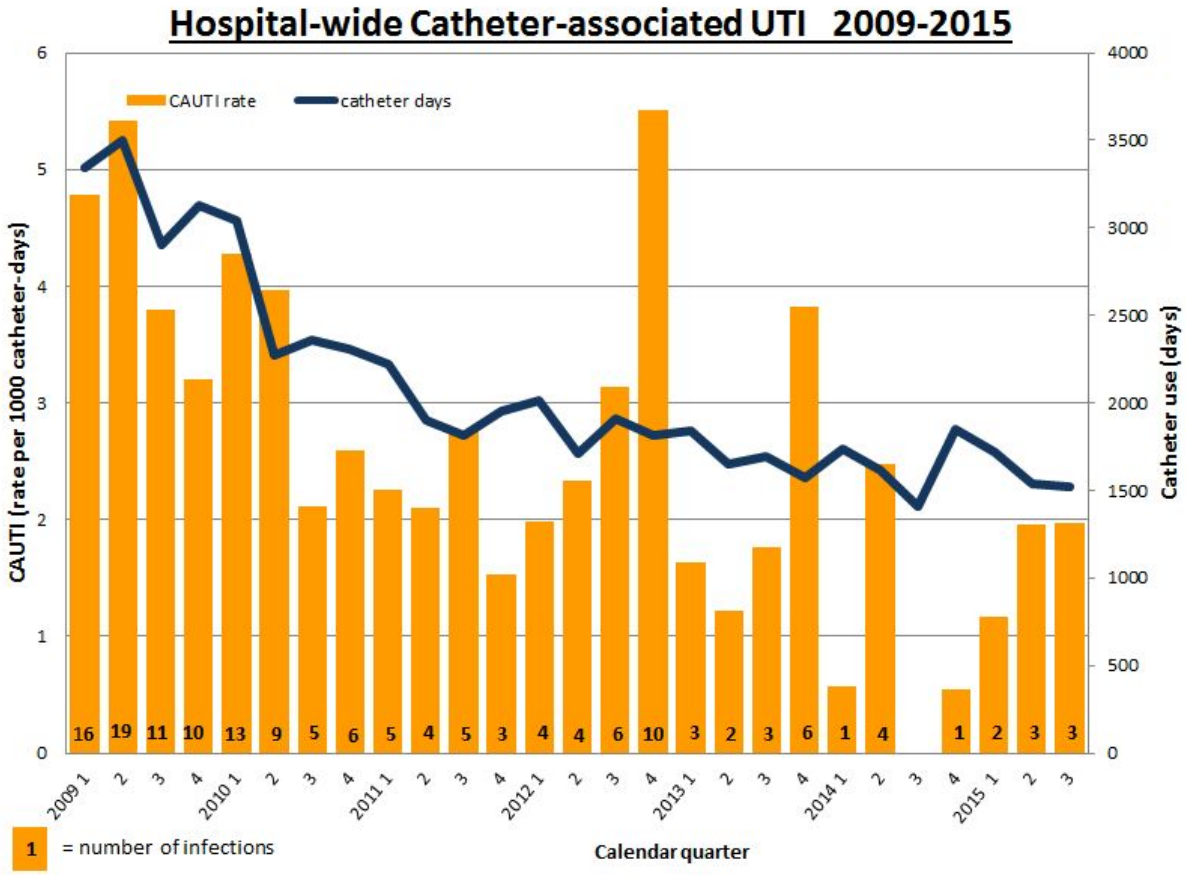
Stamford Hospital CAUTI Reduction Case Study

Stamford Hospital in Stamford, CT, is a 305-bed community teaching hospital, an affiliate of the New York-Presbyterian Healthcare System and a major teaching affiliate of the Columbia University College of Physicians & Surgeons. Through a multi-disciplinary program with a primary focus on the implementation of a nurse-directed urinary catheter removal protocol embedded within MEDITECH's nursing documentation, Stamford successfully **reduced hospital-wide urinary catheter use by 50 percent and urinary tract infections by over 70 percent.** [1] **Savings from the program is estimated at $100,000 and six lives saved** over a three year period. The results of a 36-month study, which outlines the team's innovative program approach and successful outcomes, were published in the American Journal of Infection Control (Parry MF, Grant B, Sestovic M. *Am J Infect Control*. 2013;41:1178-1181). An important aspect of any quality initiative is sustainability and Stamford's results over the last seven years demonstrate the effectiveness of the program.

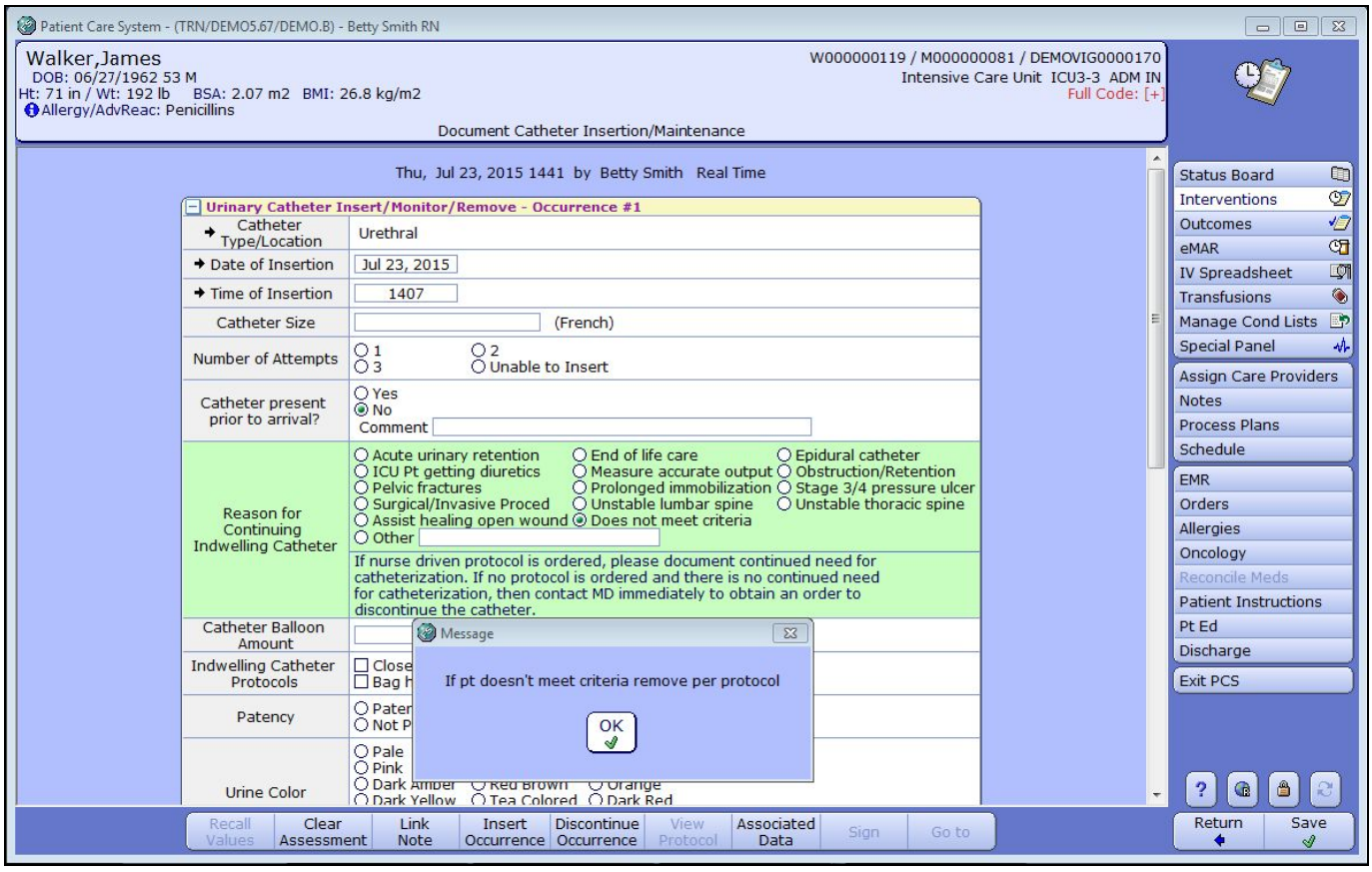


[1] Parry MF1, Grant B, Sestovic M. Successful reduction in catheter-associated urinary tract infections: Focus on nurse-directed catheter removal. Am J Infect Control. 2013 Dec;41(12):1178-81.

Prior to the January 2009 start of the catheter-associated urinary tract infections (CAUTI) reduction initiative, Stamford Hospital had already implemented broad-based education, hand-hygiene efforts, and environmental cleaning initiatives but urinary catheter utilization rates and CAUTI had not fallen over a five year period (2004-2008).

According to the CDC, hospital-acquired CAUTI increase length of stay, mortality, and hospitalization costs with the average per patient direct costs and attributable mortality at $750 per episode.[2] Another significant factor was the CMS announcement that starting October 1, 2008, CAUTI cases acquired during hospitalization would be paid as though the secondary diagnosis was not present, so hospitals do not receive the higher payment.

The prevailing evidence-based guidance focuses on three key areas to reduce CAUTI events, including appropriate use of indwelling catheters, proper techniques for urinary catheter care, and the timely removal of urinary catheters. Stamford's Infection Prevention team approach to minimize urinary catheter use and infections from urinary catheters was the implementation of a nurse-directed urinary catheter removal protocol reinforced by regular feedback on catheter use and infections on each patient care unit. Leveraging the MEDITECH EHR through nursing documentation, physician documentation, CPOE, clinical decision support, and reporting tools, they enhanced communication between nurses and physicians on the need for catheters. They also made it easy for their clinicians to follow best practice. The organization developed a group of interventions to minimize the risk of catheter associated urinary tract infections.



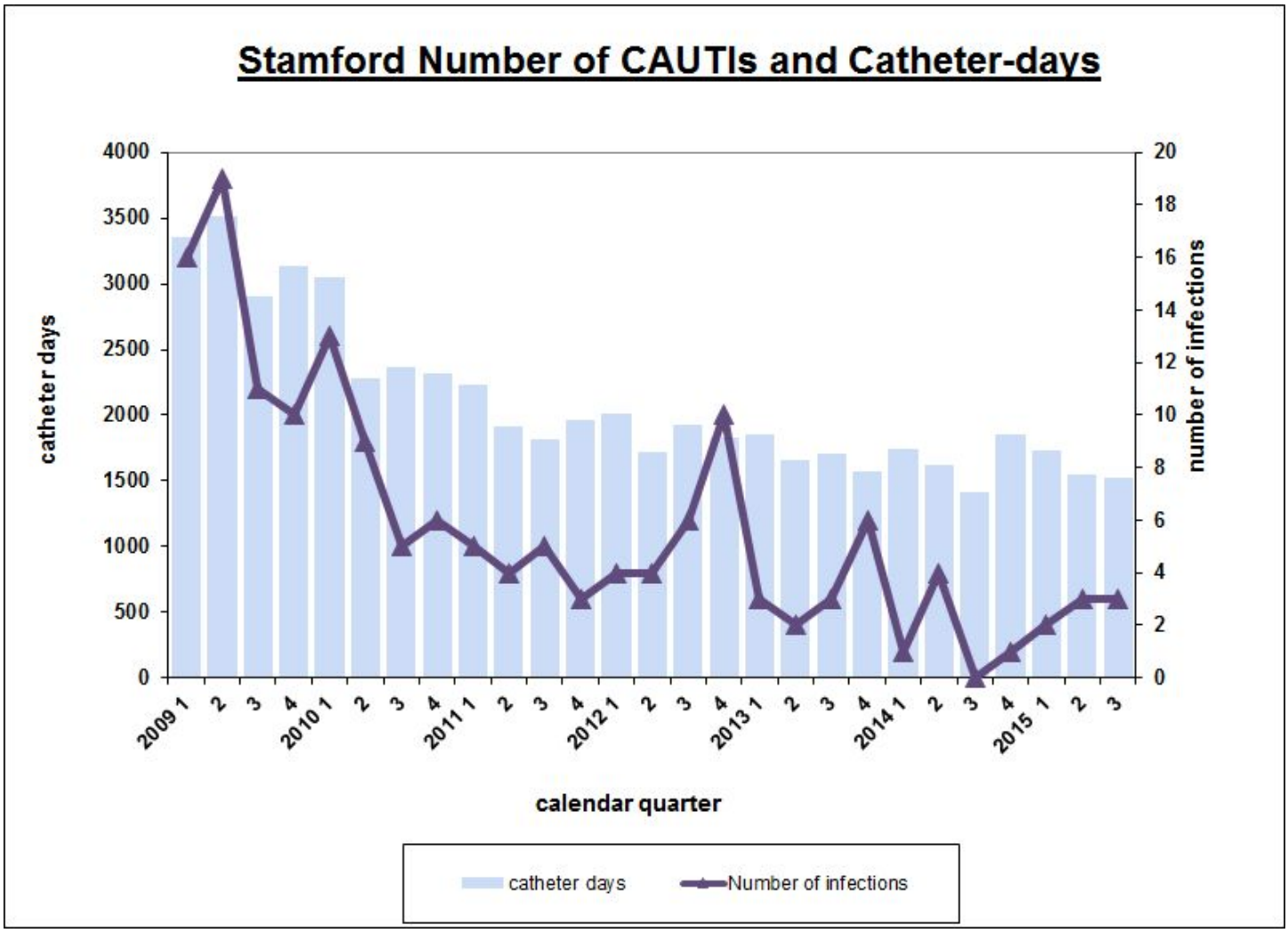
[2] http://www.cdc.gov/HAI/pdfs/hai/Scott_CostPaper.pdf

These are the steps they initiated in the EHR:

- The Infection Prevention team developed guidelines that require physicians ordering a catheter to document the catheter insertion criteria. They developed electronic order sets with Foley time limits.
- They linked the order for "Foley Maintenance Protocol", which includes the nursing checklist for catheter removal, to the physician's catheter insertion order.
- To heighten awareness, physicians revisit the reason for catheter use in their daily progress notes. They created a device specific section within physician documentation with questions on the presence of a urinary catheter, device removal plan, and embedded a list of the indications for foley use.
- Nurses regularly review the reason for a catheter and are required on every shift to document the patient's voiding method e.g. indwelling catheter. A nurse-driven protocol allows nurses to remove the catheter when no longer needed.
- The Infection Prevention team reviews lab results daily to look for bacteria that may be linked to urinary catheter use.
- Utilizing nursing documentation enabled the electronic data capture of catheter-days collection to create automated monthly reports. Stamford found EMR abstraction process to be more precise than manual methods, with less than 5 percent difference between EMR abstraction and the infection preventionists' audits.
- Reports are produced for each unit on how often they are using the catheters, and what the rates of infection are, and the data is presented by unit nurse managers at the bi-weekly multidisciplinary Quality Briefing. The discussion on unit rates also led to unit competition.

Teamwork among the disciplines involved was fundamental to their success. On the patient care units, strong nurse managers sustained efforts and implemented daily 'Device Rounds' keeping those patients with catheters at the forefront. In addition to reporting, the quality improvement team increased institutional awareness through regular attendance at meetings, such as department head, nursing committees, patient safety, and medical staff meetings, as well as through re-education on policy change, on Foley insertion, maintenance, and removal. Leadership was solidly behind the initiative including the Medical Executive Committee who supported the physician education strategy. The process also resulted in a culture change for the facility, enhancing teamwork among all disciplines involved.

The results of Stamford Hospital's CAUTI Reduction Program are impressive. For over seven years, they successfully sustained reductions in hospital-wide catheter-associated urinary tract infections and Foley catheter use. Since 2009, hospital wide CAUTI numbers have fallen from 14 per quarter to two per quarter and hospital-wide CAUTI rates, measured as infection rates per catheter-day using the CDC's National Healthcare Safety Network (NHSN) criteria, have trended down from 4.3 infections per 1000 catheter-days to 1.4 infections per 1000 catheter-days. Foley catheter use hospital-wide has remained at approximately 0.11 catheters used per patient-day down from 0.23, and unit by unit catheter use rates are in the lowest decile of NHSN reported rates.



Stamford believes that meaningful reduction in CAUTI rates can only be achieved by reducing urinary catheter use. The nurse-driven catheter removal protocol built within the EMR combined with unit-level reporting on catheter use and infections are the key factors in helping with the prevention and early detection of CAUTI. The power of the EMR to improve communication among caregivers, provide staff with immediate access to catheter data, evidence-based guidance, and clinical decision support, were also instrumental. Stamford continues to sustain their process improvement practices throughout their hospital as evidenced by a continued reduction in hospital-wide use of indwelling urinary catheters and their associated infections over the last five years.