2014 Gage Awards

Reference #	7445588
Status	Complete
Name of hospital or health system	Harbor-UCLA Medical Center/Los Angeles County Department of Health Services
Name of project	Innovative Approach to Reduction of Healthcare-associated Infections
CEO name	Delvecchio Finley
CEO approval	Check here to confirm that your CEO approves of this project being submitted for a 2014 Gage Award
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Within which of the two categories does your application best align?	Quality

1. Provide a brief description of the project. (This section should resemble an abstract for a poster presentation or an abstract for a peer reviewed journal. Include an objective, data sources, study design, findings, and conclusions.)	Background: A healthcare infection (HAI) is an infection a patient acquires in the hospital and which was not evident at admission. Reduction of HAIs is a national public health priority. Five percent of all US inpatients contract an HAI; ~2,000,000 infections and 99,000 associated deaths occur annually. Patient morbidity is often debilitating and direct annual medical costs may exceed 35 billion dollars. HAIs are reportable to national and state agencies, awareness among the public and legislators has increased dramatically, and rates are now publically available in at least 2/3 of U.S. states. Objective: The objectives of our program were to 1) improve healthcare staff awareness of the need to prevent HAIs; 2) solicit and implement innovative strategies to minimize their occurrence; and 3) achieve and maintain improvements over time. The Performance Measures were occurrence of central-line associated bloodstream infection (CLABSI), ventilator-associated pneumonia (VAP), methicillin-resistant Staphylococcus aureus infection (MRSA), and Clostridium difficile diarrhea (C. diff), hand hygiene compliance, and the potential economic savings associated with the interventions. The overarching principle of our approach was to develop a multi-disciplinary program to create and maintain Awareness and Action. Data sources: We monitored HAI incidence using prospectively collected infection prevention surveillance data using national case definitions for each HAI under study. Hand hygiene data were collected in a covert manner by trained observers. Peer-reviewed published attributable risk economic data were utilized. Study design: From 1/1/10 to 12/31/12, we implemented innovative incentives and procedures for line staff, unit-based HAI prevention “competitions”, hospital-wide HAI prevention “celebration and awareness weeks”, regular face-to-face rounds with staff to share ideas about how to encourage removal of unneeded medical devices, engaged administration to perform hand hygiene observation, and led multi-disciplinary Task Forces to centralize progress reporting and feedback. Findings: Our interventions continue, but during the study period we reduced the total number of predicted HAIs by 68% (including a predicted 7 deaths) and increased hand hygiene compliance from 34% to 76%, a 124% increase. Prevention of HAIs avoided an estimated $2,495,771 in healthcare costs, and demonstrably improved patient safety. Healthcare staff engagement increased and all successful outcomes were maintained over time. Conclusions: Targeted, inclusive, and multidisciplinary interventions toward minimizing the occurrence of HAIs, concomitant with consistent feedback to line staff, can change and maintain healthcare worker behavior. These

	changes directly led to a reduction in HAIs, a common and publically mandated measure of patient safety, while clearly reducing costs.

2. Describe the methods use in this project. Include where, why, and how the project was accomplished.	We conducted our project from 1/1/10 thru 12/31/12 at Harbor-UCLA Medical Center in Los Angeles California, a 453 bed tertiary care referral center. Our diverse patient population is at particular risk for HAI because 1) a large proportion has at least one risk factor for developing an HAI and 2) built in 1962, our hospital has infrastructural challenges that lead to patient crowding and make environmental disinfection more difficult. We chose this project because 1) HAIs are frequent, often debilitating, and sometimes fatal; 2) our hospital has had HAI clusters; 3) many HAIs are preventable; 4) HAI is a patient safety failure; and 5) the general public demands of healthcare systems that incidence of HAIs be minimized. The intervention involved raising Awareness and taking Action, and was led by the Infection Prevention and Control Department. For Awareness, we first conducted face-to-face educational campaigns with staff groups (e.g. respiratory therapy, nursing units). These utilized a “train the trainer” approach wherein a small (trained) group is empowered to teach a much larger one. We created a screen saver program with simple HAI prevention messages often using pictures of staff known to others. We also “carpet bombed” staff with short talks and formal educational activities on HAI prevention. We conducted HAI awareness “weeks” (“National Hand Hygiene” and “International Infection Prevention” weeks), although not necessarily national or international at the time; we believed that a bit of levity would engage more interest. These included hand culturing of staff to show how dirty their hands really were, giveaways, and use of a “rolling sink” to demonstrate good practices. We also led two high profile, good-natured hand hygiene competitions. The winning teams received hospital-wide recognition and lunch with the CEO. For Action, we instituted new practices: 1) use of the “CLABSI bundle” for every central line insertion which documents procedures and empowers any individual to stop the procedure if something is amiss; 2) online entry of line insertion for better monitoring and HAI reporting; 3) chlorhexidine disinfectant mouth wash for ventilated patients; 4) daily chlorhexidine body baths for all ICU patients; 5) diluted bleach for cleaning of each room after patient discharge; 6) a computer screen “Alert” system informing staff if their patient had a dangerous germ that causes HAIs; and 6) a “progressive discipline” policy for hand hygiene compliance (up to termination for repeat offenders). We also instituted Central Line Leadership rounds twice monthly with healthcare staff and importantly, administration. Herein, we checked the medical chart for documentation that staff considered if the line was still necessary and also solicited staff ideas on how to improve line “awareness”. Information was presented in various venues, including newly formed CLABSI

	and Hand Hygiene Task Forces.
3. Describe the results of the project. What data was used to support improvement results?	We used prospectively collected HAI surveillance data based on national case definitions for each HAI, covert hand hygiene audits, and published economic data to generate our results. HAI incidence: Over 3-years, our multi-disciplinary program lowered the number of HAIs by over 68%; by preventing 145 serious infections as predicted from pre-program surveillance data collected using the same methods. Specifically, the project prevented at least 11 CLABSIs, 41 ventilator-associated pneumonia infections, 13 invasive MRSA bloodstream infection, and 80 cases of C. difficile diarrhea. We also prevented 7 deaths that were predicted to have occurred with these HAIs (see Attachment). Hand hygiene: This project raised hand hygiene compliance from 34% to 76% (124% increase, see Attachment). Although any HAI results from a collection of unfortunate circumstances, poor hand hygiene has been shown to be a major contributor. A significant increase in hand hygiene, therefore, is expected to limit transmission of pathogens between and among healthcare staff and patients. Cost savings: Using peer-reviewed published HAI-specific economic burden data (CLABSI $29,160/incident case, VAP $28,508/incident case, MRSA $21,251/incident case, C. difficile $9124/incident case), we avoided at least $2,495,771 in direct medical costs. Significant indirect costs (costs associated with lost opportunities due to illness or death) were saved as well, but we did not specifically collect this information. In addition to these substantial direct medical cost savings, indirectly some revenues to the hospital likely accrued as well. This is because beginning 10/1/08 the Centers for Medicare and Medicaid Services has denied payment for central-line associated HAIs. Thus, for an individual patient who avoids an HAI and is discharged more quickly, that patient's (now) available bed space can be filled, potentially, with a different patient with a CMS-reimbursable diagnosis. In addition to preventing HAIs in individual patients, the benefits to the hospital (given the reality of hospital-specific public reporting in California) are important. Patients now compare hospitals using such data; real improvement in patient safety reflects well on the hospital and may guide patient choices.
3A. Attachment, if applicable (Only graphically displayed data such as charts will be accepted. Data should include baseline and improvement data)	GAGEAWARDattachmentallslides.pptx (1420k)

4. Describe what happened as a result of the project. Was the improvement related to the intervention? Can the project be duplicated by other organizations?	The results from this project have impacted the line staff, are used by administration as a management model, and the infrastructure created for its implementation continues to drive action and decision-making to the present. Importantly, two factors that made any impact of these results possible were that 1) the endpoints are based on objective criteria and; 2) the clinical and economic results clearly occurred as a direct consequence of the interventions. We have noted an obvious and positive change in the culture with regard to HAI prevention among the line staff. Previously, staff didn't have any real sense of HAI rates or hand hygiene compliance in their units. For example, certain of our ICUs have had zero CLABSIs for many months, sometimes even for 1-2 years since the program began. "Countdown from last CLABSI" signs are posted and (particularly) the nurses take great pride. For example, in our busiest surgical trauma ICU, several CLABSIs/month was the norm; these same units are now "upset" when even one CLABSI occurs, a complete change in the culture of HAI prevention. The success of fewer HAIs feeds upon itself among line staff. Further evidence of the cultural change is an increase in comments from staff to our (continuing) HAI-related Task Force meetings and increased reporting to our online Patient Safety Network reporting system related to breaks in best practices for HAI prevention (reflective of staff emboldenment and pride). Our data have been widely publicized internally and memos from administration have also used it as an example of how a team approach and individual responsibility can direct improve patient safety. The results have also been shared within the Los Angeles county health system (which includes 4 publically-funded hospitals). These results have also been recognized by the Los Angeles County 27th Annual (countywide) Productivity and Quality Awards Program as a "Top Ten Award" winner, the only such recipient within the Department of Health Services. In an era when public reporting of HAIs is mandated and more importantly, scrutinized by patients and regulators, actual information to support a claim of a higher level of care quality is always desired. In this case, we used objective criteria such as HAI reduction and economic savings. Other indirect measures are noted above, all of which in aggregate, are as or perhaps more beneficial to the hospital in general. This project can be duplicated by any hospital interested in lowering HAI rates. It requires, however, a measured approach, patience, and a resolve to commit to appropriate principles in its rollout.

5. Describe how patients, families, and if appropriate, community was included in the work.	Prevention of HAIs is maximized when patients and their families are actively involved and working with the healthcare staff. This is especially true in our hospital which has relatively few private rooms and families of different patients frequently intermingle in the multi-bed room and are therefore as able as staff to acquire and then transmit infection to staff or patients. Our project endeavored to empower families to work with healthcare staff to prevent an HAI in their hospitalized family member or themselves, focusing on hand hygiene and proper use of personal protective equipment (PPE) including gloves, masks, and gown, when appropriate. To do this, every family received an information packet at admission which included these messages. This included specific requests to wash their hands before and after visiting and even more importantly, we hoped to make it clear that it was OK - even necessary - to remind doctors and other healthcare staff to wash their hands prior to and after seeing their family member. They were also educated about the meaning of PPE signs posted on the patient's room door (written in English and Spanish). In high-traffic areas of the hospital community, we hung simple posters of our hand hygiene audit results and created realtime screen savers in order to increase awareness. Also, our hand hygiene and infection prevention "weeks" (described above) were conducted in the elevator lobbies and various hospital fairs which included educational materials for patients and families.
5A. Attachment, if applicable (Applicable attachments include documents created for patients, families, or community members or by them as a result of the project)	GAGEAWARDattachmentscreensavers.pptx (8320k)
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