

2018 Hospital Quality Institute C. Duane Dauner Quality Award

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ZERO Harm: Moving a Culture and Engaging the Community

Identified topical area(s) of focus in this application:

- Patient Safety
- Quality Improvement

¹ CVHP Community Health Needs Assessment, 2016

² Center for Disease Control (CDC), retrieved from: <https://www.cdc.gov/hai/surveillance/index.html>

Brief Statement by an executive in support of the application

Dear Members of the Hospital Quality Institute:

As President and Chief Executive Officer of Citrus Valley Health Partners (CVHP), it is my pleasure to share with you the efforts and ongoing commitment to protect those who entrust their lives to us every day. Building a culture of safety and ZERO harm requires empowerment of all of our people. I once heard that, when the question was posed to an environmental services staff member of what their job was, he answered, “My job is to save lives”. It was understood that every role supports patient safety and the prevention of harm.

At CVHP, our journey to high reliability requires engagement of all individuals to the collective efforts to “Do No Harm”. The Lean Six Sigma (LSS) and Change Methodologies were embedded into the culture of CVHP to support this foundation. A “Stop the Line” policy was developed to proactively support the practice of empowering employees, medical staff, residents, students, and volunteers to speak up in advocating for patient safety. This policy gives the responsibility and the authority to immediately intervene to protect the safety of a patient and to prevent harm from occurring.

As you will see, our process improvements have led us to a reduction in healthcare associated infections (HAIs) and pursue our vision of ZERO harm.

Thank you for allowing us to present our story.

Sincerely,

Robert H. Curry, MPH, FACHE, CSSGB
President and Chief Executive Officer
Citrus Valley Health Partners

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ZERO Harm: Moving a Culture and Engaging the Community

Citrus Valley Health Partners

Executive Summary

Citrus Valley Health Partners (CVHP) is committed to ZERO harm. In 2013, we embarked on a journey to become a high reliability organization. Health and well-being are precious gifts and there is a profound responsibility when one places this gift into your hands. CVHP honors that trust through building a culture of constant mindfulness of how and where systems are failing and a strong resilience to recover from failures by building processes that prevent recurrence.

In this journey for high reliability, CVHP embraced Lean Six Sigma and Change Management methodologies as a framework to build process improvements. CVHP has experienced the following improvements:

- 56% reduction in preventable harm HAIs, including:
 - 59% reduction in SSIs (Class I and II; Deep incisional/ Organ space)
 - 83% reduction in Central-line Associated Bloodstream Infections
 - 80% reduction in Ventilator-Associated Events
- 205 less inpatients developed a preventable harm HAI
- Surgical instrument tray error rate reduced from 3.8% to 1.9% (527 less tray defects/year)
- Hand-hygiene:
 - 45.5% improvement in Before Patient Contact
 - 47.9% improvement in After Patient Contact
- Statistically significant improvement in Sepsis:
 - Early sepsis identification improved by 80%
 - Bundle compliance shows a 5% higher survival rate (O/E 0.79, 0.89, 0.90)

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Background and relevance of the problem being addressed and effort undertaken

It has become essential for healthcare systems to find strategies to maximize stewardship and performance outcomes by engaging staff in organization-wide quality efforts. Success depends heavily upon how well an organization fosters an innovative culture that encourages staff at all levels to think critically and become directly involved in patient safety and quality improvements.

Citrus Valley Health Partners (CVHP) is a family of three hospitals and a hospice that serves one million residents in the East San Gabriel Valley. Nearly 3,500 staff members and 1,000 community-based physicians are guided by the mission to help people keep well in body, mind and spirit by providing quality healthcare services in a safe, compassionate environment. We mindfully added the word “safe” to our mission statement in 2012 to underscore our declaration of our commitment to seek ZERO harm. CVHP hospitals are safety-net facilities with an 82.3% Medicare/ MediCal payer mix. In the service area, 47.2% of the community lives twice below the federal poverty level as compared to the national average of 13.5%. In addition, 12% are unemployed and 28.2% have been diagnosed with a disability.¹

Healthcare-associated infections (HAIs) are among the most common complications of hospital care according to the Agency for Healthcare Research and Quality (AHRQ). HAIs are a major, yet preventable, threat to patient safety. The Center for Disease Control (CDC) has indicated that 1 in 25 hospital patients are diagnosed with at least one infection related to hospital care in the United States annually.² The cumulative effect of HAIs has resulted in an annual burden of billions of dollars in unnecessary costs, significant patient morbidity, and tens of thousands of lives lost.

In 2013, CVHP embarked on a journey to become a high reliability organization. In pursuing excellence, our focus was on improving processes. We integrated the Lean Six Sigma (LSS) and Change Management methodologies to provide a systematic approach to problem solving. Today, CVHP has experienced a cultural transformation. Resources have been dedicated to train leadership and staff throughout the organization and the community. These include hospital leaders, front line staff, board members, private practice physicians, and community partners. The implementation of these methodologies opened our eyes to the potential to proactively address various quality and patient safety issues.

Executive and senior leadership began regular rounding on patients and staff. A software tool, “My Rounding”, was acquired to track and trend safety and improvement opportunities throughout the organization. This information is regularly discussed at the Executive Team meetings.

A policy was developed entitled, “Stop the Line”, which serves to empower the healthcare team to proactively identify and say something when potential safety issues are found. Leadership supports the voice of the entire organization to speak up and advocate for patient safety.

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The CVHP multidisciplinary Infection Control (IC) team was created to embark on a journey to tackle the long-standing preventable harm problem. Despite our efforts, 112 patients total in our system in 2013 developed high-risk infections. In the journey for ZERO harm, this number was unacceptable. The IC team knew that work needed to be done internally with staff to reduce patient harm and externally to educate the community at large. The goal was to reduce HAIs 50% by the end of 2017. The strategy included reaching out to every department internally for education, consultation, and to mentor on evidence-based infection prevention practices. This resulted in the IC Department transforming from a surveillance and control strategy to a culture of prevention.

CVHP also outreached into the community via the Diabetes Outpatient Education Center, the Ortho Pre-op Clinic, conducting post-op surgical patient phone contact, and through Population Health to provide important information and education to empower our patients and their caregivers to prevent and eliminate harm.

Describe the effort, including the scope, process, strategies and tactics utilized, challenges encountered and how they were addressed.

High-risk infections represent a significant threat to patient health. Infected patients have higher morbidity and mortality rates as well as increased lengths of stay. In 2013, 112 infections were identified. Clearly, there were many opportunities for improvement.

Initially, a need was identified to change culture, practice, and processes within the system. The Infection Control Practitioners (ICPs) moved out from behind the desk to standardize daily rounding in the nursing units. The practice of daily monitoring for patients with medical devices to prevent infections became the common practice throughout the organization. By building connections with staff during rounding, a culture of multidisciplinary teamwork motivated people to continually improve their processes. To further cement the culture of continuous improvement, ICPs became Lean certified by leading projects that collaborated inter-departmentally. These face-to-face interactions moved the departmental strategy from infection control to infection prevention.

Lean Six Sigma (LSS) methodology was utilized for the prevention of SSIs and the identification of root causes. The first project began in 2014 and had a primary goal to reduce the SSI rate by 25%. The project focused on appropriate pre-op antibiotic dosing and re-dosing, as well as the cleaning process of the Operating Rooms (ORs). Barriers to success were studied, including physical, cultural, and financial. Targeted solutions included a need for pre and post-op patient education enhancement, standardization of various practices, and development of streamlined processes in OR. Policies were revised to reflect current guidelines/ best practices. “Just-in-time” education was conducted for Environmental Services (EVS) staff to promote compliance and accountability. Some challenges encountered related to being able to address corrective issues with transparency and a non-punitive mindset. This project achieved a 54% reduction in the SSI rate with a p-value of 0.036.

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In 2015, another strategy to improve patient safety was achieved by initiating a LSS Hand Hygiene project based on the World Health Organization (WHO) recommendations. The WHO focuses on the quality of hand hygiene that looks at proper technique, substance, and duration. Improvements included engaging staff with problem solving by conducting weekly meetings. A poster campaign was developed to spread awareness for staff, patients, and visitors. A training video was created and used during huddles. Patient education about hand hygiene was included in the patient welcome kit. Alcohol gel dispensers were changed throughout the organization to dispense the proper amount, ensuring appropriate technique and duration. The biggest challenge with this project was staff feeling safe to approach physicians about compliance. Hand hygiene compliance showed a 108% improvement with a p-value of 0.001.

Two LSS projects focusing on sepsis early identification and bundle compliance were initiated. The goal of these projects was to reduce Sepsis mortality and overall length of stay. One project identified issues with door to identification with a baseline of 61 minutes. The second project identified problems with omissions, order, and timing of bundle elements. Early identification has improved to 12 minutes and bundle compliance is now approximately 50%. These projects achieved a p-value of 0.000 and 0.017 respectively.

Another LSS project focused on the quality of surgical instrument trays which had the potential to cause an SSI. The primary goal of this project was to reduce the surgical instrument tray errors due to damaged or missing instruments by 50%. The project found problems in damaged instruments, surgical wraps, and misplaced unsterile packages. The improvement created a new process in Central Sterilization of “one piece flow”, identification of damaged instruments, and a method to simplify locating correct instruments. The goal was achieved by reducing the surgical instrument defect by 50% with a p-value of 0.001.

Community outreach was an unexplored opportunity to create awareness about the importance of proper hygiene and infection prevention. The need to focus on infection prevention and hygiene issues stemmed from challenges identified with high-risk patients who have a higher potential to become septic from an infection. The Population Health Department was utilized to provide additional education to our community on disease management. The new process teaches diabetic, wound-care, and surgical patients how to identify the early signs of infection. Diabetic patients now attend classes that teach proper dental care, hygiene, foot care, and skin care. Wound care and infection prevention are all part of pre and post-op teaching. For example, orthopedic surgical patients are given Hibiclens to prep the skin for upcoming surgery. Post-discharge clinician phone calls incorporate teaching and follow-up with hygiene and infection avoidance. With some patients, the goal is identify those at a higher risk for developing sepsis and to educate and change behavior to reduce the incidence of hospitalizations.

A systematic approach was used to review each infection type. After completing a point-prevalence study across the organization, a gap analysis and action plan for improvement was developed. The main strategy was to switch from retroactive control of the problem through surveillance to proactive interventions to prevent the infection.

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Technology was also used to improve processes. Data mining technology was utilized to identify and analyze HAIs. As a result of the analysis, UV light machines were purchased to disinfect ORs and Rapid Adenosine Triphosphate (ATP) testing was initiated to confirm environmental cleaning and surface disinfection.

Description of the results of the effort

The IC Department became part of the culture of continuous improvement focused on prevention by using innovation, technology, and employee engagement as part of the solution. Every healthcare worker is part of the prevention team. Every healthcare worker has the responsibility for patient safety. As a result of the empowerment of the culture, staff and physicians proactively seek the advice and input of the IC Department. For example, the Radiology Department questioned the portable HEPA machines used to scrub the air while airborne infectious patients are present. Additionally, the hospitalists contacted the IC Department and suggested a location change in materials and cleaning products for better and safer cleaning of clinical equipment.

These efforts resulted in statistically significant patient safety outcomes as follows:

- 56% reduction in the preventable harm HAIs, including:
 - 59% reduction in SSIs (Class I and II; Deep incisional/ Organ space)
 - 83% reduction in Central-line Associated Bloodstream Infections (CLABSIs)
 - 80% reduction in Ventilator-Associated Events (VAEs)
- 205 less inpatients developed a preventable harm HAI
- Surgical instrument tray error rate reduced from 3.8% to 1.9%
 - This translates to 527 less tray defects per year
- Hand-hygiene compliance:
 - 45.5% improvement in Before Patient Contact
 - 47.9% improvement in After Patient Contact
- Statistically significant improvement in sepsis patient care
 - Time to sepsis identification improved by 80%
 - Bundle compliance shows a 5% higher survival rate (Observed versus Expected Ratio at 0.79, 0.89, and 0.90 respectively)

Discussion of the significance of the results. How do the results demonstrate outstanding achievement?

The achievement of the reduction of harm by 56% since 2013 is living the mission, vision, and values of CVHP. Establishing a culture of safety and empowerment of individuals leads to the prevention of harm and patient-centric care. This was demonstrated by reaching, not only within the walls of the hospital, but outside the walls through connection with our community and providing education and support which transforms lives.

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Description of sustainability and scaling of the achievements

Close monitoring and regular reporting of all preventable harm HAIs occurs monthly at the multidisciplinary HAI Committee meeting led by the IC Department. Fallouts are reviewed for trends, gaps in the delivery of care, and a root cause analysis is conducted for each infection to identify opportunities for improvement. The HAI Committee standardizes and implements process changes across all CVHP entities that arise from the HAI Committees' efforts.

Participation in collaboratives with the national Joint Commission (TJC) SSI project and Health Services Advisory Group Hospital Improvement Innovation Network (HSAG HIIN) supports continuous improvement efforts. Additional improvement projects have been adopted by frontline staff and include reducing vendor surgical tray errors, *C. diff* elimination, nursing unit soiled core storage revisions and expansion of community outreach.

Daily rounding of ICPs at each campus on each unit provide timely feedback to staff via one-on-one discussions and just-in-time education. Weekly feedback on staff hand hygiene observation fallouts is provided to leaders. Physician specific compliance is monitored during daily rounds and is reported to the Chief Medical Officer for peer-to-peer communication and follow-up on hand hygiene fallouts.

The Emergency Department physicians are engaged in reviewing sepsis bundle fallouts on a concurrent basis to identify opportunities for education. A report has been generated to identify real-time root causes for bundle noncompliance and is currently being piloted.

Community outreach continues through both the Population Health Department and post-surgery monitoring efforts. Soon, education and outreach will scale to additional high-risk disease state populations.

Description of key lessons learned and any advice to colleagues who might try to undertake a similar effort

Staff engagement is crucial in implementing a culture of safety. In the beginning, staff believed that HAIs were an unavoidable part of the risk patients incur. Through this journey, a new understanding was developed that HAIs are preventable and it is each of our responsibility to advocate for patient safety.

A defined problem solving methodology used consistently provides process changes that result in sustained improvements. This helps staff develop good measurement systems, identify root causes, and create solutions. By adopting a data-driven approach to problem solving, data becomes actionable and provides staff with feedback confirming what is working or what needs to be adjusted. Data transparency and timeliness are the basis for good decision making.

System-wide infection control strategy must change from surveillance to prevention. Incorporate into practice continuous collaboration with other disciplines, data collection and analysis, data

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reporting, standardization and implementation of policies and action plans, ongoing education, and unrelenting awareness.

The people who do the work drive the change. Provide frontline staff clear goals with a compelling target using value-based language. Include multidisciplinary staff in decision making. This not only empowers them, but releases their creativity. Employee trust is built along the length of the problem solving process and trust helps staff feel safe to innovate. When staff is given a voice there is strong buy-in and vested interest in success.

Population health is a vital conduit for educating and supporting our communities' health. Use population health resources to identify at-risk populations and reach outside the walls of the hospital to connect with them. Have practitioners provide information and techniques which give patients a strategy to prevent infections while at home. These proactive steps help patients understand infection prevention practices, helping them to keep healthier.