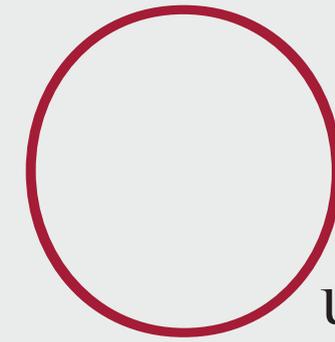


**FROM BIG IDEAS
TO BOLD ACTION:**
MOVING THE NEEDLE
ON QUALITY OUTCOMES



CEDARS-SINAI®



ur goals are ambitious.

Our approach is inventive.

And our inspiration is a passion
for improving patient care.

This is the nature of quality
improvement at Cedars-Sinai.

FIRST TAKE

With a culture that prizes innovation, Cedars-Sinai is an organization in which challenges to conventional wisdom are always welcome — especially when it comes to improving patient care.

This openness to new ideas has enabled us to set new benchmarks and create models of care through our wide-ranging quality improvement initiatives.

For example, one of our early successes involved challenging the prevailing idea that a certain number of hospital-acquired infections are bound to happen. We adopted the slogan “Zero is the greatest number,” and proved we could consistently achieve this goal — or come very close.

This report highlights some of our many other successes, including innovative measures to ensure safer use of medications, improve care transitions and reduce readmissions.

Our Quality Council oversees initiatives such as these with strong support from Cedars-Sinai’s Board of Directors and top executives. And employees system-wide are engaged in teamwork that draws knowledge and expertise from many disciplines.

Once we achieve our goal for each project, we remain vigilant about monitoring results and sustaining progress. At the same time, we take on new challenges. For example, our goals for the near future include improving the quality of medical and surgical cardiac care, reducing potentially inappropriate intensive care unit days and ensuring efficient use of clinical resources.

It’s all part of a deeply ingrained commitment to quality that has benefited Cedars-Sinai patients for more than a century.



MICHAEL L. LANGBERG, MD
Chief Medical Officer and
Senior Vice President, Medical Affairs
Cedars-Sinai Health System

“A number of our quality initiatives have become models of care for hospitals nationwide — including strategies to reduce readmissions, improve care transitions and increase medication safety. We are always looking for new ideas that will make a difference in patients’ lives.”

— JOYELLE SUDBURY, MPH
Vice President, Medical Affairs

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FULLY ENGAGED IN QUALITY IMPROVEMENT

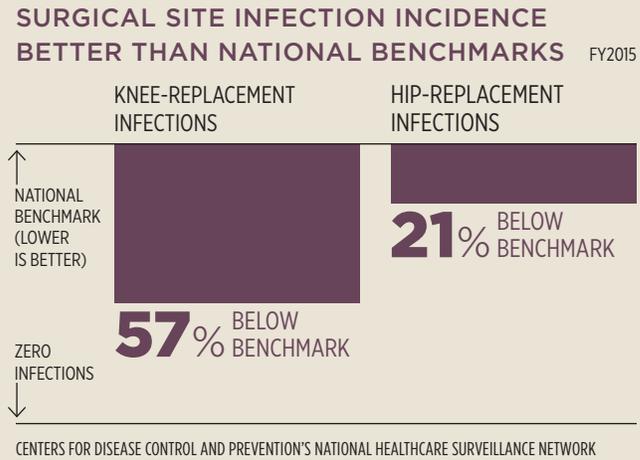
Cedars-Sinai's quality improvement initiatives are characterized by:

- System-wide engagement of clinical staff and employees at all levels in identifying and resolving core quality and safety issues
 - Mandate to look beyond existing best practices and be open to all ideas for improving healthcare
 - Flexibility to adapt quickly as tests of change lead to safer and more effective clinical practices
 - Vigilant monitoring of results and data transparency that allow everyone to see where improvement is needed
 - Rapid case assessments involving all healthcare team members to quickly identify issues and solutions
 - Support from top leadership, including resources and oversight — and removing obstacles to rapid progress
- Human-centered design techniques to analyze patients' needs and develop effective interventions — including use of ethnography to better understand the patient experience
 - Extraordinary expertise of performance improvement facilitators, who provide training and mentoring and keep projects moving at the fastest possible pace
 - Close attention to scalability and sustainability of quality improvements
 - Drift-proofing to ensure that quality improvements remain stable over time
 - Use of multiple performance improvement methodologies such as Plan-Do-Study-Act, Six Sigma and Lean to improve outcomes and maximize efficiency and value in healthcare
 - Engagement of patients in providing feedback and implementing tests of change

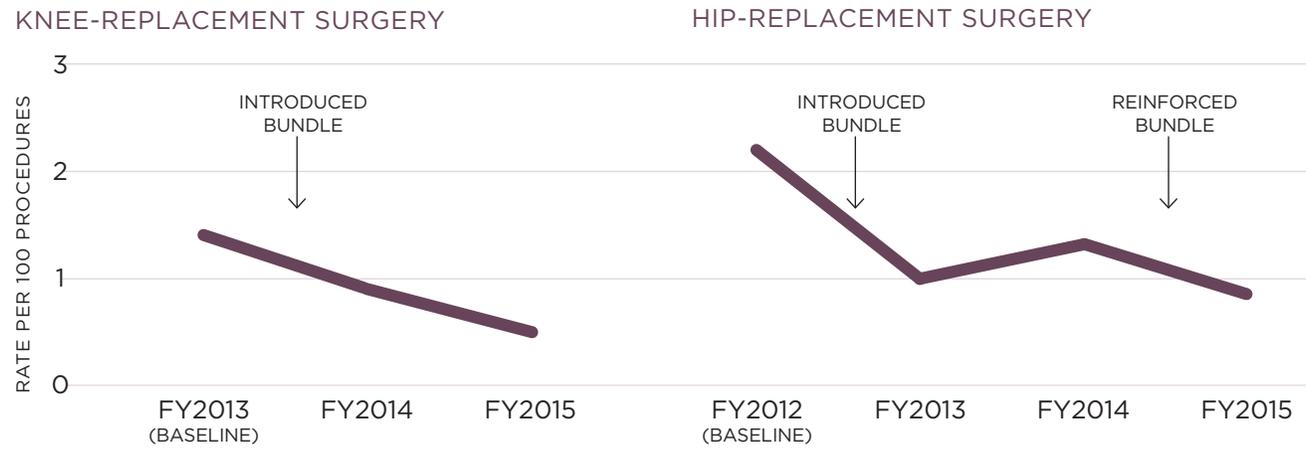
CASE STUDY:
**SURGICAL SITE
 INFECTION
 PREVENTION**

A 'Bundle' of Best Practices

No magic bullet exists for preventing or eliminating surgical site infections. However, the closest thing may be Cedars-Sinai's systematic method of addressing multiple risk factors through strict adherence to a set of evidence-based protocols outlined in its Orthopedic Surgical Site Infection Prevention Bundle.



PROGRESS TOWARD A ZERO INFECTION RATE



PREVENTIVE MEASURE COMPLIANCE CONSISTENTLY HIGH

ANTIBIOTICS GIVEN IN A TIMELY MANNER PRIOR TO SKIN INCISION



SURGEON COMPLIANCE CONSISTENTLY HIGH

GLOVES CHANGED PRIOR TO HANDLING IMPLANT



“Our ‘bundle’ approach to preventing surgical site infections reflects a paradigm shift from the idea that some complications are likely to happen to the belief that every infection is potentially preventable.”

— JAN DECKER, RN, CNOR
 Director, Operating Room Services

Project Team

- SURGEONS
- ANESTHESIOLOGISTS
- NURSES
- EPIDEMIOLOGISTS
- PROCEDURE CENTER STAFF
- OPERATING ROOM STAFF
- ANESTHESIA PRE-PROCEDURE EVALUATION CENTER STAFF
- PERFORMANCE IMPROVEMENT FACILITATORS

THE PROBLEM

- A difficult-to-treat surgical site infection in a bone or joint can lead to readmissions, additional surgery, longer hospital stays, prolonged antibiotic therapy, reduced mobility, lower quality of life, intensive rehabilitation and higher healthcare costs.
- Although the incidence of orthopedic surgical site infections at Cedars-Sinai was already better than national benchmarks, the medical center aimed for a strategy to reduce the infection rate to zero — and keep it there.

THE BIG IDEA

- Develop a set of best practices covering the entire care process for total hip- and knee-replacement surgeries to achieve a zero rate of infection due to *Staphylococcus aureus*, the most common bacteria causing surgical site infections. The “bundle” protocols bring constant attention to the need to perform every step, every time, for every patient.
- *Extra point:* Cedars-Sinai is a national leader in adopting the bundle approach to multiple surgical disciplines.

SUSTAINING PROGRESS

- Team members monitor adherence to the bundle, track infections, and provide feedback to surgeons and other members of the care team.
- In the rare cases when an infection occurs, the medical team huddles with epidemiologists to determine whether the bundle was followed, discuss the patient’s risk factors and other possible causes of infection, and identify any necessary changes in practice.

- These huddles help close gaps in compliance and provide an experience-based process for continuously improving the bundle. For example, one of these discussions led to a change in standard practice regarding the timing of prophylactic antibiotic use to reduce infection risk.
- Ongoing training reinforces the importance of following every step in the bundle and brings new staff members up to speed.

DIVING DEEPER

- After reviewing best practices and identifying risk factors for orthopedic surgical site infections, the project team brainstormed to come up with effective precautions to take before, during and after every hip- and knee-replacement surgery. No idea was too small to be considered.
- The bundle includes pre-op steps such as bathing with antiseptic soap and obtaining a nasal swab to test for *Staphylococcus aureus* as well as a number of measures to maintain a sterile operating room environment during surgery.
- The no-stone-unturned investigation of potential risks included posting someone at the operating room door to count how many times it was opened during surgery. This led to a step in the bundle requiring that operating room traffic be limited to essential staff members only.
- Observation in the operating room led to another safety measure: requiring surgeons to stop and change their gloves immediately before placement of implants.
- The investigation of risks was so thorough that the team placed petri dishes around the operating room to check for microorganisms in the atmosphere — which, it turned out, was not a problem.

CASE STUDY:
**REDUCING
READMISSIONS**

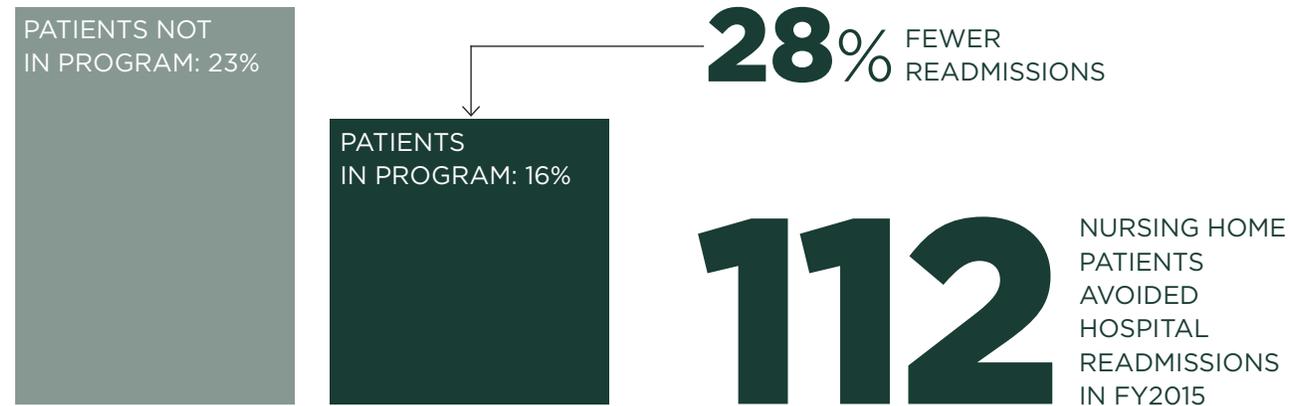
Better Transitions, Better Outcomes

Nurse practitioners from Cedars-Sinai do regular rounds at skilled nursing facilities, providing an extra layer of clinical support after vulnerable patients are discharged from the hospital and helping to reduce the risk of readmissions.



READMISSION RATES DROPPED WITH INVOLVEMENT FROM NURSE PRACTITIONERS

30-DAY READMISSION RATES FOR PATIENTS DISCHARGED TO SKILLED NURSING FACILITIES FY2015



THE ENHANCED
CARE PROGRAM
PARTNERS WITH

8

LOCAL SKILLED
NURSING FACILITIES

AND

200

PHYSICIANS

THE PROGRAM
ENROLLS AN
AVERAGE OF

150

PATIENTS EACH
MONTH

THE PROGRAM'S
NURSE EDUCATOR
HAS TRAINED
MORE THAN

130

SKILLED NURSING
FACILITY NURSES

“Safe care transitions are crucial to reducing readmissions. With nurse practitioners closely monitoring patients in skilled nursing facilities, we have illuminated a stage of care that used to be a black hole in healthcare.”

— **GARY GUTKIN, MD**
Medical Director, Enhanced Care Program
Associate Medical Director, Inpatient Specialty Program

Project Team

- MEDICAL DIRECTOR
- NURSE PRACTITIONERS
- HOSPITALISTS
- COMMUNITY PHYSICIANS
- NURSE EDUCATOR
- SOCIAL WORKERS
- SKILLED NURSING FACILITY STAFF
- PHARMACISTS AND PHARMACY TECHNICIANS
- ADMINISTRATIVE SUPPORT STAFF
- DATA ANALYSTS
- PERFORMANCE IMPROVEMENT FACILITATORS

THE PROBLEM

- According to the Centers for Medicare & Medicaid Services, approximately 30 percent of Medicare discharges from acute care hospitals nationwide are sent to skilled nursing facilities. An average of 25 percent are readmitted to the hospital within 30 days.

THE BIG IDEA

- Reduce hospital readmissions by having nurse practitioners perform regular rounds at the skilled nursing facilities. Through the Enhanced Care Program, these nurses serve as liaisons between the facility, physicians and family members. They focus on enhancing coordination of care and preventing medical complications entirely or addressing them early.
- *Extra point:* Pharmacists and pharmacy technicians perform medication reconciliation for transitions in care between the hospital and facility. If they identify variations in medication lists, the nurse practitioner resolves any discrepancies with the patient's physician.

SUSTAINING PROGRESS

- The Cedars-Sinai team discusses quality issues with the facilities, reviews hospital readmissions to see what they can learn from the case and participates in interdisciplinary team rounds at each facility.
- Partner facilities are collaborating with the team to improve quality of care through multiple initiatives. These include implementing annual flu vaccination campaigns, establishing antimicrobial stewardship programs, improving communication during handoffs and coordinating outpatient blood transfusions in Cedars-Sinai's Procedure Center.

- A nurse educator provides extensive training on such topics as detecting changes in condition, fall prevention, symptom management, cardiovascular assessment, pain management, advance care planning and stress management.

DIVING DEEPER

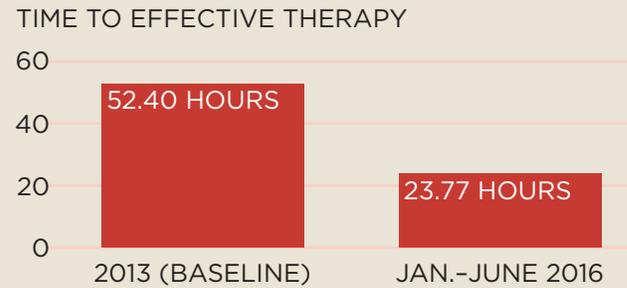
- This program, which has drawn national attention through its innovative model of care, accepts referrals from any Cedars-Sinai physician.
- Nurse practitioners visit patients in nursing homes within 24 hours after discharge from the hospital. They also see the patients on rounds one or two times a week, are on-site daily and are on call 24/7.
- The nurse practitioners record notes from their patient visits in Cedars-Sinai's integrated electronic health record system, CS-Link™, so that up-to-date information is always available to the entire care team.
- The nurse practitioners make referrals as needed to Cedars-Sinai's outpatient Supportive Care Medicine team to assist with goals-of-care discussions, perform advance care planning and provide assistance with complex symptom management. They also aim to ensure that every patient has an advance healthcare directive or physician orders for life-sustaining treatment form in the electronic health record.

CASE STUDY:
**ANTIMICROBIAL
STEWARDSHIP**

Timing Is Everything

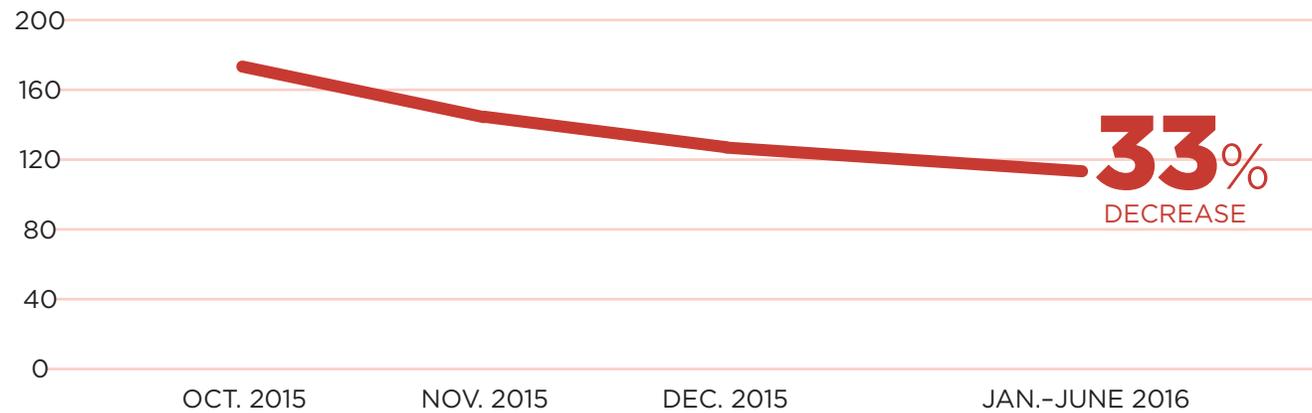
By prompting physicians to review antibiotic prescriptions after three days and providing faster test results, Cedars-Sinai is shortening the duration of therapy and reducing the risk of side effects, *Clostridium difficile* infections and drug resistance.

RAPID DIAGNOSTIC TESTING ENABLES PHYSICIANS TO REEVALUATE ANTIBIOTIC PRESCRIPTIONS SOONER.



DURATION OF ANTIBIOTIC USE DECLINED WITH TIMELIER REVIEW OF PRESCRIPTIONS

DAYS OF VANCOMYCIN THERAPY PER 1,000 PATIENT DAYS



72-HOUR ELECTRONIC CLINICAL DECISION SUPPORT ALERT PROMPTED PHYSICIANS TO REASSESS ANTIBIOTIC THERAPY.

DEC. 2015-JAN. 2016

DURATION OF ANTIBIOTIC THERAPY WAS DISCONTINUED OR NARROWED FOR

71%
OF ELIGIBLE PATIENTS

287
ANTIBIOTIC ORDERS MET 72-HOUR CRITERIA

46%
OF ANTIBIOTICS DISCONTINUED PRIOR TO FIVE DAYS

“We have made extraordinary advances toward safer, more effective use of antibiotics. Our multidisciplinary team effort succeeded in closely monitoring prescriptions and encouraging physicians to reevaluate medications as they receive test results at a faster pace.”

— **REKHA MURTHY, MD**
Vice President for Medical Affairs and Associate Chief Medical Officer

Project Team

- INFECTIOUS DISEASES PHYSICIANS
- ANTIMICROBIAL STEWARDSHIP AND STAFF PHARMACISTS
- PHYSICIANS/HOSPITALISTS
- EPIDEMIOLOGISTS
- MICROBIOLOGISTS
- PATHOLOGY AND LABORATORY MEDICINE STAFF
- NURSES
- SOCIAL WORKERS
- OFFICE OF LICENSURE, ACCREDITATION AND REGULATION STAFF
- PERFORMANCE IMPROVEMENT FACILITATORS

THE PROBLEM

- Inappropriate use of antibiotics and other antimicrobials not only puts patients at risk of serious adverse events but also contributes to a growing public health problem worldwide: antibiotic resistance.
- The Centers for Disease Control and Prevention (CDC) estimates that 2 million people acquire drug-resistant infections each year in the U.S. and 23,000 of them die. The CDC also estimates that 20 to 50 percent of the antibiotics prescribed in U.S. hospitals are unnecessary or inappropriate.

THE BIG IDEA

- Provide electronic decision support for physicians — including an alert at 72 hours prompting them to review antibiotic prescriptions — and tools such as rapid diagnostic testing techniques in the laboratory to ensure that patients are on the right drug, at the right time, at the right dose, for the right duration.
- *Extra point:* Embed infectious disease pharmacists and physicians in healthcare team rounds at the bedside and conduct daily multidisciplinary team evaluations to help ensure appropriate use of antibiotics.

SUSTAINING PROGRESS

- The “Antibiotic Timeout” has been automated with clinical decision support alerts on CS-Link. These alerts, which cover a growing number of antibiotics, remind physicians to reassess prescriptions for any patient on antibiotics for three or more days. Physicians are prompted to document their reasons if they decide to continue antibiotic therapy.

- Pharmacists closely monitor use of antimicrobials and identify opportunities to ensure optimal selection, dose, duration and route of antimicrobial therapy.
- Next steps include designing and implementing tools for improving appropriateness of urine test orders and antibiotic prescriptions for urinary tract infections.
- The Antimicrobial Stewardship Program initiatives are integrated into the medical staff performance improvement process.

DIVING DEEPER

- Collaboration between lab technicians, pharmacists, physicians and epidemiologists leads to faster test results and clinical decisions — and early warnings about antibiotic resistance. This results in safer antibiotic use and better outcomes for patients.
- Cedars-Sinai has become a national model by reaching out to community partners — such as the network of skilled nursing facilities supported through the Enhanced Care Program (see page 10) — to help them establish antimicrobial stewardship programs.
- The Antimicrobial Stewardship Program builds on highly successful, ongoing Cedars-Sinai infection-prevention initiatives. These initiatives aim to eliminate hospital-acquired infections by applying best practices for all patients to prevent transmission of organisms. For example, Cedars-Sinai reduces risk through effective hand hygiene and also focuses on steps to prevent infection from devices and surgery.

OVERALL MEASURES

TOP RESULTS 8 YEARS IN A ROW

Cedars-Sinai is one of only four hospitals nationwide that, for eight consecutive years, has achieved a 30-day risk-adjusted mortality rate for Medicare patients better than the national average for the care of patients with heart attack, heart failure or pneumonia.*

Heart attack:

11.1%

BETTER THAN NATIONAL AVERAGE OF 14.1%

Heart failure:

7.3%

BETTER THAN NATIONAL AVERAGE OF 12.1%

Pneumonia:

12.6%

BETTER THAN NATIONAL AVERAGE OF 16.3%

* SOURCE: CMS HOSPITAL COMPARE (REPORTING PERIOD: JULY 1, 2012-JUNE 30, 2015)

Quality of Care

Heart attack:

96% of percutaneous coronary intervention procedures occurred within 90 minutes of a patient's arrival at the hospital.

CALIFORNIA AVERAGE: 95%
NATIONAL AVERAGE: N/A

Heart failure:

100% of patients received a severity check to determine how well their hearts were pumping.

CALIFORNIA AVERAGE: 98%
NATIONAL AVERAGE: 97%

Pneumonia:

98% of patients with pneumonia were given the most appropriate initial antibiotic.

CALIFORNIA AVERAGE: 97%
NATIONAL AVERAGE: 95%

Timely stroke care:

100% of patients admitted with an ischemic stroke arrived in the emergency department within two hours of the onset of their symptoms and received tPA treatment to improve blood flow to the brain within three hours after the onset of their symptoms.

CALIFORNIA AVERAGE: 89%
NATIONAL AVERAGE: 84%

100% of patients

admitted with an ischemic stroke received antithrombotic therapy within two days of arriving at the hospital.

CALIFORNIA AND NATIONAL AVERAGE: 96%

99% of patients admitted with an ischemic stroke or hemorrhagic stroke received treatment to prevent blood clots the day of or day after arrival at the hospital.

CALIFORNIA AND NATIONAL AVERAGE: 98%

SOURCE: CMS HOSPITAL COMPARE
JULY 1, 2014-JUNE 30, 2015

Cedars-Sinai is one of only four hospitals nationwide that has achieved a 30-day mortality rate better than the national average for the care of patients with heart attack, heart failure or pneumonia for eight consecutive years.

Patient Satisfaction

Cedars-Sinai Health System participates in the national Clinician & Group (CG) and Hospital surveys conducted by Consumer Assessment of Healthcare Providers and Systems (CAHPS) to measure the patient experience.

WILLINGNESS TO RECOMMEND CEDARS-SINAI MEDICAL CENTER

80% of patients who received care at Cedars-Sinai answered "definitely yes" when asked if they would recommend Cedars-Sinai to friends and family (SEPT. 2015).
NATIONAL RESEARCH CORP. AVERAGE: 76%

OVERALL INPATIENT SATISFACTION

83.7% of patients rated Cedars-Sinai a 9 or 10 on a 10-point scale, with 10 being the "best hospital possible" (SEPT. 2015).
NATIONAL RESEARCH CORP. AVERAGE: 72%

HOSPITAL OUTPATIENT PROVIDERS

94.3% of patients rated Cedars-Sinai a 9 or 10 on a 10-point scale, with 10 being the "best hospital possible" (OCT. 1, 2014-SEPT. 30, 2015).
NATIONAL RESEARCH CORP. AVERAGE: 86%

MEDICAL NETWORK PATIENT SATISFACTION

77% of patients rated their Cedars-Sinai provider a 9 or 10 on a 10-point scale, with 10 being the "best provider possible" (FY2016, n = 7,138). 91.1% of patients said their provider always showed respect for what they had to say. 88.9% said that their provider always listened carefully to them. 88.8% of patients said that nurses treated them with courtesy and respect.

SOURCE: CEDARS-SINAI MEDICAL GROUP CG-CAHPS SURVEY 2016

NATIONAL RESEARCH CORP., A CONSUMER AND HEALTHCARE RESEARCH FIRM, DEVELOPS THE CAHPS SURVEY, WHICH PROVIDES THE PUBLIC WITH INFORMATION ON INPATIENT AND OUTPATIENT CARE FROM THE PATIENT'S PERSPECTIVE.

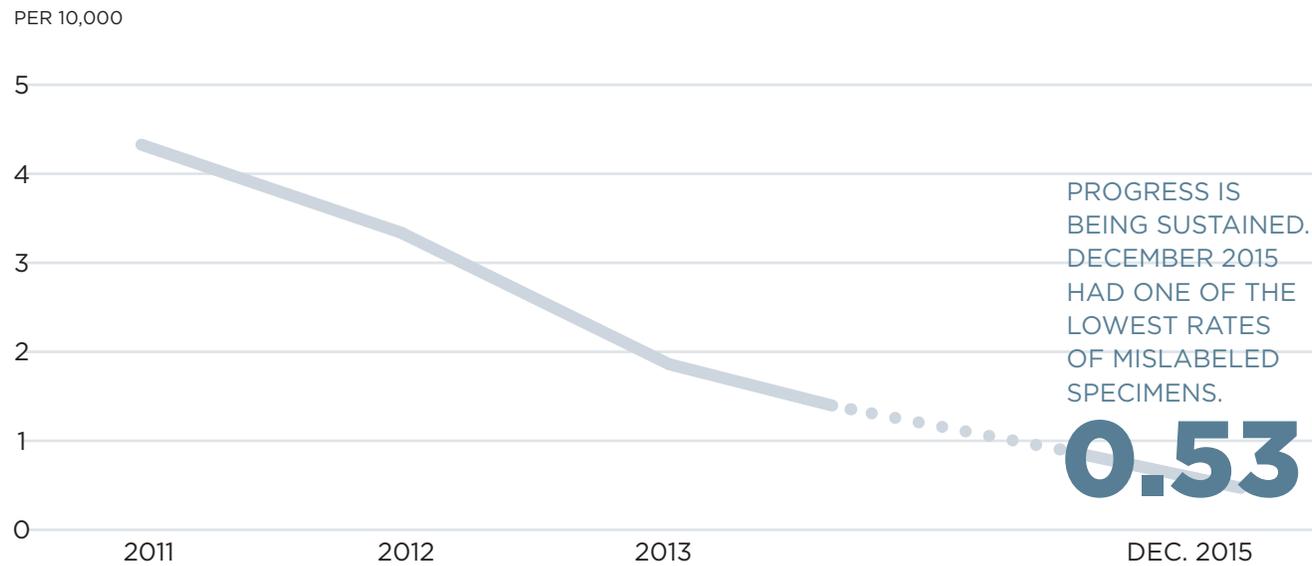
CASE STUDY:
**MISLABELED
LAB SPECIMENS**

Six Sigma at the Bedside

By bringing together the science of performance improvement with the bedside experience of nurses, Cedars-Sinai aimed to reduce the number of mislabeled laboratory specimens. The team used Six Sigma strategy and nurses' insights to analyze human errors and make system changes to get as close to "zero defects" as possible.



SIGNIFICANT, SUSTAINED REDUCTION IN MISLABELED LAB SPECIMENS



900,000

LAB SPECIMENS COLLECTED PER YEAR

Getting close to Six Sigma in a healthcare environment focused on improving human processes is remarkable because this methodology is primarily used for large-scale manufacturing processes to reduce the rate of defects per million to a level of near perfection.

“We used different kinds of knowledge — borrowing Six Sigma from industry and learning from what nurses were seeing at the bedside — to develop multiple interventions in our specimen-labeling process. It was a winning combination.”

— **MARY CIRRICIONE, RN, MBA**
Director, Nursing, Women's and Children's Services
and **EDWARD G. SEFERIAN, MD**
Chief Patient Safety Officer

Project Team

- NURSES
- PATHOLOGY AND LABORATORY MEDICINE STAFF
- BLOOD DONOR SERVICES STAFF
- ENTERPRISE INFORMATION SERVICES TECHNICIANS
- PHYSICIANS
- OFFICE OF LICENSURE, ACCREDITATION AND REGULATION STAFF
- PATIENT SAFETY EXPERTS
- PERFORMANCE IMPROVEMENT FACILITATORS

A mislabeled specimen is defined as one with an incorrect patient name or medical record number or a mismatch between the name on the label and the name on the lab test order. Specimens with no labels also are counted. In addition, if a blood type does not match the patient's historical type on record at Cedars-Sinai, it is considered mislabeled.

THE PROBLEM

- Inaccurate lab specimen labeling can result in misdiagnoses, delayed treatment and unnecessary procedures. It also can affect the safety of blood transfusions.
- Human error in the multistep specimen-labeling process is a significant factor in mislabeling events.

THE BIG IDEA

- Combine a Six Sigma approach with nursing expertise to identify human factors that lead to mislabeled lab specimens. Tailor solutions to support workflows in specific medical units.
- *Extra point:* The techniques that increased patient safety at the medical center are being shared with Cedars-Sinai affiliates in the community — and with hospitals nationwide through scientific publications and presentations at national quality meetings.

SUSTAINING PROGRESS

- Accuracy in lab specimen labeling is closely monitored, and data transparency helps create a culture of heightened awareness of the potential for error. A weekly quality and safety report for hospital leaders and managers includes the number of mislabeled lab specimens.
- When a mislabeled lab or blood bank specimen incident occurs, root cause analysis is done promptly to identify system issues and solutions.
- Mislabeled specimens can be detected early through a process in the lab that flags a patient's test results when they differ significantly from previous findings or aren't consistent with the patient's current medical condition.

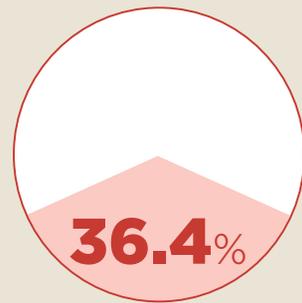
DIVING DEEPER

- Achieving Six Sigma results in a healthcare environment that depends on human performance is a remarkable accomplishment because this methodology, created by Motorola, is primarily used for large-scale manufacturing to reduce the rate of defects to near perfection.
- The project team found that a significant number of labeling errors occurred during testing at the patient's bedside. Manual entry of patient IDs for lab test labels was eliminated; two barcodes, one for medications and one for lab tests, now are printed on patient ID bands. The staff now always scans the barcode.
- In Labor and Delivery, wireless label printers were installed throughout the unit — one between every two rooms — rather than having all specimen labels printed at the nurse's station, which created the potential for mix-ups.
- A solution implemented in medical and surgical units requires that two caregivers verify patient identifiers during the specimen-labeling process.
- In the emergency department and intensive care units, nurses highlight the patient name and medical record number on the specimen label when it is removed from the printer — an extra step that prompts them to ensure they have the right label.
- One of Cedars-Sinai's affiliates, the Endoscopy Center of Santa Monica, consulted with the performance improvement team on this project and was able to resolve system issues and significantly reduce mislabeling incidents using some of the techniques that proved effective at the medical center.

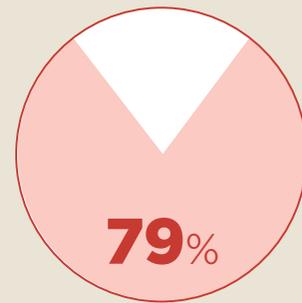
CASE STUDY:
**MEDICATION
SAFETY NET**

Crucial Follow-up From Pharmacists on the Front Line

Patients leaving the hospital with new prescriptions may not fully understand how to take their medications, and the risk of drug-related problems rises during such transitions in care. With an innovative medication adherence and literacy assessment and follow-up by pharmacists, Cedars-Sinai has greatly enhanced patient safety after discharge.



OF PATIENTS WERE FOUND TO BE AT RISK FOR A MEDICATION-RELATED READMISSION.



OF DRUG-RELATED PROBLEMS IDENTIFIED AND RESOLVED WERE SIGNIFICANT OR LIFE-THREATENING.

MEDICATION SAFETY REDUCES HOSPITAL READMISSIONS



HIGH-RISK PATIENTS WITH A LOW MEDICATION LITERACY SCORE

THE READMISSION RATE FOR A SELECT GROUP OF HIGH-RISK PATIENTS WHO RECEIVED POST-DISCHARGE CALLS FROM PHARMACISTS DROPPED BY

21%

IN AN AVERAGE MONTH:

HOSPITAL PHARMACISTS RECONCILE

942

MEDICATION HISTORIES

AND MAKE POST-DISCHARGE FOLLOW-UP CALLS TO

100

HIGH-RISK PATIENTS

IN AN AVERAGE MONTH:

THROUGH CEDARS-SINAI'S ENHANCED CARE PROGRAM, PHARMACISTS COMPLETE DISCHARGE RECONCILIATION

FOR

144

PATIENTS DISCHARGED TO SKILLED NURSING FACILITIES

“Through post-discharge calls to high-risk patients by pharmacists and close partnerships with physicians, we are ensuring the safest, best use of today’s complex medications. We have prevented readmissions and significantly reduced medication-related complications that can be life-threatening.”

— **RITA SHANE, PharmD**
Chief Pharmacy Officer

Project Team

- PHARMACISTS AND PHARMACY TECHNICIANS
- PHYSICIANS/HOSPITALISTS
- NURSES
- CASE MANAGERS
- FOUNDATION PHARMACISTS
- HEALTH SERVICES RESEARCHERS
- PERFORMANCE IMPROVEMENT FACILITATORS

Cedars-Sinai developed the Medication Adherence and Literacy (MedAL) algorithm based on an existing medication adherence scale created by UCLA Community Health Sciences Professor Donald Morisky.

THE PROBLEM

- Research shows that nearly 20 percent of patients experience an adverse event within three weeks of being discharged from the hospital, with drug-related problems being the most common post-discharge complication.
- Patients with low medication literacy and adherence, and those on complex medication regimens, are particularly vulnerable.

THE BIG IDEA

- To help prevent readmissions and potentially life-threatening medication errors, create a novel method of assessing the medication literacy of vulnerable patients – the Medication Adherence and Literacy (MedAL) algorithm – and follow up post-discharge with those at highest risk to make sure they are taking the right medication at the right dose at the right time.
- *Extra point:* This project demonstrates how Cedars-Sinai is bringing pharmacists to the frontlines of healthcare to improve outcomes and reduce readmissions.

SUSTAINING PROGRESS

- This project, which involved high-risk patients of four hospitalist groups in its pilot phase, has been so effective that it is being expanded to reach high-risk patients throughout the medical center, including frail older adults. Through Cedars-Sinai's Enhanced Care Program (see page 10), pharmacists also follow up with patients who are discharged to skilled nursing facilities.

- Cedars-Sinai pharmacists review medication lists for high-risk patients and call them within 72 hours to identify and resolve any errors or discrepancies in medication orders or use. Results from this follow-up show a trend toward lower readmissions.
- Pharmacists educate patients during follow-up calls to increase their medication literacy. They also perform comprehensive medication reconciliation at admission and post-discharge to increase the accuracy of medication lists.
- Expansion of this project includes an extensive post-discharge initiative that goes beyond high-risk patients.

DIVING DEEPER

- Pharmacists based in inpatient medical units conduct a MedAL assessment of high-risk patients to determine how well they understand their medications. "High risk" is defined as those who take more than 10 medications, are on an anticoagulant or have congestive heart failure – and have a low MedAL score.
- Pharmacists work closely with physicians, fine-tuning treatment plans and preventing medication-related problems.
- Problems identified during post-discharge calls include: not filling a prescription because insurance wouldn't cover it, not having a prescription for a medication that is needed, not taking a medication at the right time or frequency, and deciding to start or stop taking a drug without consulting a physician.

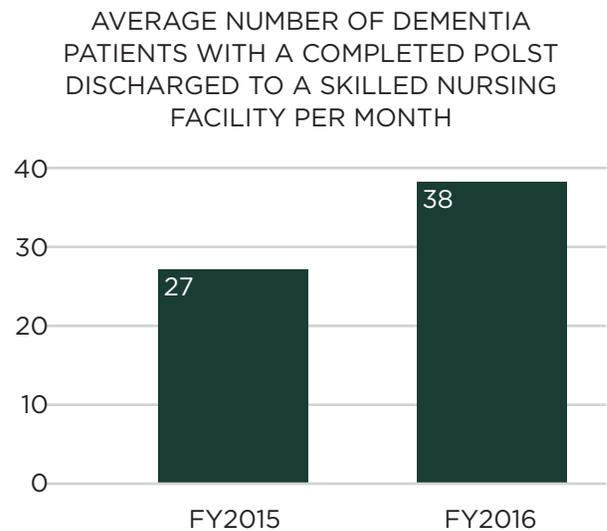
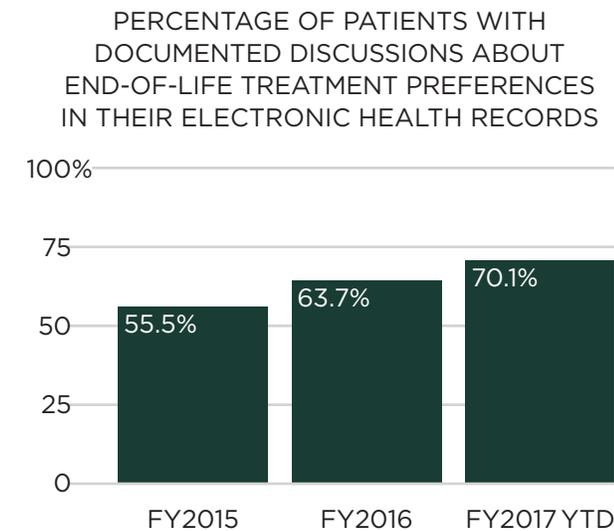
Culture Shift

A Cedars-Sinai quality initiative is sparking a system-wide culture change in end-of-life treatment to ensure that patients' wishes are understood and honored through improved communication and increased shared decisionmaking on end-of-life issues.

MORE PATIENTS WITH SERIOUS OR ADVANCED CANCERS HAVE ADVANCE CARE PLANNING DOCUMENTS IN THEIR ELECTRONIC HEALTH RECORDS.



PHYSICIAN ORDERS FOR LIFE-SUSTAINING TREATMENT (POLST) COMPLETION RATES ARE RISING.



RESIDENTS AND FELLOWS TRAINED IN DISCUSSING GOALS AND VALUES WITH PATIENTS/FAMILIES FY2016

THIS TRAINING IS ESPECIALLY PERTINENT TO END-OF-LIFE SITUATIONS.

34/34
FIRST-YEAR
GENERAL INTERNAL
MEDICINE RESIDENTS

43/43
THIRD-YEAR
GENERAL INTERNAL
MEDICINE RESIDENTS

26/30
CRITICAL CARE/
SURGICAL ONCOLOGY
FELLOWS

“There’s no template for a performance improvement project focusing on end-of-life care. It’s all about changing the culture to ensure the care we provide is consistent with patients’ goals and values.”

— EDWARD G. SEFERIAN, MD
Chief Patient Safety Officer

Project Team

- PHYSICIANS
- NURSES
- PATIENTS AND THEIR FAMILIES
- PHARMACISTS
- CLINICAL ETHICISTS
- SOCIAL WORKERS
- CASE MANAGERS
- SUPPORTIVE CARE MEDICINE TEAM
- CHAPLAINS
- PERFORMANCE IMPROVEMENT FACILITATORS

The medical staff agreed on the following definition of harm at the end of life to help guide their treatment decisions:

Initiating/continuing an intervention(s) (procedure, medication, therapy, consultation, etc.) that offer(s) no reasonable medical benefit and/or will not fulfill patient goals and values (e.g., health, time, comfort, spiritual needs, psychosocial needs) and causes significant suffering and/or pain (to patient)

THE PROBLEM

- Patients with progressive, life-limiting conditions sometimes receive aggressive treatments near the end of life that offer little or no medical benefit and could potentially cause harm.
- Lack of advance healthcare planning and communication may result in end-of-life care that is not aligned with patients' goals and values.

THE BIG IDEA

- Launch a system-wide, multifaceted initiative to change the culture and practice around end-of-life care.
- *Extra point:* With a comprehensive approach that is a model for other hospitals, Cedars-Sinai was invited to present its initiative to improve end-of-life care at the 2015 University HealthSystem Consortium Annual Conference. Cedars-Sinai also partners with other Los Angeles health organizations and has been invited to participate in the national policy dialogue on this issue.

SUSTAINING PROGRESS

- Next steps include developing ways to measure whether the end-of-life care provided is consistent with patients' goals and values.
- Data on various measures is reported regularly to the Quality Council and other internal oversight committees to help determine how to sustain and improve results.
- The push for advance care planning is expanding, with a targeted approach focusing on patients in the advanced stages of serious, progressive illnesses — including certain cancers, chronic obstructive pulmonary disease and heart failure.

- Advance care planning has been added to performance dashboard measurements for Medical Group primary care physicians.

DIVING DEEPER

- Steps to improve end-of-life care include appropriate use of feeding tubes in patients with advanced dementia, physician orders for life-sustaining treatment (POLST) forms for advanced dementia patients discharged to a skilled nursing facility, and early supportive care medicine (palliative care) consults for patients with advanced lung cancer and other high-mortality-rate cancers, including pancreatic, brain and ovarian.
- Another major focus is reducing ineffective and potentially harmful use of chemotherapy in the last two weeks of life. Patients are assigned an industry-recognized score based on their functional status. A score indicating a low performance status triggers a pharmacy and physician review before therapy begins.
- The Cancer Quality Committee reviews cancer deaths in which chemotherapy was given in the last two weeks of life. A chemotherapy stewardship program and physician education help encourage appropriate use of chemotherapy at the end of life.
- A tab in the electronic medical record shows physicians whether a completed advance directive or POLST form is saved in the system, and an electronic alert reminds physicians who submit do-not-attempt-resuscitation orders to document their discussion with patients.
- Cedars-Sinai's expanded, multidisciplinary Supportive Care Medicine program is receiving more referrals, leading to earlier palliative care consults that improve symptoms, quality of life and advance care planning.

Quality Projects in Progress

Cedars-Sinai's ongoing efforts to improve quality and safety include:

Reducing complications associated with **percutaneous coronary intervention (PCI)** and improving the appropriateness of PCI procedures

Reducing potentially inappropriate intensive care unit days and variation in **length of stay in the ICU** for specific conditions, and improving early mobility among ICU patients

Developing review and accountability processes to oversee appropriate utilization and **efficient use of clinical resources**

Preventing **bowel surgical site infections** using a “bundle” of best practices

Expanding implementation of automated, standardized procedures for **administering IV drugs** to make medication infusions safer for patients. Cedars-Sinai was one of the first hospitals in the nation to integrate smart IV pumps with the electronic health record to reduce the potential for manual programming errors at the bedside — and implemented this automated system in 2014 on a larger scale than other hospitals.

Reducing **avoidable C-sections and early deliveries** (under 39 weeks)

Deploying interventions to reduce **hospital readmissions** for heart failure patients

With a comprehensive approach to performance improvement, Cedars-Sinai is raising the bar for quality and safety in patient care.

Performance Improvement Toolbox

Cedars-Sinai makes strategic use of a wide range of performance improvement techniques to continuously improve quality and safety:

- **Data analytics:** the science of using statistical and research methods to understand patterns and draw insights from the data
- **Failure modes and effects analysis:** a systematic, proactive method for evaluating a process to identify where and how it might fail and to assess the relative impact of various failures
- **Human-centered design:** a collection of mindsets, methods and tools used to design solutions based on a profound understanding of human need. The steps include empathize, define, ideate, prototype and test.
- **Lean:** a process-management philosophy, derived mostly from the Toyota Production System, renowned for its focus on reduction of “seven wastes” in order to improve overall customer value
- **Plan-Do-Study-Act:** a systematic series of steps for gaining valuable knowledge for the continual improvement of a product or process
- **Project-based learning:** training in performance improvement methods provided to any staff member involved directly or indirectly in the delivery of care as quality projects are implemented
- **Root cause analysis:** a process for identifying root causes of problems or events and an approach for responding to them
- **Six Sigma:** a disciplined methodology that originated in the manufacturing industry to improve processes by reducing variation and eliminating defects to the level of 3.4 defects per million
- **5S methodology:** a process and method for creating and maintaining an organized, safe, clean and high-performance workplace

ACCOLADES

• *National Research Corp. Survey*

For the 19th year in a row, Cedars-Sinai received the Consumer Choice Award from the National Research Corp. for providing the highest-quality medical care in Los Angeles County, based on a survey of area households.

The National Research Corp. conducts an annual, independent hospital survey, and Cedars-Sinai has ranked No. 1 in best overall quality of healthcare and been awarded the organization's prestigious Consumer Choice Award every year since 1996, when the rankings began. The surveys are considered Southern California's gold standard in healthcare information.

In 2014–15, Cedars-Sinai was the only medical center in the Los Angeles area to win Consumer Choice Awards for Best Overall Healthcare Quality, Best Image, Best Doctors and Best Nurses.

• *Magnet Designation in Nursing*

In 2013, Cedars-Sinai received its fourth-consecutive four-year Magnet designation for nursing excellence from the American Nurses Credentialing Center, achieving the longest-running Magnet designation in California.

As the first Southern California hospital to earn the Magnet honor, in 2000, Cedars-Sinai also earned the distinction of becoming one of only nine hospitals worldwide to receive this designation four times. The credentialing center found that Cedars-Sinai's nursing services "represent the highest standards in the nation and internationally."

• *Quality Leadership Award*

Cedars-Sinai received a 2016 Bernard A. Birnbaum, MD, Quality Leadership Award by ranking eighth out of more than 100 academic medical centers participating in a study by Vizient Inc., a healthcare performance improvement company.

• *Healthcare Equality Index*

In 2015, the Human Rights Campaign named Cedars-Sinai a "Leader in LGBT Healthcare Equality." The organization's Healthcare Equality Index is a national benchmarking tool that evaluates healthcare facilities' policies and practices related to the equity and inclusion of their LGBT patients, visitors and employees.

• *Top-Rated Physician Group in Los Angeles*

Cedars-Sinai Medical Group was named a Quality Performer in 2014 by the Integrated Healthcare Association, a California leadership group of health plans, physician groups and health systems. It was one of seven medical groups in Southern California to receive the honor.

• *Elite Status Performance*

For the ninth year in a row, Cedars-Sinai Medical Group and Cedars-Sinai Health Associates were ranked by the California Association of Physician Groups among "elite status" physician groups. The recognition is based on the association's Standards of Excellence survey designed to reveal how well-equipped physician groups are to provide high-value patient care. The annual survey rated 86 medical groups that represent 11.1 million patients nationwide.

• *100 Great Hospitals*

Becker's Hospital Review, a healthcare industry publication, identified Cedars-Sinai as one of the 100 Great Hospitals in America in 2016.

• *U.S. News & World Report*

In *U.S. News & World Report's* Best Hospitals 2015–16, in which nearly 5,000 hospitals were surveyed in 16 specialties, Cedars-Sinai ranked nationally in 12.

In rankings by region, Cedars-Sinai ranked No. 1 in the Los Angeles metro area and No. 2 in California for 2015–16.

Training and Education

Through ongoing training programs, Cedars-Sinai prepares its employees and students to use a variety of performance improvement tools:

- Six Sigma and Lean training through the Performance Improvement Academy's White Belt and Yellow Belt courses. Yellow Belt students receive continuing mentorship.
- Design thinking and human-centered design crash courses and boot camps
- Training and coaching for physicians in the MD Leadership Development Program
- Training in Tableau and SigmaXL
- Case studies presented in Performance Improvement Living Series MD/RN Innovation Challenge

Sharing Our Work

PUBLICATIONS:

- *American Journal of Medical Quality* 2013
- *BMJ Quality & Safety* 2014
- *American Journal of Medical Quality* 2014
- *OR Manager* 2015

PRESENTATIONS:

- 2010 UHC Conference, San Diego CA
- 2010 World Healthcare Congress, Boston MA
- 2013 UHC Conference, Atlanta GA
- 2014 California Readmissions Summit, Newport Beach CA
- 2014 UHC Conference, Las Vegas NV
- 2015 AORN Conference, Denver CO
- 2015 OR Managers Conference, Nashville TN
- 2015 UHC Conference, Orlando FL
- 2015 Epic User Group Meeting, Verona WI
- 2015 CAHQ Annual Meeting, Los Angeles CA
- 2015 Physicians Advisors Congress, Orlando FL
- 2015 California Readmissions Summit, Anaheim CA
- 2016 California Association for Healthcare Quality Conference, Los Angeles CA
- 2016 Epic User Group Meeting, Madison WI
- 2016 Innovation Learning Network Conference, Oakland CA
- 2016 National HxRefactored Conference, Boston MA



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