PDSA rapid-cycle improvements continued until desired targets were sustained for four consecutive months.

EVALUATE: In-process and outcome measures used to evaluate progress/effectiveness. Other evaluation methods: CAUTI root cause analysis to identify gaps in the process, staff skill/knowledge, or noncompliance; chart audits; routine validation audits on all units to monitor compliance (immediate feedback/coaching for staff). Education/remediation provided based on audits, observation or RCA findings. CAUTI remains part of the infection control surveillance plan and is reported monthly to NHSN and to senior leaders quarterly.

Results

Organizational CAUTI rate per 1,000 device days increased by almost 29 percent from fiscal year 2011 through FY 2013 (4.2/1,000 device days to 5.4/1,000 device days). Efforts to reduce catheter prevalence rates were initiated throughout the organization, but despite hitting our goal of reducing indwelling urinary catheter prevalence to less than 20 percent, we did not meet our CAUTI reduction goal set in our FY 2013 infection control and surveillance plan of 5/1,000 device days for FY 2013.

Specific results achieved during the length of the project (April 1, 2013, to March 31, 2014) was a 41 percent reduction in CAUTI from 5.4 per 1,000 device days in FY 2013 to 3.2/1,000 device days for FY 2014, which exceeded the project goal of a 25 percent reduction. In addition, our monthly CAUTI rate dropped to zero in December 2013 and has remained at zero for 28 consecutive months. The CAUTI rate for FY 2015 and FY 2016 has remained at zero, which demonstrates sustained benchmark performance.

Based on the $911 to $3,824 cost estimates provided by APIC, our organization has been able to reduce the costs associated with CAUTI from between $10,021 to $42,064, and reduced increased length-of-stay days associated with treating patients with CAUTI by up to 33 days annually.

Lessons Learned

The most significant challenge the improvement team faced was engaging ED and OR staff in a project they saw as an "inpatient problem." To address and mitigate this challenge, infection control staff shared unit-specific data and information about inappropriate catheter use based on lack of medical indication, as well as stories of patients who had developed a CAUTI within 48 hours of insertion in the ED or OR, which, based on research, can be related to a break in aseptic insertion. ED and OR directors agreed to have department nurses join the improvement team working to reduce CAUTI, and these two nurses began to champion for culture change in their respective departments.

The lessons learned from our CAUTI Reduction Project are many, and a few examples include: 1) The importance of collaborating with other hospitals that are on the same quality journey and have already experienced success from aligning practice with evidence-based research, and 2) the impact of increasing accountability through transparent data sharing with all stakeholders – internal as well as external – as both of these factors helped us yield incredibly positive results in a very short amount of time. While these lessons proved valuable, perhaps the most significant positive lesson our organization learned was the importance of engaging leaders, physicians and front-line staff in our improvement efforts. Identifying physician and unit champions that could effectively engage their peers and change unit culture, proved to be one of the most impactful ways to exceed our project goals, and has also been a key factor in our sustained benchmark performance. We now strive to model this approach in all key organizational improvement projects.

GUIDING YOU TO **BETTER**
Hannibal Regional
Healthcare System

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Goal

1. Reduce duration of therapy.
2. Optimize utilization of antimicrobial agents in order to realize improvement in patient outcomes and economic benefit.
3. Increase EFFECTIVENESS and TIMELINESS of antimicrobial regimens.
4. Eliminate redundant/unnecessary antimicrobials a) responding to emergence of resistance to antimicrobial drugs and b) instituting antimicrobial restrictions/usage guidelines where appropriate and advantageous.
5. Expand and optimize IV-to-PO conversion plan.
6. Minimize antimicrobial costs.
7. Reduce prevalence of multi-drug resistant organisms; this is a complex and multi-dimensional problem that relies on many factors. Antibiotic stewardship program, in collaboration with proper infection control measures, is anticipated to have some beneficial impact on this problem, but other factors outside the control of a local antibiotic stewardship program may counteract these effects.
8. Reduce hospital length of stay.
9. Reduce incidence of *C.difficile* infection.
10. Reduce antimicrobial toxicity, adverse events and drug interactions.
11. Improve overall antimicrobial efficacy.

Improvement Strategy

An Antimicrobial Stewardship Guidebook was developed and published in both print and electronic versions to ensure that all providers and pharmacists had access to important antimicrobial information. Included in this guide is the hospital formulary, a drug cost comparison index, summaries of guidelines as published by the Infectious Diseases Society of America, custom-adjusted to the hospital formulary, the hospital antibiogram, and individual drug monographs outlining restriction status, usual dosing, monitoring parameters and inappropriate uses for each agent. Additionally, the guidebook includes the "CDC 12 Steps to Preventing Antimicrobial Resistance" instructions for ordering and approval criteria for restricted agents, penicillin desensitization protocol, and appropriate surgical prophylaxis agents and dose per surgical site. Data was collected throughout the first year of the ASP (Oct. 1, 2014, to Sept. 30, 2015), and initial reports showed a reduction in days of therapy, length of stay and broad-spectrum antimicrobial agent use. To further improve upon those measures, the AS team proposed and received medical staff approval to implement an automatic seven-day stop on all regimens. Exceptions are made for indications in which longer durations are necessary, as per the IDSA guidelines, or expert opinion, such as bacteremia, endocarditis and osteomyelitis. Based on a presentation by Broyles, et al., at the 2015 IHI National Convention, as well as supportive information from the Nebraska Medical Center, a proposal currently is being developed that would include the assessment of procalcitonin on all patients who receive antimicrobials. Nobre, et al., demonstrated that protocol-based use of procalcitonin lowers duration of antibiotic treatment and exposure. Procalcitonin was recently added, at the request of the AS team, to the existing code sepsis protocol. This $17 test is a cost-effective monitoring parameter, which will be reviewed daily by the clinical pharmacist and used to support appropriate discontinuation of antimicrobial regimens. Improvement strategies for the ASP are ongoing and include many components to ensure success. Collaboration between the AS team physician and pharmacist champions to provide yearly and ad hoc education to all medical and pharmacy staff will illustrate the high importance of antimicrobial management, as well as keep all key stakeholders involved in continuing antimicrobial education. The hospital board also will be kept abreast of ASP-related metrics and financial status during quarterly board rounds. Education on various topics in infectious disease are planned for presentation at nursing grand rounds, which will tailor the needs of antimicrobial management to nursing practice.

Results

Since the official approval of ASP, the following results have been documented.

- reduction in average duration of antimicrobial therapy by 2.9 days
- reduction in overall length of stay from 4.43 days to 4.06 days
- reduction in broad-spectrum agents through physician-established, pharmacist-managed approval process
- reduction in costs by $74,000 in the first fiscal year and currently on track for another 20 percent decrease for FY 2016

Lessons Learned

As with any complex project, our journey with AS has faced challenges. Clinical surveillance software programs offer extraordinary benefit by reducing manual data retrieval/evaluation and increasing access to clinical information. Unfortunately, the cost of this type of software would put a great strain on our small community organization. To mitigate this, the AS team has worked closely with IT, microbiology and infection prevention, to maximize use of our existing electronic health record. Unique lists have been created for clinical users, showing which patients are currently receiving antimicrobials, as well as ones that have been discontinued as per recommendations. Influencing physician behaviors has been another challenge. Some have been resistant to changing practices with which they are familiar and have used for many years. Education efforts, interventions and leadership support have helped move these habits and will continue to do so with steadfast efforts from pharmacists and leadership. The support shown by the hospital board, senior leadership, administrative leaders and medical staff leaders has been a cornerstone for success of the ASP. The combined support of AS pharmacists, physicians and leadership has resulted in the robust AS program we have today. This support clearly demonstrates that with a fully dedicated team, regardless of facility size, location and resource limits, the Triple Aim can be achieved.

Care Coordination — Critical Access and Rural Hospitals

Phelps County Regional Medical Center

Excellence in Health Care

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Goal

To increase patient visits by 50 percent during 2013-2014 and sustain the increase from 2014-2015 utilizing the same 0.9 full-time employment staffing model. Based on data from 2011-2013, program attendance and completion was low. From 2011 to 2012, 245 patient encounters utilized 0.9 FTEs and from 2012 to 2013, 257 patient encounters utilized the same number of FTEs. Only 26 percent of those who started completed the program. Patients identified a lack of engagement, difficulty with transportation, length of program, and lack of caregiver support to successful completion. Local physicians identified lack of diabetes self-management education staff, which resulted in reduced physician engagement. Program completion data and patient encounters are tracked and measured though the electronic medical record.

Improvement Strategy

From 2006 to 2012, the program structure consisted of five, 90-minute sessions spanning across one year. Once the five sessions were complete, the patient was scheduled for a 60-minute annual follow-up session within the following year. The content was delivered as a classroom lecture style and supplemented by lengthy workbooks for continued patient reference. Classes were scheduled in groups of no more than six patients in a lecture design seating arrangement that stimulated little patient engagement. Strategic planning sessions were conducted with staff to identify program strengths, weaknesses, opportunities and threats. Patient feedback also was collected by phone follow-up, where several barriers were identified.

The DSME Program has had challenges with patient access since 2012. Off-campus patient care services proved to be ineffective in meeting the needs of our patients and staff. In January 2015, the DSME Program was given a permanent location inside the new outpatient diabetes education/wound care clinic just inside the hospital's north entrance.

The DSME Program is accredited by the American Diabetes Association and is the only program within a 75-mile radius. This program reaches all persons within the community, regardless of economic status. Financial assistance applications are available to the uninsured or underinsured. Care management and primary care provider's office staff continue to work toward improving access for patients with challenges, and providing information on local resources. All patients, regardless of insurance, may receive free transportation within a 30-mile radius.

To improve program accessibility, the DSME Program now offers off-campus locations, including evening classes. Classes are offered one evening a week to accommodate patients who are unable to attend classes during the day.

The DSME Program converted nursing documentation to an electronic medical record. Historically, DSME goal documentation tracking has been a manual process that leaves many barriers to obtaining data for process improvement. By using electronic medical records, members of the care team have improved access to DSME documentation. In addition, program data can be monitored for identification of barriers and needed changes.

In an effort to improve program completion, the program and presentation materials were re-evaluated. Research was completed on presentation materials and information acquired on best practices. The ADA recommended consideration of a conversation map program. After leadership review and discussion with staff, implementation of this program began.

The curriculum and program was restructured using these course materials. The first session consisted of an assessment, medication reconciliation, barrier identification and general knowledge base. The registered nurse then recommends the best environment for learning based on the assessment. The R.N. also teaches the patients about monitoring their blood sugar, providing tangible information and tools to practice before starting classes.

Patients who wish to complete the entire 10-hour program now can attend just four sessions, each being two hours. Patients typically complete all four sessions within one month. A follow-up, individual session is scheduled three months after the last session, as well as annually, to re-evaluate their Hbg A1C and progress toward goals. These results reflect the patient's progress and assists with goal setting.

Results

Phase 1: Program course structure and content
Research and development of course content was conducted from April to May 2013. In researching best practice, the team reached out to the ADA, pharmaceutical companies, as well as larger teaching hospitals that operate outpatient diabetes programs. Baseline patient visits from January 2011 through 2012 were 245 patients, with only 26 percent of the patients completing the program. In September 2013, new advisory board members were appointed and engaged. The first new advisory board meeting was held in October 2013, where program changes and improvements were discussed. The new program curriculum was presented and approved by the advisory board. Staff completed training and obtained classroom material necessary in delivery of patient education, starting the first session in September 2013.

Phase 2: Development and implementation of the DSME electronic medical record
Patient documentation was completed on paper forms creating manual data collection. This created inefficient care communication between DSME staff and primary care providers. The electronic medical record process was created and implemented in October 2013. Outcomes data for patient visits, as well as patient goal progress collection, started in January 2014.

Phase 3: DSME Program location
The DSME Program location changed twice between the years of 2012 and 2013. In January 2013, the program received a permanent location on the main campus. This improved patient accessibility in a high-traffic location of the hospital, gaining more exposure to the community.

These results have aligned with the Triple Aim principles and the Institute of Medicine's aim of safe, timely, effective, efficient, equitable and patient-centered care, by our increased volume and completion rates. Our program has become more efficient, engaging, timely and practical for the patient. With the patient being at the center of DSME, strategies have been implemented for the identification of barriers early, which has led to increased motivation for completion of the program. As patient care and education is provided in a safe environment conducive to learning, outcomes of DSME have resulted in realistic behavioral changes conveying a healthier lifestyle. With the positive behavioral changes seen in our patients, risks are reduced, resulting in delayed complications and unnecessary admissions from diabetes. This demonstrates the increased value and support of our DSME Program.

With the changes in program processes and education delivery, outcomes resulted in significant increases in program attendance and completion. By completing the program, patients were more successful in achieving their self-management goals. National standards identify DSME as a critical element of care for all people with diabetes and those at risk for developing the disease. DSME is necessary to prevent and/or delay the complications of diabetes; decrease health care costs and increase quality of life (Funnell et al., 2010). DSME is strongly associated with a substantial improvement in the reduction of blood sugar. Given the low operating cost of the DSME Program, these results strongly support the value-added benefit of this program in treating diabetic patients. Following the restructuring of the DSME Program, implementation of EMR and elimination of identified barriers, our program has been successful for meeting the needs of our community.

Lessons Learned

The greatest lesson learned from this improvement project is that diabetic patients want to be successful and live healthier lives. Due to the low completion rate, it was presumed that patients were not motivated to make changes. Through program restructuring, changes were made to allow for patient engagement that assisted in confidence-building and goal attainment. Programs that are engaging and practical are valued by people and allow for success.

Programs that lack credibility are not supported by primary care providers. It is well documented that DSME is a value to patients with diabetes; however, if the provider does not trust the care provided, neither will their patients. Program leaders addressed barriers that were identified by primary care providers, which resulted in the creation of trustworthy relationships. After two years of consistent follow-up with providers, DSME staff has successfully engaged 80 percent of the ordering providers in the service area. Continuous process improvement allows for these relationships to be maintained and strengthened.

"This is very exciting. I loved reading how hospitals are so focused on good outcomes, engaging upstream and taking risks with business as usual." — Aim for Excellence judge

Care Coordination — Critical Access and Rural Hospitals

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Goal

- CT in 10 minutes
- CT radiologic interpretation within 45 minutes
- last known well documented during triage
- expert consultation within 50 minutes
- door to needle in 60 minutes
- door to transport within 90 minutes

Each month, all of these data elements are reported on the ED dashboard, but the ED director reviews each stroke patient the next day to determine goal achievement. This allows for rapid-cycle thoughts and plans within the ED and with partner departments for ways to improve.

Daily huddles also may include review of successes or opportunities for improvement. Each month, at the ED meeting, all parameters are reviewed with discussion on ways to improve. A graph maps the progress for all ED staff to review.

The stroke project also is part of our Medicare Beneficiary Quality Improvement Program measures and CMS quality projects.

Improvement Strategy

Monitor each stroke and transient ischemic attack patient for goal performance. Discuss at morning huddle and at the monthly ED meetings. Submit results to the ED physicians through the medical director. Discuss fall-outs with other departments involved. Data measurement is taken from national standards for stroke care from CMS, the Agency for Healthcare Research and Quality, The Joint Commission and MBQIP. We participate in these quality projects and submit data. However, we may show insufficient data on these quality reports. In 2015, the Bureau of Emergency Medical Services changed the regulation for patients with stroke-like symptoms to include transport to a Level III designation center.

This has meant some of the patients we would have served have been transferred elsewhere, which affects our numbers. In early 2015, our ED director attended a seminar for stroke designation for the ED. This journey has led us to completion of the steps for Level III designation for our ED. Within six to eight weeks, we will complete the final steps in this process.

Our stroke team meets monthly with representation from administration, nursing, radiology, laboratory, education, quality, and also the inpatient unit manager. Any patient who does not meet their goals are reviewed at this meeting as well.

Education of physicians and nursing was discussed at the last meeting with a vendor selected to provide the required classes for the designation.

Our ED director provided several community programs to encourage rapid treatment of any symptoms that could be a stroke. This is an ongoing journey to continue to provide quality care to our patients. By partnering with Level I centers to provide medical and nursing education, we believe this will share our passion for doing the right thing each and every time we have a stroke patient.

"I really learned a lot about infections, etc., I am better informed. I enjoyed judging, learned a lot, and really admire these rural hospitals for their innovations, evidence-based care and patient-centered care." — Aim for Excellence judge

Results

- On average, door to CT in 2015 was 8.8 minutes; however, some patients were there in one minute compared to an average of 27 minutes in 2013.
- Door to CT for radiologist interpretation was 25.5 minutes in 2015, compared to 40 minutes in 2013.
- Door to expert consultation was 69 minutes in 2015 compared to 100 minutes in 2013.
- Door to needle was 57 minutes (one patient) and one patient was beyond the three-hour window, but the neurologist asked to give treatment to the patient, thus it was at 3 hours 47 minutes in 2015, compared to 52 minutes (one patient) in 2013.
- Door to transport was 144.3 minutes in 2015, compared to 200 minutes in 2013.

These results point to a fervent effort to improve the care we provide for any patient with stroke symptoms. If we can provide rapid-cycle care to prevent brain damage caused by a clot blocking blood flow or transport rapidly for interventional radiology at one of four tertiary centers in one of two neighboring cities, we will improve patient outcomes and patient experience. This project definitely focuses on meeting the Triple Aim and also the IOM Aim for Excellence. By following national standards for all the multiple projects in which we participate, we are working every time a patient presents with stroke-like symptoms to meet the goals for our friends, family and neighbors. This is one of the joys of living in a small rural community — neighbors helping neighbors (patient-centered)! By the rapid cycle of care, we are planning to reduce loss of brain cells, which can lead to loss of both mental and physical capacity for patients to live in their own home and care for themselves. This also can precipitate loss of job, loss of income, stress on your family and depression because of disability. We are following time standards for each metric's national expectation of stroke care. Our laboratory staff now will meet the patient at the CT scanner to draw their blood to prevent delays in accessing the vein prior to the CT. Synchronization of all departments is reviewed at each stroke meeting for any changes to be made.

National standards are addressed in the IOM data above — we have met numerous times throughout the last two years to improve upon our results.

Lessons Learned

We must review every patient to determine goal achievement for all departments involved.

The most significant result would be getting the patient to CT in less than 10 minutes — again, some in one minute, in a small rural hospital. Many medical professionals are amazed at our turnaround times.

The most significant challenge would be getting an accepting neurologist with a hospital that has a bed available to accept the patient. Working closely with accepting Level I centers for our in-services has improved access for our patients, and of course, a better outcome. Time is BRAIN, so any time we can meet the standard, we are giving our patient a better chance for survival and for less debilitation.

Care Coordination — Critical Access and Rural Hospitals

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Goal

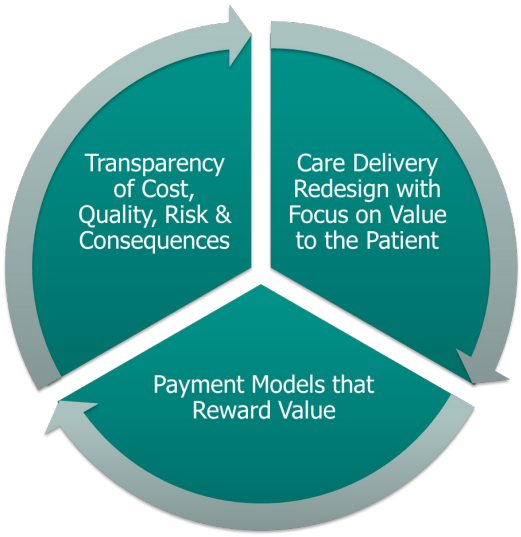
- Goal number one is to decrease readmissions by 10 percent.
- Objective 1 is to implement a readmission committee of diverse departments.
- Objective 2 is to implement discharge phone calls, medical surgical discharges to home will have a follow-up visit within three to five days. Update patient education and medication education.
- Objective 3 is to spread our readmission goals, objectives and outcomes beyond the case management department. We want to involve house supervisors, medical staff, home health, clinics and hospital departments to achieve this goal as a team and to receive readmissions updates monthly.
- Readmissions outcomes are reported monthly through the scorecard tool. The committee meets monthly to give updates and progress toward objectives and goals. Internal and external data sources will be used to measure readmission performance.

Improvement Strategy

We utilized the MHA immersion project recommendations and tasks in combination with networking and peer feedback to plan a comprehensive readmissions project outline. The committee included representatives from home health, pharmacy, information systems, nursing, case management (nurse and social work background), administration, physicians, physician office representation, emergency department and clinical education. The electronic health record greatly assisted in implementation to ease staff delivery while using computer resources to meet our goals.
The huddle is a daily interdisciplinary meeting of the nurse, physician, social services, case management, physical, occupational, speech therapy, dietary, respiratory and pharmacy departments. The patients are alerted for high readmission risk. The caregiver is identified so everyone is going to the same primary contact for treatment plan updates, patient education and discharge planning. The treatment plan is reviewed, as well as critical labs, daily goals, patient's progress and medications. This process is a cohesive group effort with a shared mental model to deliver the best care. As a CAH, we are proud to offer high-quality care from a team approach. With all ancillary department's input during the huddle, the patient's baseline and progress toward independent living and self-care in their home environment is discussed and resources are shared to maximize the patient's outcomes.

Transitioning patients to their home environment and helping them manage illness at the lower level of care has been successful through inpatient and outpatient department collaboration. The physicians give a warm handoff at discharge to the primary care physician. The office nurse or medical assistant is handling patient questions and phone calls and they may not know the full story, so when they handle patient or nursing home calls they were starting from scratch. We have opened up access to electronic health records so notes are transparent and viewable by all health care teams, no matter the location, clinic, emergency department, home health or hospital side. We have a multidisciplinary team discussing interventions and orders from the first admission to improve and provide more support through follow-up appointments. The huddle informs the case manager and social worker and allows them to prepare a personalized custom discharge plan for the patient. The patient, caregiver and health care team are engaged and supported by the discharge planning department. Health care efficiency also is maximized by this huddle, with all departments being involved during the one update from nurse and physician. Thus, staff are more efficient and not repeating themselves to update ancillary departments.

Discharge follow-up calls to patients was a strategy implemented to evaluate discharge education and patient follow-up with primary care provider and medication compliance. The surgery department was our discharge phone call leader; they are following-up with more than 70 percent of



patients. Medical surgical contacts more than 50 percent of discharged patients — they have increased successful discharge phone calls by 5 percent from 2014. The emergency department has increased to successfully reaching 60 percent of discharged patients, an increase of 30 percent from 2014. Patient testimonies and comments note their appreciation to hear from a nurse after leaving our facilities.

Discharge phone calls are now documented in the system and all points of contact can see what the patient reported during their follow-up phone call. We are centering care around the patient, but they might not always know the huddle occurs and their treatment plan is reviewed by the many specialties. A pharmacist is reconciling medications at discharge and once we shared that information with the nursing homes and clinics, it built trust and rapport that medications were "not forgotten" as they assumed. Once patients are medically evaluated for polypharmacy, medications that are deemed not medically necessary are discontinued by the pharmacist and attending physician. These efforts are done in an attempt to reduce polypharmacy, improve patient safety and prevent unnecessary medication side effects.

Results

Our hospital has tracked readmissions for years. Once we became transparent on our readmissions and compared ourselves to others during the first MHA HEN project, we took an organized approach to decrease readmissions.

2013 average readmission rate - 10.89 percent, Missouri hospital average - 9.83 percent

- we participated in the MHA HEN project, readmission reduction efforts began in 2012
- improved readmission transparency
- ED and med. surg. readmissions reported monthly to board of trustees
- 2014 average readmission rate - 8.08 percent, Missouri hospital average - 9.92 percent
- case management staff took ownership of readmissions project
- safety huddles started on med. surg. unit
- discharge phone calls introduced to clinical departments
- 2015 (January to August) average readmissions rate - 5.68 percent, Missouri hospital average - 10.18 percent
- readmission committee started meeting monthly
- discharge phone calls reported monthly by clinical departments on their scorecards
- discharge phone calls documented in electronic health record
- pharmacy department started rounding on inpatients to improve medication education
- ED, MS and OB readmissions reported to all department directors monthly

There are data-driven results that validate we have decreased our average readmit rate by 48 percent. The Missouri hospital average readmission rate has not seen a reduction in readmissions.

Lessons Learned

Medication reconciliation and one continuous medication list are the most challenging piece to sustain a safe patient-led chronic care model. Getting an understandable medication list that is viewable and useable in all modules in our electronic health record was a challenge, but this is a very important objective. If patients are not taking the right medications, their treatment plan is not fully implemented. It cannot always be blamed on patient non-compliance. It is utilizing the simplest, easiest to understand information. Challenging the electronic health record vendors will continue to be in our future to have patient-friendly information from each visit. Pharmacy involvement and education was a significant step and they will continue to be involved in the future.

Primary care involvement will continue with the disease and medication education in the outpatient setting. We are committed to adding an outpatient case manager in 2016 to support chronic disease management in the outpatient's home setting. The hospital side has collaborated care with case management and the medical team. We are expanding the collaboration resources to the primary care offices. It has shown to work with readmission reduction and patient success in their home environments. Having case managers available for the patients in the outpatient setting will continue to control health care costs and utilization by getting them help in the home, rather than in the hospital.

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Care Coordination — Care Collaborative or Health System

Care Coordination — Care Collaborative or Health System

WINNER

SSMHealth

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Goal

The health system's heart failure readmission rate goal has been set at 15.3 percent to achieve top decile performance. The specific measurements are as follows: monthly Premier HF readmission rate, percent of HF patients that received medication reconciliation/education by a pharmacist, readmission rates for home connections and telehealth, number of health-at-home consults, and percentage of high-risk patients who received follow-up appointments after discharge within five working days. The data sources include Premier data, ICD 9/10 codes, and Epic documentation. The data source time period is January 2015 to March 2016.

Improvement Strategy

A steering team was formed in fourth quarter 2014 to discuss opportunities and develop a strategy to reduce the HF readmission rate throughout the five adult hospitals in the local region. The first step was to conduct a literature review of best practices and evidence-based medicine. The literature referenced for this project is as follows: Kaiser Permanente Bundle; AMA article regarding preventing 30-day readmissions; Annals of Internal Medicine article regarding meta-analysis to prevent CHF readmissions; Advisory Board readmission toolkit; and AHA/American College of Cardiology HF guidelines.

In January 2015, the five adult hospitals within the regional health system created and hired five FTEs into the transitional care nurse navigator role. The role was developed to coordinate care across the continuum for patients with HF.

After the positions were hired, a multidisciplinary team was formed at each entity. The departments represented on the team are as follows: case management, infection prevention nursing, emergency department, cardiac rehab, nutritional services, pharmacy, palliative care, home health and medical group. The group initially met every other week, but now meets monthly at each entity.

There were six interventions created specifically for HF patients that are high risk for readmission. The first intervention was to develop a process to identify patients with HF at the time of admission. A daily multidisciplinary huddle was created to identify and prioritize patient care interventions. Each patient is risk-stratified using the Length of Stay, Acuity of Admission, Comorbidities, Emergency Department Visits (LACE) tool in an effort to identify patients at high risk for readmission. Specific consults/interventions were developed for low, moderate and high-risk patients. The TCNN conducts a root cause analysis on the readmission/admission in an effort to develop an individualized plan of care.

The second intervention is the discharge phone call. For patients who are not followed by home health or the medical group care manager, the cardiac rehab nurse/TCNN conducts a health focused phone call within 72 hours of discharge through 30 days. The call is focused on symptoms, medication reconciliation and identifying barriers to care (transportation, medication compliance, etc.)

The third and fourth interventions are to ensure patients receive proper education while in the hospital. A consult for nutritional services, cardiac rehab and pharmacy is made at the time of patient identification. Nutritional services reviews the patient's medical history and educates the patient on the appropriate diet. A pharmacist conducts a full medication reconciliation/education session while the patient is in the hospital. Cardiac rehab conducts the disease-specific education regarding pathophysiology, symptom management, daily weights, stress management and exercise. Cardiac rehab also reinforces nutritional guidelines and medication management.

The fifth intervention is to refer high-risk patients to home health or home connections. High-risk home health patients also are set up on a telemonitor. The telemonitor records the patient's heart rate, blood pressure and weight, and has programmed disease-specific questions. If a patient

is not homebound and not eligible for home health, the health system created a program called "home connections." The patient is visited at home one time and then called weekly for four weeks.

The sixth intervention is to schedule a follow-up appointment within five days of discharge for patients at high risk for readmission. The case manager and TCNN work directly with the physician offices to schedule an appointment before the patient is discharged home. If an appointment is not made before discharge, the TCNN follows up with the patient when doing the discharge phone call. They will assist in scheduling and working with local resources if transportation is needed.

Results

- **National benchmark –** Premier 50th percentile = 17.0 percent; 90th percentile = 15.3 percent
- **Regional system readmission rate –** Reduction in HF readmission rates from 17.71 percent in 2015 to 14.89 percent year to date 2016
- **In-system health-at-home referrals –** 2014: 6,994; 2015: 7,815; 2016 (A): 8,824
- **Home Connections Readmission Rate –** 2015: 6.9 percent; 2016 (A): 6.35 percent
- **Home telehealth HF readmission rate –** 2015: 7.7 percent; 2016 (A): 5.6 percent
- **Pharmacy medication reconciliation/education –** January 2015: Did not have program implemented in December 2015 YTD: 75.7 percent of the patients received medication reconciliation/education from a pharmacist during their hospitalization.
- **Discharge phone calls/cardiac rehab education –** Will need to collect data differently. We currently see/educate more patients that are coded with HF.
- **Follow-up appointments scheduled for high-risk HF patients (Lace >17) with an in-system cardiologist within five working days of discharge –** third quarter 2015: 85.92 percent; fourth quarter 2015: 95 percent

Lessons Learned

Care across the continuum is a team effort. When individuals come together as a collective group they are so much more powerful than an individual. Keeping the patient as the focal point is what drove the team and kept us focused.

The biggest challenge is the socioeconomic issues that directly impact patient readmission rates. We continue to work with the behavioral health department, and identify community resources to help support patients after discharge. Another challenge is palliative care and end-of-life patient education. The palliative care nurses have joined the readmission teams at each entity. We are now providing palliative care education for all of our providers (physicians, nurse practitioners, R.N.s, etc.). We also are conducting nursing home summits and palliative care has been a topic on the agenda. Four nursing home summits will be completed by the end of May 2016.

Care Coordination — Care Collaborative or Health System

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Goal

The program measures included practice-level progress on each of the patient-centered medical home concepts and quality metrics based on a select group of pediatric HEDIS measures, which included: Adolescent Well Care; Childhood Immunizations – Combo 2; Adolescent Immunizations; Well Child in the First 15 Months; and Well Child in 3-6 Year Olds. The goal was to achieve the National Committee for Quality Assurance 50th percentile on each of the measures. To establish cost and utilization goals, we began with baseline data for per member, per month cost, inpatient days per 1,000, inpatient cases per 1,000, and ER visits per 1,000. The goal was to decrease each utilization rate by 10 percent following the first year of implementation. Data sources used to measure the program included payer data for the population, which is available to the hospital through regular data feeds and integrated into our data analytics tool. The program was implemented in late 2013, with approximately two full calendar years of analysis.

Improvement Strategy

To improve the quality outcome metrics identified as priorities for the program, the PCMH team engaged an outside consultant in 2013 to launch this project, through education of PCMH concepts, tools and strategies. The program strategy was built around the NCQA PCMH recognition program standards. The approach we took included providing a PCMH readiness evaluation and deploying practice facilitators to the offices to work side-by-side with the consultant, providers and their staff. The facilitators taught PCMH concepts, based on the current NCQA PCMH standards, to providers and their office staff. The initial scope of the project at implementation included seven clinics of the participating 30 clinics within the integrated care network. The majority of these clinic sites are located within three counties that account for the majority of the patient membership for the integrated network.

Weekly topics via a webinar were discussed initially to establish baseline knowledge of the PCMH model, with individual practice-level education occurring with the aid of the consultant and PCMH team.

The initial goal included supporting these seven practices to successfully submit for NCQA recognition. This initiative met resistance throughout the year due to staff turnover within the practices, and limited buy-in from the providers related to this effort. We were able to successfully submit one practice within the first year of transformation (2013), with recognition received by NCQA.

To support the work toward practice transformation and align incentives with results, in 2014, we developed a provider engagement model, which included specific demonstration of PCMH concepts, including completion of patient satisfaction surveys and quality improvement initiatives. Quarterly reports were developed to assist in monitoring each practice's implementation of care processes and development of a practice-level PCMH infrastructure. These reports were made available to providers in real-time within the integrated network's secure provider portal. By the end of 2014, four additional clinics submitted successfully for recognition, with an additional two more clinics submitting in 2015. To date, a total of 12 clinics have been recognized by NCQA as patient-centered medical homes. This includes five clinics which were recognized prior to the start of the program, but have access to integrated network's support, technology and resources. The 12 clinics represent more than 70 providers within our network of 158 providers.

It was important to meet with the providers individually, as well as the weekly and monthly webinars, to support their work toward transformation. This process was further enhanced from the initial medical home training to now include monthly topics related to quality improvement techniques, evidence-based guidelines for chronic diseases, as well as alliance with the health plans for member incentives.

Each participant is encouraged to complete a survey after the webinar, and our next version will include a discussion board with required posting/discussion to receive compensation points. This work requires the offices to create formal processes and policies, while maintaining their busy primary care practices. A dedicated, provider-led team and a minimum of six to 12 months is required for a practice to successfully submit for NCQA recognition.

Future plans include:

- enhance the provider engagement model to include more significance around PCMH transformation related to 2014 NCQA standards, with demonstrated performance, including closed-loop referral tracking, coordinated care utilizing care coordinators/care managers, behavioral health integration, including process for depression screening and referrals.
- add the Early and Periodic Screening, Diagnostic and Treatment component as an additional focus measure due to a requirement in the Medicaid contract.

Performance Goals for 2016-2017:

- increase HEDIS performance rates to meet the 2015 NCQA 50th percentile benchmarks for pediatric focus measures
- increase EPSDT rate to meet 80 percent compliance with Medicaid contract

Results

In early 2016, the program had collected enough data to compare results of practice models with approximately 50 percent of the practices having achieved PCMH recognition. Since late 2013, 12 practices have achieved recognition as NCQA-certified patient-centered medical homes, delivering enhanced care using a patient-centered, comprehensive, coordinated and system-based approach to more than 40,000 Medicaid patients. Using our data analytics platform, we evaluated the PCMH initiative's impact on five preventive care HEDIS immunization and well-visit measures. Practices with a PCMH care model achieved higher quality performance in all three measures with more than one year of comparison data. For well-child visits in the first 15 months of life, practices with PCMH certification improved performance by 15 percentage points or nearly 50 percent improvement from 2014 to 2015. The PCMH practices also had higher performance in the two immunization measures while non-PCMH practices had declining performance from 2013 to 2014. Although PCMH practice performance exceeded performance on non-PCMH practices for adolescent and three to six year old well-visit measures, both groups declined in performance. The declines are viewed as opportunities for improvement, particularly for well-child visits for three to six year olds and childhood immunizations since performance is more than 13 percentage points lower than benchmark performance.

It also should be noted that the impact of transitioning and sustaining a PCMH care model may not be immediately reflective in performance results. The impact on overall quality is expected to continue to improve since the PCMH model is focused on continuous quality improvement through the use of data, PDSA cycles and improvement feedback loops. To identify best practices, we closely examined the performance rates of each measure (applicable to both quality and cost) to identify top performers. Upon recognizing the top performers, the organization's PCMH team would identify the process, system and/or best practice used to achieve performance to identify opportunities to share and replicate similar performance with other practices.

To effectively assess the value of the PCMH model of care, the organization also conducted cost and utilization comparisons between practices that have achieved PCMH recognition through engagement with our program and those that are not engaged with the program.

From a cost perspective, the PCMH practices are shown to have lower cost when compared to non-PCMH practices. For the three-year timeframe, per member, per month non-risk-adjusted cost was 21 percent lower in PCMH practices and PMPM risk-adjusted cost was 16 percent lower.

In terms of patient utilization, the PCMH practices have lower inpatient and ER utilization than non-PCMH practices. ER visits per 1,000 members in PCMH practices were 27 percent lower overall than rates for non-PCMH practices. Inpatient admissions per 1,000 members in PCMH practices were 13 percent lower and days per 1,000 members were 29 percent lower in PCMH practices than non-PCMH practices.

Patient experience, a component of PCMH, encourages practices to obtain feedback from patients' and families' experiences regarding the care they received. Four main categories are reviewed, including access, communication, whole-person care and self-management. For the patient satisfaction survey, we utilized a scale of 1 through 5 in which a score of 5 indicates "Great," and 1 indicates "Poor." For this evaluation, we applied the top box scoring method to more effectively measure the concentration of high performance scores. For example, the top box method only accounts for the percentage of patients who selected a 5 as his/her response to a rating question on the survey. Responses that scored between the ranges of 1 and 4 were not accounted for as part of the top box scoring methodology.

Throughout this analysis, patient satisfaction among patients in this model of care has shown improvement in all areas measured. Top scores produced from the annual patient satisfaction survey show a 5 rating 79.3 percent of the time for patient access, 76.5 percent for communication, 88.1 percent for whole-person care and 85.8 percent for self-management. Performance of PCMH practices versus non-PCMH practices was not available, since patient satisfaction data was not available for non-PCMH practices.

Lessons Learned

One of the biggest challenges facing providers is having enough dedicated time for the staff within their practices to adopt PCMH concepts into their everyday workflow. Secondary to that, is the challenge of getting providers to understand the importance of obtaining PCMH recognition. The process is very cumbersome and requires time and commitment from the health care team in each practice. The PCMH program staff addressed their concerns by supporting their staff with easy-to-use tools and templates, assisting with administering patient satisfaction surveys, aggregating information, facilitating quality improvement initiatives and providing assistance with the actual NCQA submission process. Obtaining early and ongoing buy-in from the providers, as well as their office staff, is critical to sustaining improvement.

The most significant positive lesson learned is the value of NCQA recognition for the PCMH transformation. When this project began, the organization thought adopting the medical home concepts would be enough to see change, but we have found throughout the past few years that those clinics that have actually achieved NCQA recognition as a PCMH have effectively decreased utilization, improved quality outcomes and increased patient satisfaction.

Care Coordination — Small or Large Metropolitan Hospitals

Care Coordination — Small or Large Metropolitan Hospitals

HONORABLE MENTION

christian hospital
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Goal

The goal of the program is to improve population health by facilitating the navigation of the health care system, link providers and patients to community resources and to ensure the appropriate utilization of health care resources.

Identified outcomes are:

- decrease the number of non-emergent ED visits
- decrease the number of non-emergent 911 calls
- introduce the mobile integrated health care concept with advance practice paramedics
- connect patients with a primary care physician/medical home
- increase use of outpatient options
- decrease cost for patients
- increase partnerships with community resources

Data will continue to be collected from our ED electronic medical record, the community access report, and the current communication tool being used, as well as the financial report from the facility. The individual dashboards for each metric have been developed to provide a comprehensive snapshot of data across each program element.

Improvement Strategy

The strategy was developed through operational meetings to create a plan that would allow rapid deployment using many different tactics. Our focus was on the community, patients, physicians and funding. Early actions included identifying strong community resources and forming partnerships. We needed to understand what the community offered and how the services currently were being used. By interviewing the patient in the current ED setting, we aimed to understand our patient, why current behaviors existed, what underlying issues prevented a deviation in current behavior and how we could effectively impact those behaviors.

The plan centered on current providers and what behaviors they felt needed to change to best support the community as we addressed appropriate care in the most appropriate place. We continuously requested that every physician agree to a same-day visit for a patient referred from our program, and 100 percent agreed. This commitment shows the level of interest and action among the medical providers in our community. In addition, we contracted with a specific physician to accept all self-pay and under-insured patients as requested. An internal assessment was done of our facility's offerings and current resources to ensure success.

Sustainable funding was a part of the strategic plan as well. We knew this program was not going to be a revenue-generating program. We started meeting with state legislators, Marsha Haefner and David Hinson, who agreed to support the program and advocate on our behalf in Jefferson City. Our corporate partners were eager to learn more and offer potential assistance. As we entered the population health space, various grant-funding opportunities arose.

The plan encompasses many moving components and was a large undertaking for the timeframe identified. We had the distinct pleasure of hosting our program kick-off covered by the local NBC affiliate.

Tactics and improvement interventions are as follows.

1. **Site visits and networking with existing programs –** The identification of two programs allowed learning to occur from sites showing great success with the concepts we wanted to employ. Engagement with MedStar EMS agency in Fort Worth, Texas, and Mountain States Health Alliance in Tenn., occurred during the entire development of the program. We became the only site in the county to initiate this concept, utilizing both the ED and the EMS entry point.
2. **Policy and procedure –** In conjunction with our legal, compliance and regulatory teams, the program was developed to ensure compliance with state laws, as well as EMTALA.

3. **Education –** Advanced assessment training was needed for all ED registered nurses and identified paramedics. This included clinical time with one physician to attest to competency.
4. **Community connection –** Attendance at all available community meetings was necessary to discuss the program and its intent prior to the program starting. Presentations at more than 85 sites occurred, sharing our program with a variety of audiences. This time was used to create strong relationship-based partnerships.
5. **Physician meetings –** Met with 100 percent of primary care physicians in the area.
6. **Clinics created at two locations –** This included space identification, supply and equipment procurement, documentation tool identification, implementation of the products, and education on the equipment were done for both locations.
7. **Ancillary support** was identified and process and compliance created.
8. **A 911 dispatch policy and process** was developed, followed by an extensive education for central county dispatch.

Our process and program creation were both grounded in literature review of various discipline periodicals, including, but not limited to: EMS, American College of Emergency Department Physicians and the Emergency Nurses Association. Additionally, we are guided and supported at the National EMS level, state and national government, and through our community. We are in constant communication with the community to ensure we are addressing their current needs. Relationships with politicians, various clergy members and federally-qualified health clinics also support the important work of this program.

As noted earlier, the timeframe from strategy to program kick-off was a short six-month timeframe that began in August 2013, with the program kick-off in February 2014. Our roll-out consisted of two access centers, located in each facility, our APP program and ED triage. We have four vehicles that provide mobility to our APPs and resource coordinators. We meet the patient where they are, physically and socially.

Results

The program has proven that nonurgent ED visits and EMS calls can be avoided and the care of the nonacute patient increases in quality. The care the patient receives is not only the appropriate level of care in the right place, but also there is an increase in patient interaction and a decrease in the cost of care. Patients are willing and excited to take part in their health and address their individual issues when engaged. We have seen community resources utilized to a greater extent. This is evidenced by the number of resources reaching out to be included in the program. We also are partnering with a funded resource that is willing to become mobile as a result of the work within our program and are investigating methods to provide us with productivity in our access centers.

The mobile integrated health care portion of the program has been so successful that we are preparing to add additional resources. We currently have three providers and one supervisor. We have seen success with this program in many areas, such as an accountable care organization, that utilized our services and were able to save $132,000, and truly assisting with a better standard of life as patients have stayed out of the hospital.

Through work with the University of Missouri-St. Louis and the Ferguson-Florissant and Jennings School Districts, we were awarded an initial Patient-Centered Outcome Research Institute grant in March of this year. This grant will allow us to work on the development of expanding the program to the pediatric population in the community.

The financial and data metric results for this program are very strong. The individual patient experience stories are truly remarkable. A sample of our patient's successes: Patient A was calling 911 at least 10-15 times in a month and each time ended with an ED visit, and at times, an admission. The patient was a substance abuser and was unable to stay in a rehabilitation facility due to issues with employment, housing and emotional and physical support for his illness. He was referred to our program through 911 and the ED. After extremely hard work from the resource coordinator, patient, family and paramedics, this patient has now been sober for 120 days, is tobacco free and has been employed for the last 30 days in an organization that will not only provide consistent wages, but also health, dental and eye insurance. He also has graduated with his GED.

Patients have attended their first ballgame, are attending church, showing strong adherence to their medication routine and truly becoming a part of their communities.

Metrics:

- 1 percent reduction in ED self-pay patients (facility financials)
- 2 percent reduction in readmissions (system data)
- 4 percent overall sustained reduction in ED visits (facility financial reports)
- 11 percent reduction in overall non-emergency transport (EMS transportation report)
- 63 percent reduction in non-emergency 911 utilization (among 150 identified high utilizers)
- 8,652 patients navigated from the 911 system and ED

- 636 patients connected with PCP/medical home (CAR)
- $269,055 savings to Medicaid (financial report February 2013 to October 2014)
- $503,604 savings to managed care plans (financial report February 2013 to October 2014)
- ACO pilot metrics: 18 patients enrolled with one primary care physician attributed
- $132,580 cost savings to program
- 56 percent reduction in ED usage/participants
- 65 percent reduction in hospital admissions/participants

Christian Hospital CHAP team members include, front from left: Michelle Moffatt, APP; Katie Eisenbeis, APP; Tiffany McNair, resource coordinator; and Jenny Rieker, APP.

Back from left: Amanda Phelps, resource coordinator; and Rebecca Poindexter, manager.

Not pictured: Brian Froelke, M.D., medical co-director; Phil Moy, M.D., CHAP medical co-director; Jennifer Cordia, chief nurse executive; Tom Saggio, director; and Shannon Watson, community health supervisor.

The community has embraced the mobile-integrated health program paramedics and resource coordinators by welcoming them into their homes to discuss issues with their families. Together, goals are set to achieve success for today, tomorrow and for generations to come.

Lessons Learned

The most significant positive lesson learned was that care for the nonacute patient is best delivered out of the ED. For many years it was a belief among the health care communities that we were providing excellent care to the nonemergent patient. The care in the ED was extremely high-tech, provided by extremely well-trained professionals. We have learned that the care we had provided was barely adequate. We work with each individual patient to understand their need and truly create a pathway of success with them. We created this problem as we courted this type of patient to the ED. We should have been providing care in the most appropriate place, for the most appropriate cost, resulting in the highest quality.

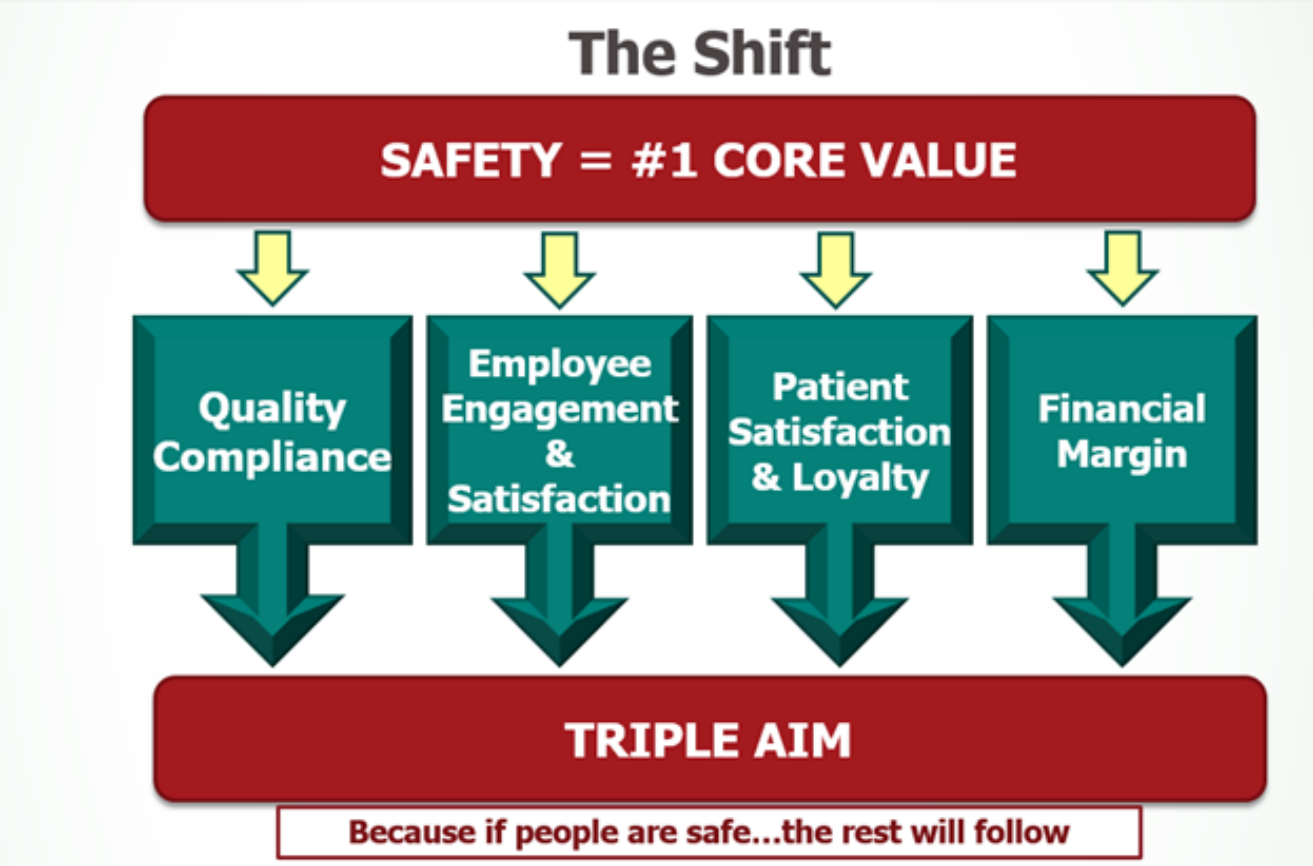
The most significant challenge was the unexpected lack of support among the employed front-line health care professionals. This was unfamiliar territory for the staff as we were now asking that patients care be provided out of the ED and that we assessed the patients individually, including financial status. We mitigated the issues as we met with 100 percent of all staff to listen to, and address, their concerns. By being transparent with both obstacles and successes, the patients are having better outcomes and our community is becoming healthier.

Clinical Excellence

Improved safety happens when the hospital has a culture of safety and a sensitivity to operations that make it difficult to do the wrong thing, and easy to do the right thing to prevent harm and keep providers safe.[v]

In 2015, the Secretary of the U.S. Department of Health & Human Services, Sylvia Burwell, and the Centers for Medicare & Medicaid Services announced a call to action to reduce harm in health care. This historic event included a timeline and goals that tie Medicare payments to improved quality or value, with the goal of zero harm across the board.

Zero harm, or clinical excellence, may be achieved with proven patient safety strategies, accountable teams, engaged employees and systematic quality reviews. When clinical excellence and safety are the core value of an organization, their quality, employee and patient satisfaction, and financial margins, increase.



Source: MHA Clinical Quality Quarterly Webinar, Safety Across the Board Part I. January 2016.

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Clinical Excellence — Critical Access and Rural Hospitals

HONORABLE MENTION

CoxHealth

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Goal

The purpose and goal of this project was to decrease surgical site infections to zero percent within a six-month time period. SSIs were identified using the NHSN's definition, which defines superficial incisional, deep incisional and organ space. The facility's EMR has an infection advisor that is completed when an SSI is identified. That program uploads SSI data to NHSN, and includes all components of NHSN infection criteria for SSI. CAHs are not required to report SSI to NHSN, but our facility follows the same protocol and recording requirements as acute care hospitals to further enhance our quality. All SSIs are recorded and monitored by the infection prevention nurse at the hospital. A Microsoft Excel spreadsheet and graph are used to log dates and infections. More than four years of data have been collected. Data is analyzed by the clinical safety committee, which includes administration, nursing staff, pharmacy, physicians, clinical excellence, surgery and housekeeping staff.

Improvement Strategy

For the "Plan" stage of Plan-Do-Check-Act, a five-tier technique using evidence-based methods taught by the World Health Organization, CDC, APIC, Association of periOperative Registered Nurses (AORN) and MHA, was strategically put into place to implement improvement with this project.

- **Team Approach:** An ad hoc team was created to discuss and strategize this project and identify barriers, goals and resources needed. Team members included the IP nurse, FP/OB physicians, labor and delivery nurse manager, chief nursing officer/administration, OR nurse manager, and housekeeping (EVS); guidance also provided by the system's certified IP professionals. The team met monthly. The fear of punitive repercussions was removed and all staff members were encouraged to notify the IP nurse of concerns leading to good feedback and staff engagement. Implemented strategies went to the clinical safety committee, clinical excellence committee and medical executive committee. The patient and family members also are considered part of the health care team and are heavily involved in the hand hygiene interventions, Chlorohexidine Gluconate (CHG – a rapid-acting, persistent and broad-spectrum skin antiseptic) shower prior to arrival and wound care education.
- **Hand Hygiene:** Mandatory education to all staff included hand hygiene with hospital-approved soap and water, hand hygiene with alcohol-based hand gel, and hand washing technique competency checks. Annual education focused on "Gel In/Gel Out" (entering and exiting the room), which has since evolved to include the five moments (before patient contact, before aseptic task, after body fluid exposure risk, after patient contact, after contact with patient surroundings) from WHO. Hand hygiene audits to monitor hand hygiene appropriateness for patient care also were conducted. Additional dispensers were added to be closer to the mother, as well as next to the door. Every room now has two dispensers monitored daily by EVS. Patients, family members and visitors were provided education on the importance of hand hygiene. Signage was placed in the room at all sinks and hand hygiene dispensers to empower the patient to ask physicians, nurses, etc., to perform hand hygiene at any time. All staff, including physicians, wore buttons stating the same.
- **Environmental Services:** An initial "cruise ship cleaning" took place — terminal disinfection of the entire unit — all curtains removed and replaced, walls, ceilings and all equipment were washed with disinfectant. Curtain changes are now on a regular schedule; once a month and after each isolation case. We evaluated all common-use equipment and identified some areas of improvement, such as providing dedicated stethoscopes for each room and bassinette. Audiogram ear pieces and temp-probe warmers are now single-use disposable items. Disinfectant wipes are utilized in our hospital. Staff was re-educated on appropriate "wet time" for disinfectants. The ad hoc team addressed concerns of

who cleaned what, and a clear designation of duties was created based on the CDC's recommendations. This provides standardization of EVS practices. Validation of practices was completed by direct observation. Special education for EVS, which included MRSA, impact on the patient and how to prevent transmission, took place. Cultural and educational backgrounds were taken into consideration with this group to ensure proper education, and that the teach-back method was utilized.

- **Skin Prep:** The pre-operative process changed to include a CHG shower the night before and morning of a scheduled C-section (AORN). The staff started using CHG wipes for urgent C-sections and patients unable to take the CHG shower. CHG operative skin prep was initiated at this time as well. A CHG representative provided education on the three-minute dry time for all OR and L&D staff. Betadine gel is now only used on emergent C-section cases based on current evidence-based practice.
- **Post-op and Discharge Wound Education:** Patients are provided the following educational tips: can shower daily, but the incision must be kept clean and dry between showers; don't vigorously scrub over incision; don't cover incision; don't pick at incision; don't apply any medication to incision unless prescribed by physician; and when to notify physician. Education is made very simple and easy to follow to meet the health literacy needs of our population. Discharge education is available in other languages as well. Hand hygiene and new EVS practices were implemented within the first few weeks. Wound education was next and skin prep was last, with all completed within three months. Ongoing evaluation continues to ensure practices are still in place with direct observation of EVS compliance, hand hygiene audits of all staff and IP surveillance for SSI. The labor and delivery unit, with seven certified beds, was selected for this project due to increased MRSA SSI following C-sections. Due to our low census and C-section volume as a CAH, one infection is significant.

Results

Prior to implementing this project, in 2011, the facility had six total C-section SSIs, or 7.1 percent of all C-sections. In 2012, we had 10 C-section SSIs, or 10.8 percent of all C-sections. The SSIs were cultured and three were identified as MRSA and two required readmission with contact isolation precautions. This documented a downward trend in outcomes and action had to be taken. A drill-down of cases reviewed data on procedure, date, age, surgeon, surgery length, ASA score, surgical class, pre-op antibiotic given (name), time, minute before incision, weight, infection date, organism, signs and symptoms, comments, and common staff members. No consistent or common themes were discovered. Therefore, the project focused on the process. We examined national and state data and discovered that nationally, in 2010, SSIs occurred 31 percent of the time, and SSI specific to C-sections ranged from three to 15 percent (CDC). Missouri SSI prevalence was around 14 percent to 16 percent as well. At 10.8 percent, the facility determined that their performance was not far out of the average range, but that did not meet the facility's expectations. Since the new process was started, we have only had three total C-section SSI cases (first 12 months), and none at all since June 28, 2013; that's 1,038 days! We've been at three percent for almost three years! Since implementation of the C-section process, metrics benefits have been seen in our other infection categories. Our original goal was to decrease our C-section SSIs to zero percent within six months. Although we were not at zero percent at the six-month mark, we had significantly decreased our cases and were at zero percent at 12 months, and have sustained that for three years. To align project results back to the Triple Aim and IOM Aim principles, it is clear to see this equitable process improved the patient's safety and experience. Healthy moms coming in and healthy families going out is of utmost importance. Furthermore our patient experience/satisfaction has improved; our HCAHPS results for all of 2015 are all above the 70th percentile rank, four of which are in the top decile. Our communication results have done well and that is how this program maintains much of its effectiveness, by involving patients in their care and promoting a patient-centered atmosphere. Evidence-based methods provided by the WHO, CDC, AORN, APIC and MHA were used to ensure effectiveness of the hand hygiene, pre-operative, operative, and wound care protocols. Patients do not have to wait for any of these services, and our timely results were seen almost immediately. It also has been efficient in the amount of money saved (approximately $75,000 throughout three years) in decreased costs associated with SSIs. Finally, with each safe, healthy mom who is able to actively breastfeed, it creates a safe and healthy baby. Those healthy babies become part of the area's population and increase the overall health of the community.

Lessons Learned

Two powerful lessons were learned from this project. A positive lesson learned is that SSI caused by MRSA can be prevented! We have built on this by continuing to educate new staff, providing the resources they need to be compliant, and continuing to use administration support and patient/family engagement. Many people were involved in the celebration, including an OB staff mother who baked and decorated a cake in the shape of a woman's torso with a "perfect" incision line (pink, no sign of infection) and said "Congratulations!" as a celebration. Administration also provided a pizza party for all shifts. Pictures of the OB staff were posted in the elevators and around the hospital saying, "I have something to smile about – no C-section SSIs!" to recognize them for their hard work. Another challenging lesson that we overcame: EVS feared that they would be blamed for the infections. The IP nurse spent designated time with all EVS staff and approached administration when it was EVS week. The IP nurse did a presentation (at their level) and the hospital provided them dinner and a gift. Administration attended the event to show support. The goal was to show EVS staff the job they performed with disinfection of the environment was a link in the chain that must not be broken. Staff was very appreciative of the gesture and extra support. Current staff and leadership are engaged and willing to do what needs to be done to prevent infections in the future.

Perry County Memorial Hospital
People Care More Here

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Goal

The primary goal of this project was to improve the health and quality of life for the most vulnerable population of older adults in the community – those with dementia and their caregivers. Through geriatric-specific interprofessional education, a primary care interprofessional team was developed to provide a clear system of geriatric care for these at-risk, older adults and caregivers, from screening to diagnosis, education, innovative intervention provision; and caregiver screening and well-being education.

Pre- and post-therapy testing screening measures were used for patients: mental status (Saint Louis University Mental Status Examination for Detecting Mild Cognitive Impairment and Dementia), depression (Cornell Scale for Depression) and quality of life (Quality of Life-Alzheimer's Disease). Caregiver evaluations also were done pre- and post-therapy.

Data from all CST therapy class participants and their caregiver's measures were compiled and assessed.

Improvement Strategy

The improvements to this plan and strategy for this program has been very dynamic. This program has had far-reaching effects on the whole community, including the elderly residents and their family or caregivers, health care providers, hospital, nursing and residential care providers, etc. Rapid-cycle problem-solving was used to address immediate and pressing issues and to make incremental improvements quickly. Data was used to guide improvements. Interventions were aimed at increasing quality in the lives of this geriatric population.

Provider Reminder Systems

- May 2015 – Electronic medical record screens were introduced into primary care offices for pilot study.
- April 2016 – Computer-based decision support made available through EMR for referrals to inter-professional teams for further assessment and evaluation.

Facilitated Relay of Clinical Data to Providers

- February 2014 to present – Weekly updates were provided to the referring physician in writing.
- Audit and feedback
- February 2014 to present – Feedback was sought from referring physician on the CST participants — what was their perception of the patient — improvement, no change or decline.
- February 2014 to present – Feedback was sought from caregiver and/or family members. What was their perception of the patient — improvement, no change or decline? Tangible examples of change in behavior was received. Feedback was addressed with each caregiver and/or family members. Issues were addressed and acted upon.
- May 2014 to present – Pre- and post-scores of patient were reviewed. Data on all pre- and post-scores was compiled and assessed. This data was benchmarked against national performance data. Our data showed the same type of improvements in quality of life, depression and cognition. We tracked this data over a 24-month period. Data continues to be analyzed. Performance data was compiled and published.

Provider/Physician Education

- November 2014 – Physician education held at medical staff meetings with expert in geriatrics — Dr. Morley from St. Louis University.
- December 2014 – Rapid geriatric tools were used and educational materials were distributed.
- September 2015 – Two staff facilitators were sent to London for certification in CST.
- April 2016 – Physician education on rapid geriatric screens and referral to interprofessional team for intensive assessment.

Caregiver/Family Education

- February 2014 to present – Written information given to patient and caregiver and/or family members.
- June 2014 to present – Alzheimer's Association provided education and caregiver support classes while patient in CST session. Information on Alzheimer's Association, such as respite and 24-hour support provided.
- November 2015 to present – Provided caregivers with training in individual CST to enhance group treatment program.

Organizational Change

- October 2013 to present – Meetings with leadership, board and staff members to review data, feedback, etc., and implement improvement strategies.
- February 2015 to present – Need for increased trainers for this county results in training sessions for more hospital staff members, nursing home and community volunteers to be trained.
- June 2015 to present – SLU requests training to be done by our staff through grant. Ongoing training.
- January 2016 to present – Interprofessional teams developed for extensive assessment after rapid geriatric screens.

Results

Interprofessional education on dementia and the rapid cognitive assessment was provided to all primary care physicians, APRNs and primary care nurses. All staff occupational therapists, social workers and speech therapists were trained in the delivery of CST.

This education has resulted in approximately 300 cognitive screenings completed by primary care staff. These screens resulted in 55 individuals participating in the CST intervention, and their families and caregivers receiving dementia education, resources and case management. A total of 55 participants with mild to moderate dementia received 14 sessions of CST. Of these, 42 participants remain in a weekly maintenance CST program.

After completing 14 sessions throughout seven weeks, pre- and post-data was compared. There were significant improvements to pre- to post-CST group on measures of general cognitive screen (St. Louis University Mental Status – SLUMS), depression (Cornell Scale for Depression in Dementia); quality of life.

The 42 participants who remained in the maintenance group CST were measured using the data at seven weeks compared to measures at 12 months. Continued improvements in cognition, depression and quality of life were noted.

Qualitative data, as reported by participants themselves and caregivers, indicated improvements in the areas of: behavior, with decreased agitation reported; increased "presence," resulting in increased social engagement; improved word-finding skills with less social anxiety; improved reciprocal language both inside and outside the group setting; and improvements in general recall/memory. These improvements in language and comprehension improved the participants overall well-being as evidenced by the scores on the quality of life and depression screenings.

Improved Population Health – The primary goal of this dementia project was to improve the overall health and quality of life for those older adults within our community with a diagnosis of mild to moderate dementia. The results show significant improvements in cognitive skills, quality of life and depression in both community dwelling and participants residing in residential care facilities.

Improved Experience of Care – Both quantitative and qualitative data supports that CST intervention improved the quality of care for older adults with dementia. Participants and caregivers on post-evaluation interviews describe CST as a beneficial and positive experience. For example, one of our participants had isolated themselves due to lack of confidence in having conversations. Family and participants report her socialization and engagement has improved tremendously with CST. She now is engaging with friends and family again and also is much more confident in public. Another participant had a small stroke and was having a great deal of trouble with word-finding and memory. She and her family report after a few months in CST that her memory had improved significantly, especially recalling names and word-finding. At 12 months, she remained well. Many of the participants and their families report how much they enjoy and look forward to coming to the group. Further, reports from our residential care participants are that they are socializing more with other residents. Staff and family reported improved recalling of names and overall increased happiness.

"I find the process very appropriate and fair. I really enjoyed learning about the different projects, their creativity and excellence. I am honored MHA invited me to be one of the judges." — Aim for Excellence judge

Lower Cost – Outcomes indicate a significant improvement in all measures. This occurred without additional health care costs, such as medication.

Safety – This was determined to be a safe intervention strategy. No adverse effects were reported by participant or caregiver.

Timely – CST intervention began within one month of physician referral.

Effective – Qualitative and quantitative measures support this program being effective and becoming the standard of care for all older adults in the community diagnosed with mild to moderate dementia.

Equitable – No disparities were noted in the outcomes among genders, social-economic, age or place of residence.

Efficient – Outcome measures showed significant improvements within a short duration of seven weeks and even continued improvements over longer periods of time.

Patient-Centered – Post-intervention outcomes indicate a high percentage of participants continuing in a maintenance program, indicating participants felt the program had personal value as it is a voluntary program.

Data suggested a positive correlation between the number of sessions attended and outcomes. The more sessions attended, the greater the impact on all outcome measures. Also noted, were continued improvements in outcome measures over time. Gender did not appear to affect outcomes. Males and females responded similarly to CST intervention. Our results are comparable to studies completed in the U.K., and internationally.

Lessons Learned

The most significant positive lesson learned was that caregiver involvement and support was essential. Caregiver needs must be addressed. Support groups were started with the partnership of the Alzheimer's Association for caregivers. These are ongoing active groups who receive education, emotional support and comradery. Patients in the groups built friendships and requests were made to continue after the CST sessions were completed. Maintenance CST groups have been established.

One of the most significant challenges was the overwhelming request for more programs in this community and the request for training staff in other areas in Missouri. Two of our staff members are certified CST trainers. (There are only three people in the U.S. who were trained and certified by Professor A. Spector from the University College London). This is a very new, cutting edge evidence-based program for the U.S. Our staff have been recognized as experts by Dr. Morley, Geriatrician at St. Louis University. These staff members are now involved in educating medical residents and other health care professionals about CST. These staff members also have been speakers at Missouri League for Nursing and occupational therapy seminars. The project and CST results have been published in the *Journal of Post-Acute and Long-Term Care Medicine*. This hospital, being very committed to the quality of life of the elderly, has allocated time and resources for the continued dissemination of the CST program.

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Clinical Excellence — Care Collaborative or Health System

Clinical Excellence — Care Collaborative or Health System

HONORABLE MENTION

CoxHealth

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Goal

Safety is the health care system's primary value and was the primary goal of this project. The fundamental goal of the health care system was to establish a patient blood management guideline that would provide safe care for patients needing a blood transfusion.

The first goal was to establish a patient blood management guideline that would be approved and implemented across all facilities within the health care system. The second goal was to decrease the utilization of red cell transfusions by 20 percent within one year of implementation. The third goal was to have no increase in 30-day readmissions, complications, mortality or length of stay in patients receiving the restrictive transfusion guideline. The final goal was to reduce associated charges related to blood transfusions. Understanding the financial goal to be an estimate and not the primary reason, the goal was not set as a "smart" goal.

Improvement Strategy

The improvement strategy began with the formation of a multidisciplinary team including physicians (surgeon, hospitalist, CMO, pathologists) and staff from the following departments: quality, patient safety, nursing, education, health care analysts and laboratory. The team utilized the PDCA cycle to implement small tests of change for rapid improvement. The project simultaneously focused on all patients potentially needing a red blood cell transfusion in the acute care setting of the health care system. The improvement strategies detailed occurred throughout a six-month timeframe and the past 12-18 months have focused on sustaining results and corrective actions as needed.

The initial strategy was to achieve consensus among the multidisciplinary team on the restrictive transfusion guideline. The team established a system transfusion trigger of 7 g/dL in a nonbleeding patient and a transfusion trigger of 8 g/dL in a nonbleeding postoperative or heart disease patient. The guideline addressed the clinical concern that if a patient had significant signs and symptoms of anemia and/or major bleeding, transfusions would be indicated despite the Hgb value. Lastly, the guideline addressed a long-standing "tradition" of always ordering and transfusing two units of RBCs. Evidence indicates that in the typical acute care patient, one unit of RBCs should be given, a patient evaluation should be conducted, and then a second RBC should be considered, if needed. Considering the number of years a "type and cross and transfuse two units of RBCs" order has been used, this was a significant behavior to change among all providers and staff. Education and assurance that no patient harm would occur had to be closely monitored.

After consensus was achieved on transfusion triggers and strategies by the multidisciplinary team, the restrictive transfusion guideline had to be approved at all facilities' medical executive committees. The health care system's pathologist personally presented the guideline to each MEC to address any concerns and make the system aware of the change. Approval was obtained by all MECs across the health care system.

Education of medical and nursing staff was a key component as the restrictive guideline was a new concept for many of the clinicians. Many clinicians were concerned, because much of the evidence generated surrounding this practice has been in academic medical centers and the health care system is a community-based setting. The pathologist and CMO provided several individual presentations in section meetings, one-on-one educational sessions, and developed online education modules for medical staff. During orientation of new medical staff, each physician and physician extender are provided education on the benefits of the restrictive patient blood management program. Additionally, the system pathologist meets routinely with the family medicine medical residents and all nursing personnel upon hire to the health care system.

Policies and protocols were changed to address the new restrictive transfusion guidelines. For example, the system's

Pictured: Transfusion Committee

critical result policy had to be changed to be in alignment with the new Hgb levels. The previous procedure was to notify a provider if the Hgb level was less than 10 g/dL. Now the policy addresses the new trigger levels of 7 g/dL or 8 g/dL, based on patient population. Systemwide standardized order sets also were evaluated and changed to the new transfusion triggers and restriction of the standard order of automatically transfusing two units of RBCs.

The final step of implementation was designing an ongoing evaluation system, which is described in the next section.

Results

From January 2013 to March 2013, the health care system has demonstrated a steady decline in the number of RBC transfusions. In 2013, the health system transfused between 900 and 1,000 units of RBCs per month. In the first quarter of 2016, the health system is transfusing less than 600 units of RBCs per month, more than a 30 percent decrease, exceeding the system goal. The number of units of blood transfused can be impacted by census and acuity of patient population. For example, the health system has had an increase in acuity in one of the hospitals that could impact the number of transfusions. Despite this increase in acuity, the system has not demonstrated an associated increase in the number of transfusions.

To avoid any potential impact of patient volume on number of transfusions, the system monitors the rate of transfusion in addition to the number of RBC transfusions. The system reviews patient cases with Procedure Code 99.04. Based on this procedure code, the health system averaged greater than 10 percent of the patients receiving a transfusion in January 2013 and has experienced a steady decline in transfusion rate to now below 7 percent.

One of the concerns of the clinicians and the health system was the potential negative impact restricting transfusions could have on patient outcomes. Therefore, the health care system monitors complications, mortality, average length of stay and average charges for those patients receiving blood transfusions. There has been no documented negative impact of restrictive transfusions in the patient population, meeting the system goal of no increase in negative outcomes. During the baseline measurement period, the health system documented a complication rate in patients with RBC transfusions of 12.24 percent and in January 2016 this rate was 6.28 percent. Mortality rates have remained unchanged from a rate of 8.31 percent during baseline period to a rate of 7.94 percent in January 2016. The ALOS was 9.75 days during the baseline period and was 8.74 days in January 2016. Lastly, average charges of patients receiving a RBC transfusion were $91,263 during the baseline period, and were $78,235 during January 2016.

In alignment with the Triple Aim, the health system has been able to document a significant cost savings related to the restrictive patient blood management protocol. According to the pathology department, the average cost of a single unit of RBC is $200/unit. This cost does not include the cost of associated laboratory costs for type and crossmatch, nursing time for transfusion, etc. Based on the $200/unit, the health system estimates a savings of over $70,800/month, or $849,600 annually. According to Shander, et al. (2010), the average cost of RBC transfusion, including indirect and direct costs, is $1,200. Using this figure, the health system is saving an average of $400,800/month, or $4,809,600 annually.

Lessons Learned

The primary lesson learned is that consistent participation by all members of the multidisciplinary team is needed to drive and sustain change in complex clinical processes. Process change is slowed when key members are not engaged. When examining lack of engagement, the root cause was often the fact that the team member did not understand the "why" behind their contribution. Therefore, it is critical when forming a team to explain the "why" of the team formation and team goals early in the process to generate engagement.

Establishing a change in practice is difficult when there is no defined "benchmark" for achievement. Clinicians are concerned with knowing how they perform compared to others, and there is no such data available within patient blood management. Educating physicians that reduction of transfusions is just as important as achieving a certain benchmark was a challenge, but as results were achieved, engagement increased.

The last lesson learned was the need to translate the evidence-based practice from the academic setting to a community setting. Clinicians would become concerned that the data and protocols came from hospitals "not like us," meaning an academic center, when we are a community center. The system pathologist soon learned to frame the message regarding benefits to all patients regardless of practice setting demonstrating that the protocols were applicable to both academic and community settings.

BJC HealthCare

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Goal

Reduce Patient Harm
2009 to present: Hypoglycemia task force reduced severe hypoglycemia events by 80 percent systemwide by adopting an innovative approach to identify harm, create dashboards and collect causative factors, followed by implementation of systemwide and local interventions informed by these data.

2016 Goal for Hypoglycemia
Target: 1.5 hypoglycemia events per 1,000 at-risk patient days.

Rolling six-month performance at 0.86 hypoglycemia events per 1,000 at-risk patient days.

Improvement Strategy

1. **Creation of Dashboard –** An essential component of the dashboards was the creation of a metric to adjust for differences in the patient populations of our hospitals. To do so, the hypoglycemia task force developed a metric to calculate hypoglycemia rates to better reflect true exposure.

   The metric was defined as count of events/all days of a patient stay when there was an order for a diabetes agent any time during that stay.

   Development of this risk-adjusted metric accomplished several goals: reduced measurement bias, confidently identified high-performing hospitals, prioritized hospitals for improvement and achieved buy-in among diabetes experts across the system. This standard metric was applied to all system hospitals, which include a heterogeneous mix of large and small; academic and community; and urban, suburban and rural institutions with a range of admissions with diabetes.

2. **Evidence-Based and System Best Practices –** Many of the recommendations of the 2009 AACE and ADA "Consensus Statement on Inpatient Glycemic Control" were adopted. These were proposed as foundational practices to be readily implemented in each hospital. Then the team garnered input from local subject matter experts, including endocrinologists, nurse educators, diabetes educators and pharmacists; conducted site visits of system high-performing hospitals; and identified additional system best-practices to be implemented immediately. These interventions included order form modifications, such as adding holding insulin only with a prescriber order, reducing bedtime sliding scale insulin by 30 percent, avoiding routine correction insulin at 0200 and 0400 hours and notifying the prescriber when a patient had two glucose levels < 70 mg/dL or one glucose level < 50 mg/dL. Successful implementation of these improvements were tracked at the monthly hypoglycemia task force meetings.
3. **Identification of Causative Factors – Hypoglycemia Event Analysis Tool:** The task force also developed a HEAT to aid in systematically collecting causative factors discovered during the event investigation. HEAT was initially introduced as a paper tool that was completed by diabetes educators, nurses or pharmacists from each hospital within 10 days of an event. During the investigation of an event, the trained clinician identified the causative factor(s) from a pre-defined list. Feedback from these clinicians and leadership led to the development of a more streamlined, partially pre-populated automated version of the tool, which reduced the burden of collecting the extra information and increased adoption of the process. Concurrently, the HEAT form was incorporated electronically in a pharmacy expert system. Reports generated from these data graphically displayed the frequency of the perceived causative factors associated with a severe hypoglycemia event for each hospital and the system. During the original phase of data collection in 2011 and 2012,

the three most frequently identified causative factors were "timing issues," "glucose trend not recognized," and "home regimen continued as inpatient."

4. **Utilizing HEAT Data –** Causative factor data showed that timing issues with the insulin-administration process surrounding meal time was a major contributing factor of severe hypoglycemia at several hospitals. The team held a week-long event, which included brainstorming and rapidly testing solutions. This process resulted in a new workable solution; they modified the dietary staff workflow to alert the nurse when meals arrive. Using the meal delivery as a trigger, the nurse was able to perform both the glucose test and administer insulin at the appropriate time. This improved the percentage of insulin doses given within 30 minutes of meal time.
5. **Continuous Dissemination of Knowledge –** To manage the efforts of the hypoglycemia task force, an interactive internal website called the "Hypoglycemia Facility Strategy Tracker" was created. The H-FaST site was used to collect and track the interventions, dashboards, causative factors and best-practice recommendations.
6. **Clinical Decision Support –** This alert utilized predictive analytics to identify diabetic patients at risk for hypoglycemia utilizing low body weight, low creatinine clearance, high basal insulin dose, sulfonylurea therapy and mealtime sliding scale insulin therapy. Responders to the alert used a systematic tool for identifying appropriate changes in therapy and communicating these recommendations to the prescriber. High-risk alert was developed to identify any patient presenting to the emergency department with a previous hypoglycemia event at the system facility within the last two years. The high-risk sulfonylurea alert notified pharmacists when the use of a sulfonylurea was contraindicated due to an increased risk of hypoglycemia.

Results

The health system experienced a sharp decline in the number of severe hypoglycemia events from pre- to post-implementation (913 and 185 cases, respectively) of the hypoglycemia initiative. The rates of severe hypoglycemia events among the patient population at risk of hypoglycemia declined from 6.45 per 1,000 at-risk patient days from July to December 2009, to 1.32 per 1,000 at-risk patient days for January to June 2014, resulting in an 80 percent reduction in systemwide rates of severe hypoglycemia events ($p<0.01$). The severe hypoglycemia reductions were observed at all hospitals and ranged from 70 percent to 100 percent.

Rates among the total patient population showed the same trend. The overall rate of severe hypoglycemia events was 2.35 events per 1,000 patient days from July to December 2009, and 0.49 events per 1,000 patient days from January to June 2014. The degree of decline for the system and individual hospitals was similar to what was observed for the at-risk patient population (system-level rate reduction=80 percent, $p<0.01$; range, 70 percent to 100 percent across all hospitals).

Rates using at-risk patient days plotted by month exhibited a clear picture of decline in the occurrence of hypoglycemia. The slope of the fitted regression line indicated that the rates of hypoglycemia declined, on average, by 0.08 (95 percent CI, -0.09, -0.07) events per 1,000 at-risk patient days per month ($p<0.01$, $R2=0.85$). The rate reductions and slope estimates were unchanged when removing the two community hospitals with imputed baseline values.

By identifying all severe hypoglycemia events, collecting causative factors for each event and implementing customized, informed interventions, the health system successfully reduced severe hypoglycemia events by 80 percent in five years. Across a 2,000-bed hospital system, nearly five severe hypoglycemia events per day were identified prior to the hypoglycemia initiative. By comparison, with similar patient days, the recent six-month count was slightly less than one event per day. The automated surveillance program identified a hidden epidemic of severe hypoglycemia at our hospitals. Through establishing a multidisciplinary task force, gaining leadership support from all levels and accessing a wide array of system resources, we improved patient outcomes while aligning processes to sustain improvements in all 11 hospitals. Notably, our approach made efficient use of current hospital resources while leveraging a very diverse group of employees including pharmacists, certified diabetes educators, clinical nurse specialists, endocrinologists, dieticians, epidemiologists and informatics specialists.

The creation of our hypoglycemia task force is in line with current recommendations, including the American Society of Health-System Pharmacists Expert Consensus Panel's recommendation that all hospitals develop "protocol-driven and evidence-based order sets that permit prescribing of complex insulin regimens." The early steps taken by the task force included modifying the order sets within each hospital based on current evidence. Pasala and colleagues recently developed a similar inpatient hypoglycemia committee that investigated all severe hypoglycemia events, developed a treatment protocol, revised insulin order sets and educated physicians, though results were not enumerated. Cobaugh and colleagues recognized the importance of retrospective analyses of hospitalwide data to identify the root causes of

severe hypoglycemia and to enhance insulin use safety in hospitals. Our process included many recommended strategies, such as nurse-driven hypoglycemia protocols for treatment of blood glucose levels < 70 mg/dL to prevent mild events from deteriorating into severe events and creating multidisciplinary committees to evaluate and improve current hospital procedures.

Lessons Learned

While our processes resulted in consistent improvement over time, there are some important limitations to its application in other hospital settings. First, it is possible that true positive events were undercounted, as blood glucose levels less than 15 mg/dL were excluded. This decision was made because these levels are known to often be false "positive" events as they are typically followed by a much higher glucose level, suggesting an error with the first reading. Second, although existing staff and resources were utilized, this was an extensive undertaking. We did not attempt to estimate either the costs or the cost-savings of the implementation. Lastly, some of the intervention components may not be replicable in hospitals without the capacity to customize and use extensive undertaking. However, implementing these interventions manually may be an option for such hospitals given that initially we were successful in manually collecting causative factors and creating dashboards using a common spreadsheet. Also, while our custom-automated tools streamlined our interventions, the logic for these rules is available, and likely can be adapted, to various hospital clinical decision support platforms.

Clinical Excellence — Small and Large Metropolitan Hospitals

Clinical Excellence — Small and Large Metropolitan Hospitals

WINNER

SAINT FRANCIS MEDICAL CENTER

Medicine to the Highest Power

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Goal

In June 2013, we implemented a quality improvement initiative to reduce our necrotizing enterocolitis rates by 50 percent in our NICU, on or before the end of calendar year 2014.

Included Populations

- Extremely and very low birth weight babies < 1500 grams

Excluded Populations

- Newborns = 1500 grams

NOTE: Weight is consistent with Vermont Oxford Network benchmarks; however, our feeding protocol was expanded to include = 34 weeks and = 1800 grams

- Expired; without ICD-10-CM principal diagnosis code, necrotizing enterocolitis
- Transfer in from a referring hospital
- Twin transfer to another hospital (transferred to be with twin)
- ICD-10-CM principal diagnosis of spontaneous intestinal perforation
- Readmission or return transfer following patent ductus arteriosus ligation or hydrocephalus shunt placement

Improvement Strategy

Initially, we reviewed our feeding practices and looked closely at any variation which might have accounted for our best performance in 2011, when we observed an 18.8 (rate in 2010) to four percent decrease in NEC rates. During the aforementioned year, the only attributing factor we identified was the implementation of penguin warmers. This technology homogeneously warms breast milk to a temperature comparable to fresh breast milk and mitigates potential exposure to water-born organisms. However, we did not know of, nor could we find, scientific data to support the unexpected decrease in NEC with use of these devices alone. Therefore, it was no surprise that our rates of NEC were higher than national averages again in 2013.

Use of breast milk, expressed or donor, has been shown to reduce NEC (Ganapathy, Hay, Kim, 2011; Sullivan, Schanler, Kim, 2010). Historically, we had strongly encouraged expressed breast milk. We hypothesized that the use of donor breast milk versus preterm formula, in our low birth weight population, could be a significant contributing factor to decreasing NEC. Furthermore, we wished to analyze, compare, and refine our feeding strategies to optimize NEC reduction. We undertook an extensive review of the scientific literature and surveyed nearby academic NICUs to evaluate best practices.

Benchmarking processes with other NICUs was new to our unit. We prepared and distributed an extensive 34-question survey to six local NICUs in our service area. We observed an impressive 66 percent return rate (4 of 6). Concurrently,

Front (left to right): Dr. Laura Al-Sayed, neonatologist; Amanda Boatright, R.N., BSN; Tajuana Bird, Erin Aguila, R.N., BSN; Jennica Hagar, R.N., BSN; April Bond, R.N., BSN, CLC; and Heather McHughs, R.N., MSN, NNP

Back (left to right): Lindsey Meisner, R.N., MSN, NNP-BC; Tori Ainsworth, Lindsay Roth, R.N., IBCLC; Jenna Greer, R.N., Dr. Alan Barnette, neonatologist and Dr. Karlyle Christian-Ritter, neonatologist

we performed a deep dive, reviewing each NEC case reported by our NICU from 2009 to 2013. This activity led us to identify possible contributing factors which may have led to our higher than expected rate of NEC. We concluded that while our NICU clinicians appeared to understand the pathology of, and risk factors for, NEC; we observed inconsistencies in feeding practices.

Finally, after thoroughly developing our strategy, we launched an interdisciplinary process improvement project that included NICU staff, physicians, neonatal nurse practitioners, lactation consultants, managers, educators and registered nurses. We conducted staff education about NEC, its pathophysiology, impact and risk factors. We evaluated the transfer of learning using a preliminary quiz to establish baseline knowledge. We solicited the expertise of all NICU staff and providers, formulated a NEC mitigation plan, and presented to our division of neonatology council for approval. Our final quality improvement plan included the following.

- standardized feeding advancement protocol, grouped by gestational age and weight
- guideline for additional feeding protocol considerations, e.g., adding needed supplements, holding feeds
- NEC quality improvement bundle
- algorithms to assist in evaluation of feeding intolerance and response
- weaning protocol for donor milk

The above standard work was laminated, deployed for use, available during rounding and accessible at all times to all staff.

Results

The initial quality improvement plan was in place for two years, January 2014 to December 2015. During the first year of implementation, we exceeded our goal (reduce NEC by 50 percent) as we observed our NEC rates drop to 2.5 percent from 7 percent in 2013, an impressive 64 percent improvement.

In 2015, we not only sustained our NEC rate reduction from 2014; our hospital had the pleasure of celebrating zero NEC cases. Additionally, we examined whether our quality improvement plan had positively affected length of stay, discharge weight, average weight gain per day and cost per case. Following a drill down by case, we lowered length of stay by an average of 14 days from January 2014 to December 2015. Cost per case was reduced to $4,000, on average, in the same period. Similarly, we found significant reduction in variation among discharge weights by nearly two standard deviations. Additionally, we analyzed average weight gain per day. We further reduced the overall variation without reducing average daily weight gained.

Our NICU is proud to be among top performing hospitals in the nation providing, safer, more reliable, equitable, efficient care at a lower cost, as a result of successful NEC reduction.

Lessons Learned

The most significant positive lesson learned was the value of a single standardized process for feeding extremely and very low birth weight babies. Prior to the improvement initiative, three physicians and five nurse practitioners recognized significant variation in patient outcomes as a result of individual ordering practices. These observations could not be more evident than in our post-improvement results data. Mitigating variation in our process led to the delivery of safer, more reliable, timely, efficient and cost-effective, patient-centered care.

The most noteworthy challenge, following the quality improvement bundle implementation, was the desire of NICU team members to recommend changes to the protocol. In the absence of fact-based evaluation of post-improvement data, team consensus was not achieved. However, providers reported difficulty balancing team engagement and buy-in while discouraging anecdotal recommendations to improve the bundle. After reducing NEC rates from 7 percent in 2013, 2.5 in 2014, and zero NEC cases in 2015, the NICU team agreed on three changes to be implemented on Jan. 1, 2016. Changes to the feeding protocol were selected after repeating the PDCA methodology that proved to be successful in the initial phases of NEC reduction.

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Goal

With safety being the first value for the organization, the facility's primary goal was to enhance the safety of care for the postoperative patient. Therefore, the first goal was to lower the Patient Safety Index 12 rate by 25 percent from 2013 to 2015 and bring the VTE-6 rate of hospital-acquired VTE below the national benchmark before 2015.

Next, the facility established a goal to improve compliance with the Centers for Medicare & Medicaid Services core measures. The goal was established that 100 percent of the facility's core measures would meet or exceed the national benchmarks by 2015.

Lastly, the facility established a goal to decrease costs associated with readmissions and complications from VTE. A specific smart goal was not established for this goal due to its complexity. In summary, three project goals were established: enhanced safety of care, improve core measure compliance, and decrease cost to the postoperative patient.

Improvement Strategy

The improvement strategy began with the formation of a multidisciplinary team including physicians (surgeon, hospitalist, CMO); quality, patient safety, nursing, education (physician and nursing) and electronic health record personnel; data abstraction nurses; and pharmacists. The team utilized the PDCA cycle to implement small tests of change for rapid improvement. The project focused on all postoperative units in the acute care setting of the facility simultaneously. The improvement strategies detailed below occurred over a six-month process, and the past 12-18 months have focused on sustaining results and corrective actions as needed.

Initially, the team evaluated the process of the basic care of the surgical patient beginning at admission and ending at discharge from the acute care facility. During this evaluation, the team identified opportunities for implementation and education related to post-surgical VTE prophylaxis. Key process opportunities identified included: VTE prophylaxis electronic order set availability and consistency, consistent discharge education related to VTE prevention, consistent education related to warfarin and other anticoagulants, and education of physicians and nursing staff of VTE measure requirements and prevention strategies.

In the fall of 2014, the team focused on the availability and consistency of all VTE prophylaxis order sets. Within the facility's EHR, order sets can be added to the patient's plan of care as an individual order set or as a sub-phase of another order set, such as a postoperative care order set for a specific procedure. The team identified that the VTE orders were not consistently available on all sub-phases of postoperative orders. The team worked closely with EHR personnel to add the VTE prophylaxis sub-phase orders to all applicable postoperative order sets; this amounted to more than 70 order sets. By making these orders available as a sub-phase to the existing order set greatly enhanced the consistency and implementation of VTE prophylaxis orders without reliance on human memory for implementation. Education was implemented for all physicians and physician extenders of the reason (why) the orders were needed and valuable, the content of the order set, and how to add the VTE prophylaxis to their saved order sets. During the "Check" phase of PDCA, compliance was continually monitored, and feedback and actions were taken to ensure compliance of order set utilization. During the "Check" phase of PDCA, it was noted that physicians were not documenting essential elements when VTE chemical prophylaxis was contraindicated. Therefore, a physician EHR form was developed to address the contraindications, thereby meeting all documentation requirements by CMS.

After addressing the order sets, the team turned its focus to patient education. Two educational opportunities were identified. First, there was a lack of consistent home care discharge education available for postoperative patients on

VTE prophylaxis. Second, there was a lack of consistent, succinct educational materials available for patients being discharged on warfarin therapy and other anticoagulants. Materials for post-discharge care and medications existed but there were different materials available throughout the organization (no standardization) and materials were several pages in length (difficult to understand). The team consulted with experts in the field of patient education development, medication safety, VTE prophylaxis physician champions and literature review of evidence-based practices to develop consistent, succinct materials for patient education related to discharge care at home and medication therapy. To develop a consistent process, when a patient is ordered warfarin or any anticoagulant, a task is generated by the EHR for the nurse to complete warfarin or anticoagulant education; the task is generated until completed, or discharge, whichever occurs first. The completion of the task is documented within the patient's EHR. The post-discharge care instruction/education materials were placed in the EHR discharge content so that they were readily available during discharge and could be easily updated when needed. By linking the documentation of this educational process to the EHR, it assisted the facility in meeting the CMS core measure documentation requirements.

The last strategy for improvement was related to educational needs of both nursing staff and physicians related to VTE prophylaxis strategies and CMS core measure requirements. Nursing and physician staff was queried on their perceived educational needs related to VTE prophylaxis and their knowledge of CMS core measure requirements. Educational materials were developed for both professions meeting their defined needs and CMS requirements. The materials were made available to both groups through the online learning system for the facility.

Results

The facility has demonstrated consistent improvement in VTE outcomes; specifically, hospital-acquired potentially preventable venous thromboembolism (VTE-6) and postoperative pulmonary embolism or deep vein thrombosis (PSI-12) for the last three years. In calendar year 2013, the facility had a 20.5 percent rate of hospital-acquired potentially preventable venous thromboembolism (VTE-6), a rate that was worse than the national average. In 2014, the rate decreased to 12.5 percent, but remained worse than the national average. In 2015, after implementation of the variety of interventions, the rate further decreased to 4.3 percent, which is above the national average. At the current time in CY 2016, the facility has a zero percent rate of hospital-acquired VTE, which is above the national average, thus meeting the goal to perform at or above the national benchmark.

Additionally, the PSI-12 rate has demonstrated steady improvement. Utilizing the Crimson database, the facility is able to generate PSI data by facility and by individual provider. Rates are monitored on a monthly basis, outlier cases are analyzed and a chart review is performed of specified cases. In FY 2013, the organization had a PSI-12 rate of 3.3/1,000 discharges. In FY 2014, the rate declined to 2.91/1,000. And, in FY 2015, the rate has reached an all-time low of 2.47/1,000. Comparing these results to the aim statement, the facility has exceeded the established goal by reaching a 26 percent reduction in PSI-12.

Compliance with the core measures for VTE prophylaxis has demonstrated steady improvement from CY 2013 to current performance. VTE-1 has increased throughout the project. VTE-1 compliance in 2013 was 85.4 percent; 2014 rose to 90.1 percent; 2015 rose to 92.5 percent; and preliminary 2016 results are at 94.1 percent, which is greater than the national average. VTE-2, prophylaxis of the ICU patient has seen an increase from 89.6 percent compliance to a compliance of 100 percent in 2015, before it was retired by CMS. ICU prophylaxis had the least amount of opportunity in the organization as the ICU providers were the most educated on prevention strategies prior to the improvement project. VTE-5, venous thromboembolism, warfarin therapy discharge instructions had the most significant gain in process measures. In 2013, compliance with VTE-5 was at 69.3 percent and has continued to struggle through 2015 due to process challenges within the EHR. The multidisciplinary team identified the challenges in the process utilizing the PDCA process and actions were implemented within the EHR. Since addressing the process within the EHR, the facility has achieved 100 percent compliance on this measure beginning with fourth quarter CY 2015, through current abstraction.

The facility's aim statement was to achieve 100 percent of all core measures at the national benchmark. All measures exceeded the national benchmark in 2015, with the exception of discharge instructions. This discharge instruction measure exceeded the national benchmark in fourth quarter 2015, as well as first quarter 2016.

"We are very pleased to have an opportunity to share our improvement work with MHA member (and nonmember) hospitals, and are looking forward to learning from the organizations that are selected to receive the Aim for Excellence Award."— Aim for Excellence applicant

Lessons Learned

The primary lesson learned is that consistent participation by all members of the multidisciplinary team is needed to drive and sustain change in complex clinical processes. Process change is slowed when key members do not engage or attend meetings, making process changes difficult to implement in a timely manner. When examining lack of participation, the root cause was often the fact that the team member did not understand the "why" behind their contribution. Therefore, it is critical when forming a team to explain the "why" of the team formation and goal early in the process to generate engagement.

The second lesson learned was to reach out beyond traditional clinical scopes. When examining the need for discharge education, the facility held the traditional model that discharge education should be provided by nursing personnel. Upon investigation, the facility expanded the role and documentation, engaging the pharmacy staff in completing the discharge medication teaching for warfarin and other anticoagulants.

Abbreviations Legend

AACE	American Association of Clinical Endocrinologists
ACEP	American College of Emergency Physicians
ADA	American Diabetes Association
AHA	American Hospital Association
AHRQ	Agency for Healthcare Research & Quality
AORN	Association of Perioperative Registered Nurses
APIC	Association for Professionals in Infection Control and Epidemiology
APP	Advanced Practice Paramedics
APRN	Advanced Practice Registered Nurse
AS	Antimicrobial Stewardship
ASP	Antimicrobial Stewardship Program
BP	Blood Pressure
C.diff	*Clostridium Difficile*
CAH	Critical Access Hospital
CAUTI	Catheter-Associated Urinary Tract Infection
CDC	Centers for Disease Control
CHG	Chlorohexidine Gluconate
CMO	Chief Medical Officer
CMS	Centers for Medicare & Medicaid Services
CPOE	Computerized Physician Order Entry
CST	Cognitive Stimulation Therapy
CT	Computed Tomography
CUSP	Comprehensive Unit-Based Safety Program
DSME	Diabetes Self-Management Education
EBP	Evidence-Based Practice
ED	Emergency Department
EHR	Electronic Health Record
EMR	Electronic Medical Record
EMS	Emergency Medical Services
EMTALA	Emergency Medical Treatment and Active Labor Act
ENA	Emergency Nurses Association
ER	Emergency Room
ESBL	Extended-Spectrum Beta-Lactamase
EVS	Environmental Services
FTE	Full Time Equivalent
FY	Fiscal Year
HCAHPS	Hospital Consumer Assessment of Healthcare Providers and Systems
HEAT	Hypoglycemia Event Analysis Tool
HEDIS	Healthcare Effectiveness Data & Information Set
HEN	Hospital Engagement Network
HF	Heart Failure
HR	Human Resources
HRET	Health Research & Educational Trust
ICU	Intensive Care Unit
ID	Infectious Disease
IDSA	Infectious Diseases Society of America
IHI	Institute for Healthcare Improvement
IP	Infection Preventionist
IT	Information Technology
IV	Intravenous
L&D	Labor and Delivery
LACE	Length of Stay, Acuity of Admission, Comorbidities, Emergency Department Visits
MBQIP	Medicare Beneficiary Quality Improvement Project
MDRO	Multi-Drug Resistant Organisms
MEC	Medical Executive Committee
MIC	Minimum Inhibitory Concentration
MRSA	Methicillin-Resistant Staphylococcus Aureus
MS	Medical-Surgical Unit
NCQA	National Committee for Quality Assurance
NHSN	National Healthcare Surveillance Network
NICU	Neonatal Intensive Care Unit
NNP	Neonatal Nurse Practitioner
NP	Nurse Practitioner
OR	Operating Room
PCMH	Patient-Centered Medical Home
PCORI	Patient-Centered Outcomes Research
PCP	Primary Care Physician
PDA	Patent Ductus Arteriosus
PDCA	Plan-Do-Check-Act
PDSA	Plan-Do-Study-Act
PES	Pharmacy Expert System
PMPM	Per Member, Per Month
PO	Oral
PSI	Patient Safety Indicator
SHEA	Society for Health Care Epidemiology of America
SSI	Surgical Site Infection
TCNN	Transitional Care Nurse Navigator
TIA	Transient Ischemic Attack
TJC	The Joint Commission
VON	Vermont Oxford Network
VRE	Vancomycin-Resistant Enterobacteriaceae
VTE	Venous Thromboembolism
WHO	World Health Organization

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