



## **Citrus Valley Health Partners**

*Keeping Patients Safe by Reducing the Incidence of Surgical Site Infections*

### **Background**

Citrus Valley Health Partners (CVHP) is a nonprofit comprehensive health care system based in Los Angeles County, California. CVHP serves nearly 1 million residents of the East San Gabriel Valley through the work of its four facilities: Inter-Community Hospital, in Covina, California; Queen of the Valley Hospital in West Covina, California; Foothill Presbyterian Hospital in Glendora, California; and Citrus Valley Hospice/Home Health in West Covina, California. CVHP has more than 3,200 employees and nearly 1,000 physicians.

### **Robust Process Improvement and Lean Six Sigma**

CVHP's mission is to "help people keep well in body, mind and spirit by providing quality health care services in a SAFE, compassionate environment." We aim to become a high-reliability health care system where no patients are harmed by making Robust Process Improvement (RPI®) and Lean Six Sigma part of our culture and how every employee works.

In January 2014, the journey to transform health care and create a culture of safety with RPI and Lean Six Sigma began at Citrus Valley Health Partners. Partnering with the Joint Commission Center for Transforming Healthcare, the entire executive team was the first group to be trained in Lean, Six Sigma and change management. As part of wave I, 21 Six Sigma green belts began training with the Joint Commission Center for Transforming Healthcare. Green belts were trained in the Define-Measure-Analyze-Improve-Control (DMAIC) approach to problem solving and process improvement. The DMAIC methodology provides a systematic approach to solving complex problems and guides teams to examine why processes fail to achieve desired results. DMAIC is a search for causes of quality and safety problems.

Wave I green belts worked on six Lean Six Sigma projects aimed at improving patient safety, clinical outcomes and patient experience. One of the initial six projects embarked upon reducing the incidence of surgical site infections.

### **Patient Safety Initiative**

Improve patient safety by reducing the incidence of surgical site infections (Class I/II, deep incisional/organ space) at Inter-Community Hospital.

### **Results**

The work of the surgical site infection reduction team resulted in a decrease of 12 SSIs in 2014 (55 percent reduction) and an additional decrease of 4 SSIs in 2015.

## Team Members

Kathy King-Trujillo, director of surgical services, ICH; Kevin Streeter, corporate director of surgical Services, QVH; William Choctaw, M.D., chief transformation officer; Donna Wern, corporate director, PI; Divina Borzillo, charge nurse, ICH; Joe Grimes, corporate director, materials management; Khan Hameed, M.D.; Brian Filadelfia, assistant director, PI; Tanya Johnson, OR charge nurse, ICH; Mai-Chi Hong, pharmacy. Other team members: Kari Kim, Lindy Osbrink, Stacy Nichols, Socorro Chavez, Sandra Rivas, Lori Cox.

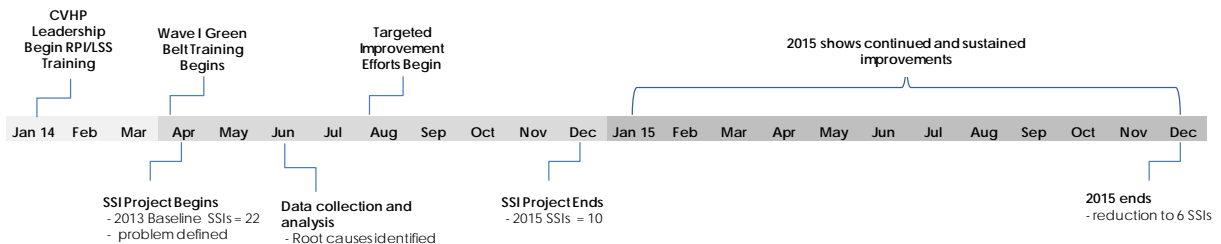


## SSI Green Belt Project and Results

Surgical site infections are hospital-acquired conditions that are preventable. Focusing on Citrus Valley Health Partner's goal of zero harm, the team looked at the causes of these infections and analyzed what processes could be targeted to prevent them. In addition to patient harm, there is a financial impact as regulatory agencies are denying reimbursement for hospital-acquired conditions. The cost of an SSI can have a significant financial impact on an organization.

Understanding the problem was the first step for the team (see Figure1). The problem statement was developed, and the team began to measure the current state and identify potential root causes. The team identified opportunities for improvement that would have the greatest impact by measuring data and performing an analysis.

Figure 1. SSI Green Belt Project Timeline



The team discovered that there were variations in specific practices that lead to potential vulnerabilities. These processes could be aligned under evidence-based medicine and best practices to produce consistency and promote accountability. One area was antibiotic dosing. Collaborating with pharmacy, the team developed surgical prophylaxis antimicrobial recommendations based on best practices, primarily in the area of appropriate dosing. Other targeted improvement solutions included operating room cleaning, use of supplies and improved workflow in the OR (see Table 1).

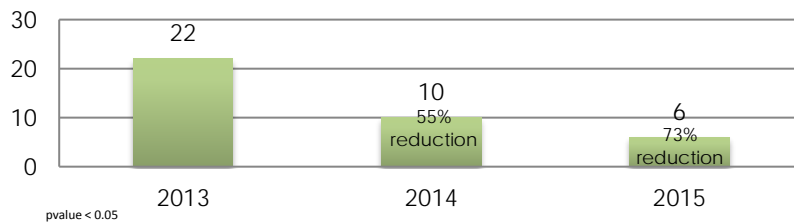
**Table 1. Targeted Improvement Solutions**

Root Cause	Targeted Solution	Improvement
Antibiotics best practices not in place	<ul style="list-style-type: none"> <li>Align antibiotic dosing based on body weight</li> <li>Reinforce antibiotic redosing for longer surgeries</li> <li>Review and education at Department of Anesthesia</li> <li>Ongoing compliance, education</li> </ul>	<ul style="list-style-type: none"> <li>Policies revised to reflect current guidelines</li> <li>Alterations in dosing practices</li> <li>Improvement in appropriate dosing/redosing rates</li> <li>Surveillance spread to all campuses</li> </ul>
Room turnover cleaning not consistent	<ul style="list-style-type: none"> <li>Consistent EVS Training</li> <li>Align AORN training with OR, EVS</li> <li>Terminal cleaning of patient's hospital bed while in surgery</li> <li>Ensure mobile equipment is cleaned appropriately</li> </ul>	<ul style="list-style-type: none"> <li>Observation in real time</li> <li>Implementation of AORN cleaning guidelines</li> <li>Focus on OR turnaround and terminal cleaning</li> <li>OR and EVS education</li> </ul>
Supplies and inventory	<ul style="list-style-type: none"> <li>Relocate supplies: masks in the operating room</li> <li>Wear masks before entering OR</li> <li>Relocate supplies: remove masks with loops, use masks with ties</li> </ul>	<ul style="list-style-type: none"> <li>Conduct trial of single-use products: turnover kits, single-use tourniquets, single-use straps</li> <li>Convert from reusable products</li> </ul>
Inefficient work flow	<ul style="list-style-type: none"> <li>Redirect OR traffic during a procedure</li> </ul>	<ul style="list-style-type: none"> <li>Improved OR workflow</li> <li>Main hallway door less clogged</li> </ul>

**Results**

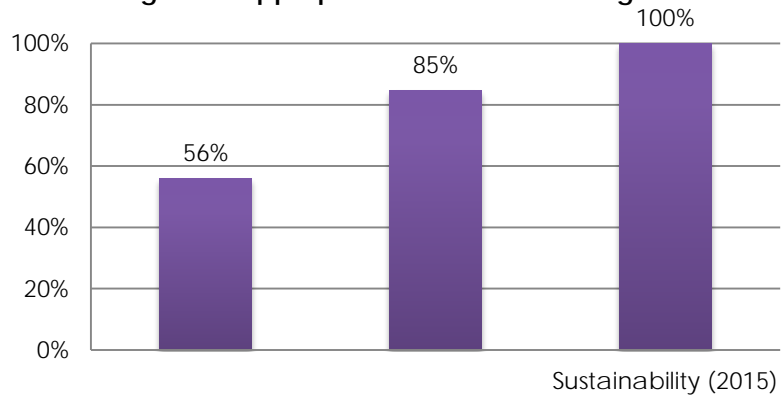
The work of the surgical site infection reduction team resulted in a statistically significant improvement. The decrease of 12 SSIs in 2014 demonstrated a 55 percent reduction. Since the project began, there has been an additional decrease of 4 SSIs in 2015, which represents a cumulative 73 percent reduction (see Figure 2).

**Figure 2. SSI Project Results: Inter-Community Hospital Surgical Site Infections**



In addition to reducing surgical site infections, improvements with both antibiotic dosing and redosing occurred (see Figure 3). At baseline, appropriate antibiotic dosing was at 56 percent. In 2015, the project has sustained 100 percent compliance.

Figure 3. Appropriate Antibiotic Dosing



### Keys to Success

The focus on high reliability and zero patient harm at Citrus Valley Health Partners was the driving force to success with this project. The team used Robust Process Improvement and Lean Six Sigma to approach the surgical site infection problem and target improvement solutions. The team worked together collaboratively, engaged key stakeholders of the process, used change management training and, ultimately, achieved results, improvements and sustainability.

Zero patient harm and patient safety continue to drive decision making with improvement initiatives and green belt training. Process excellence continues to grow and sustain at all levels of the organization (see Figure 4).

Figure 4. Process Excellence at CVHP

