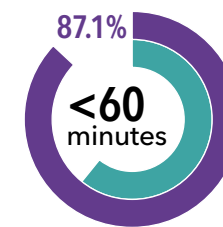
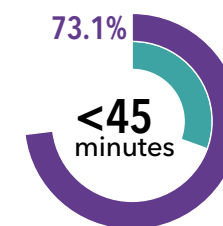


Leveraging Technology and Clinical Teams to Improve Acute Stroke Outcomes

By Melissa M. Meighan, MS, RN, regional stroke coordinator

Door to Needle Time Pre and Post Stroke EXPRESS



Pre Post
Implementation

Kaiser Permanente Northern California redesigned the care process for acute stroke using technology and integrated clinical teams. This project resulted in a significant reduction in the time it took to diagnose and treat stroke patients across the region.

Two million brain cells die each minute during a stroke. For every 15 minutes of swifter time to treatment, fewer brain cells die and patients go home more independent at discharge.

The Centers for Disease Control and Prevention has reported stroke morbidity and mortality rates have stalled in three out of four states. It is difficult for lay people to detect a possible stroke because, unlike a broken leg, an evolving injury such as stroke may not be readily apparent.

Kaiser Permanente Redesigns Stroke Care

Rapid neurology assessment requires close collaboration with bedside and emergency room nurses to rule in a candidate for rapid treatment with therapy. One of the most common treatments for stroke is alteplase, an anticoagulant drug that dissolves the blood clot causing a stroke.

Between March and September 2015, a redesigned stroke program was developed, with the pilot implementation beginning in September 2015. The program was named EXpediting the PRocess of Evaluating and Stopping Stroke (EXPRESS).

EXPRESS relies on a broad base of leadership and nursing experts who redesigned workflows, creating a tele-neurology program called "Stroke FORCE" (Fast Operating Remote Cerebrovascular Experts) under the direction of Mai Nguyen-Huynh, MD, and Jeff Klingman, MD.

A tele-neurology physician group was established with stroke experts from multiple Kaiser Permanente Northern California medical centers, who hone their skills and share best practices through weekly learning forums.

EMPIRICAL QUALITY OUTCOMES

Patient care continues well beyond our hospital doors. Kaiser Permanente's integrated care model helps members receive the right care at the right time in the right place. Nurses are instrumental in improving patient outcomes across the continuum.

Carol A. Orlando, MBA, RN
Executive Director, Continuum Clinical Services, Kaiser Foundation Health Plan and Hospitals

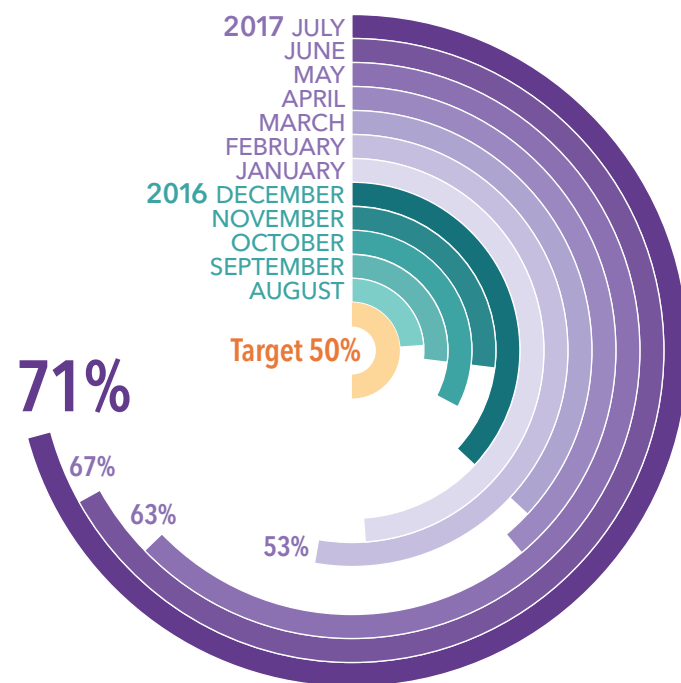
Stroke Alert with Telehealth

Once a patient is identified as having a possible stroke, a stroke alert is called and the local team immediately contacts the on-call tele-neurologist who can help run the stroke alert via the use of a mobile cart with high-definition video capability.

Tele-neurologists assess the patient in close collaboration with the bedside or emergency room nurse, and work with the ED physician or hospitalist to determine the patient's eligibility for alteplase.

If a patient is eligible, the tele-neurologist explains to the patient and family the risks and benefits of IV alteplase and writes the preliminary order for Pharmacy to mix the alteplase. The tele-neurologist also helps the team determine if an ambulance needs to be ordered ahead of time for possible transfer to a center with endovascular capability.

The patient is then immediately brought to Radiology, where a non-contrast head CT is conducted to rule out a cerebral hemorrhage. The remote tele-neurologist "joins" the clinical team during the CT scan via remote conferencing, discusses the results of the CT scan with the radiologist, and authorizes the administration of IV alteplase by the RN.



Current Performance:
Alteplase Door to Needle ≤ 30 Minutes

In a vast majority of cases, a CT angiogram is required, and the tele-neurologist oversees this procedure as well. If the CT angiogram shows a large vessel occlusion, the tele-neurologist will arrange for transfer of that patient to a center with endovascular therapy capability as appropriate.

Getting to the Details

Standardizing each step of the ED and Inpatient workflows was crucial. The goal is to successfully administer IV alteplase consistently within 30 minutes of arriving at the ED and in the inpatient setting directly upon recognition. The new workflow and training materials were tested with multiple real-time improvements. Robust local leadership and implementation teams were designated for each of the 21 medical centers in northern California.

In partnership with our regional simulation team, each medical center completed a full-day simulation to learn and practice the new workflows. Prior to their designated go-live date, each medical center completed 10-15 shorter mock drills to refine their workflow.

Improved Outcomes

Prior to implementation of the EXPRESS program, door-to-needle time was less than 60 minutes about 60 percent of the time.

After implementing the new workflow, the median door-to-needle time was 29 minutes across Northern California. In addition, alteplase usage has doubled, and we have treated twice as many individuals with endovascular treatment. This project has made systematic, sustainable, and substantial changes to improving patient care for the stroke population.

ENHANCED RECOVERY AFTER SURGERY

Transforming Surgical Care at Kaiser Permanente

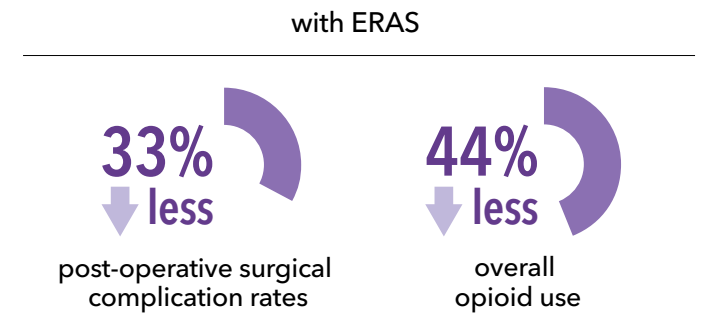
By Tracy G. Trail-Mahan, MS, RN, Northern California ERAS mentor and Pearl Paras, MPH, RN, Northern California ERAS mentor

Enhanced Recovery After Surgery (ERAS) is a comprehensive evidence-based program. Our clinical teams employ the principles of ERAS to improve patient care outcomes across the continuum.

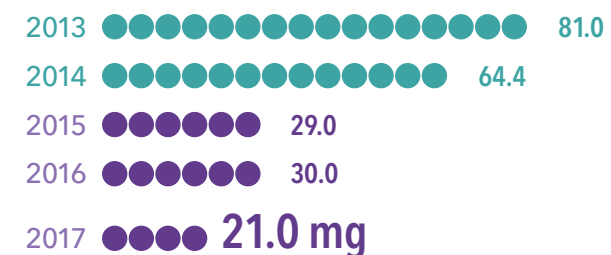
In 1914, Florence Nightingale said, "For us who nurse, our nursing is a thing which, unless we are making progress every year, every month, every week, take my word for it, we are going back." These words were true more than 100 years ago, and remain true today.

Implementation and Performance

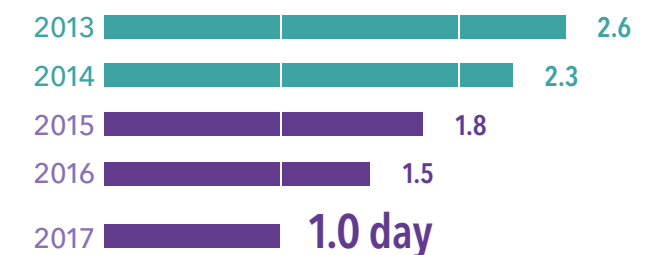
The successful spread of ERAS across 21 hospitals in the past three years has improved care for more than 20,000 surgical patients. This has resulted in the reduction of post-operative surgical complication rates by 33 percent, and an overall decline in opioid use by 44 percent. For total hip surgery patients, we have reduced their length of stay from 2.6 days to only one day.



AVERAGE MORPHINE EQUIVALENTS (MG)



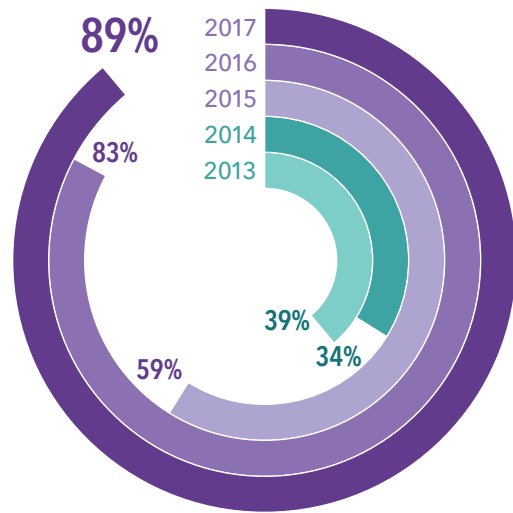
AVERAGE HOSPITAL LENGTH OF STAY (DAYS)



Improving Total Hip Surgery Outcomes with ERAS

● post-implementation ● pre-implementation

LAST LIQUIDS BEFORE O.R. ENTRY

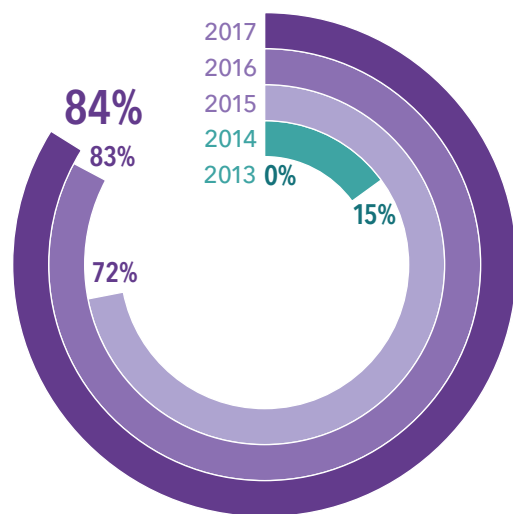


Although surgery-related opioid use only represents a fraction of the overall problem, more than 2 million individuals may transition to persistent opioid use following elective, ambulatory surgery each year. ERAS does its part to minimize opioid use through promotion of a multimodal analgesia approach, targeting optimal opioid-sparing pain relief.

An Interdisciplinary Effort

A true team effort, ERAS requires the collaboration of disciplines across the continuum of care. Instrumental in the development and advancement of ERAS, Derrick C. Lee, MD, has served as the clinical expert for many of the evidence-based practice innovations. Working together, our team of physicians and nurses has transformed surgical care.

FIRST AMBULATION IN 12 HOURS

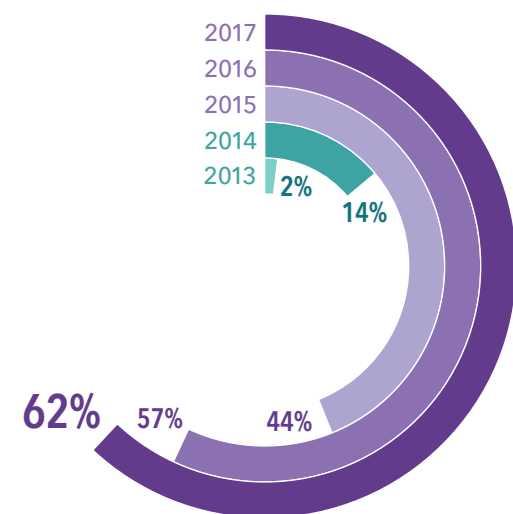


Northern California ERAS in JAMA

ERAS is receiving widespread media attention and has been featured on television, in newspapers and other publications, as well as at national health care conferences. Our remarkable results from the first two ERAS prototypes involving more than 5,000 hip fractures and 3,700 elective colorectal resection patients were highlighted in the May 2017 issue of the *Journal of the American Medical Association (JAMA)*.

The article, as one commentary noted, "represents an important contribution to population health. The investigators and their integrated system moved the bar of implementation science into real progress in the real world."

MULTIMODAL ANALGESIA GIVEN



The Common Pathway

The ERAS Common Pathway, the first in the world, is a novel approach to packaging the ERAS concepts into a bundle of standardized interventions that can be applied to nearly all surgical patients.

Kaiser Permanente's ERAS program is advancing to serve as the global pioneer in establishing a new paradigm for providing the highest quality and safest surgical care.

REDUCING CAUTI RATES

San Leandro Improving Outcomes with KP HealthConnect

By Dana Littlepage, MBA, RN, San Leandro Medical Center Clinical Adult Services director

Have you ever wondered what we could do real-time to improve our patient care outcomes as a team? By leveraging technology and good old-fashioned teamwork, we worked to reduce CAUTI rates in our adult patient population.

We have improved our team's clinical oversight and effectiveness through the anticipation of patient care needs with health record data. This supports the delivery of real-time feedback to frontline staff on care interventions that may increase patient safety and better inform care transitions.

During each shift, nurse leaders also round on patients with urinary catheters and their direct care teams. CAUTI prevention interventions are evaluated during these rounds, and care suggestions are made when indicated.

This year, Kaiser Permanente made a focused effort to reduce catheter associated urinary tract infections (CAUTIs). Our CAUTI Standardized Infection Ratio (SIR) for March 2017 was 1.59. Our processes were good, yet our data told us that we could be better.

A Positive Trend

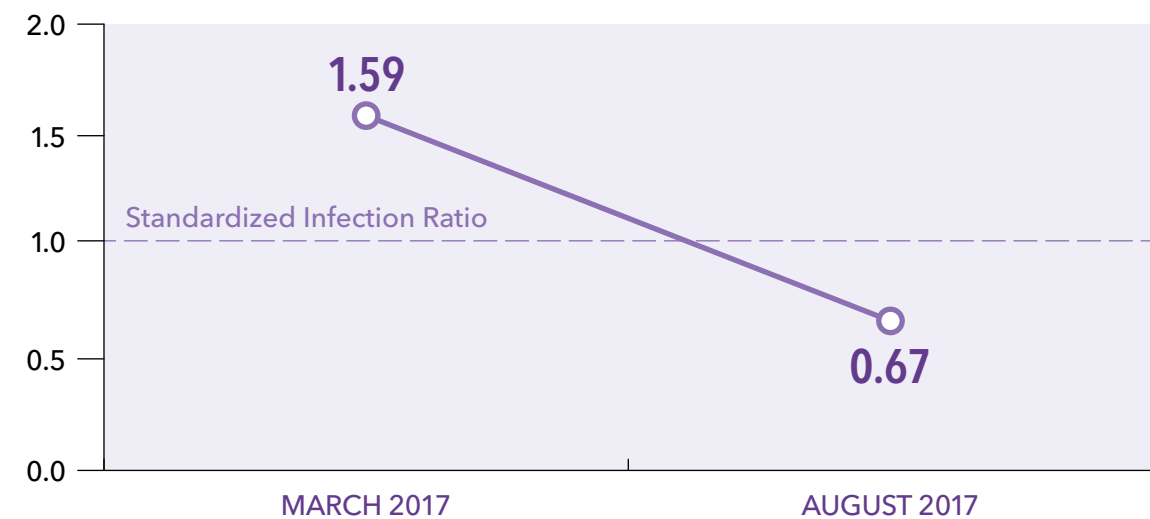
The proof is in the results: Kaiser Permanente San Leandro was successful in preventing CAUTI. In August 2017, our CAUTI SIR rate was 0.67.

Anticipating Care Needs

Leaders support nursing practice and monitor progress throughout a patient's stay by monitoring HealthConnect data in a more strategic way. This approach also provides our team with new opportunities to celebrate excellent care, coach for positive care outcomes, and train care teams on best practices that prevent harm.

"By leveraging the daily safety briefing, the assistant nurse manager in each unit has helped lead a significant reduction in CAUTI rates," said Amy Bearden, MSN, RN, San Leandro chief nurse executive. "Our success is a mixture of transparency and adherence to the standardized CAUTI bundle."

REDUCTION IN CAUTI STANDARDIZED INFECTION RATIO



Helping Patients Successfully Recover After Hospital Discharge

By *Angela Wahleithner, MSN, RN, executive director Care Coordination* and *Pamela Galley, MSN, RN, regional director Continuum Administrative Operations*

Kaiser Permanente's Northern California Division of Research collaborated with the Regional Care Coordination Department to evaluate a Readmission Risk Score (RRS) predictor. This study tested a standardized tiered intervention model for patients discharged to home identified at risk for rehospitalization.

When patients are discharged from Kaiser Permanente facilities, their hope is for recovery with a return to normal daily life. But this is not always possible. Complications may result in a patient returning to the hospital to receive further care. Through a collaboration with the Northern California Division of Research to develop a Readmission Risk Score (RSS), Northern California has seen a dramatic reduction in hospital readmissions.

Pilots Showed Promising Results

Piloted in 2016, the Readmission Risk Score is a multifactorial score that assesses the risk of a patient requiring readmission to the hospital after discharge. Starting at seven skilled nursing facilities, the score sought to leverage data to help support high-quality care in real time.

In January 2017, the initial data showed a 25 percent rehospitalization reduction with the patients for whom the Readmission Risk Score specified intervention.

Refined and Spread Across the Region

Refined in the Kaiser Permanente Napa-Solano Continuum Department, the tiered interventions were modeled after the interventions tested in the first pilot program for patients discharged to home. The RN Continuum Coordinator and skilled



nursing provider work collaboratively with the skilled nursing facility interdisciplinary team to support care coordination and quality oversight of our members. Bedside visits and interaction with members are conducted by the team throughout the patient's stay.

This led to the development of the Readmission Risk Score evaluation for patients discharged to skilled nursing facilities, in Kaiser Permanente's 21 Northern California hospitals, using a tiered intervention approach.

Collaboration with physician colleagues has been essential in the success of RSS. Stephen M. Parodi, MD, and Vivian M. Reyes, MD, have led the regional coordination and implementation of this project. They have worked collaboratively with physicians on the ground including Lawrence A. Lippmann, MD, and Russ D. Granich, MD.

The Readmission Risk Score in Action

In 2017, a patient was discharged to the Napa Valley Care Center skilled nursing facility. A clinically complex patient with diagnoses of diabetes, kidney transplant, congestive heart failure, and asthma, he had five admissions to the ED or hospital in the past year.

The patient was assigned a medium Readmission Risk Score. Next, the Continuum RN Coordinator worked with the care team to ensure that the appropriate precautions are taken due to the patient's score. By standardizing our proactive approach to care, we are able to help prevent a readmission to the hospital following discharge.



Data Informing New Standards of Practice

The provider immediately wrote orders in response to the patient's condition. On the second rounds, the patient reported feeling feverish and coughing. The provider ordered a stat chest X-ray, which showed pneumonia, and oral antibiotics were immediately started.

The next week, the team observed the patient with worsening cough, new chest pain, increasing temperature, and rapid pulse. Again, the provider quickly ordered medication, nebulizer treatments, labs, and EKG. The results returned with

no further needed action. Two days later, the patient was discharged with Home Health Services. The patient has not returned to the hospital since.

"Readmission Risk Score is an invaluable tool utilizing historical data to predict those at risk for readmission," said Carol A. Orlando, MBA, RN, executive director continuum clinical services. "With our region's large number of annual discharges, this easy-to-use system will help improve countless care outcomes."

PATIENTS READMITTED (OBSERVED VS. EXPECTED)

