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## Medical Student and Resident Foley Catheterization training program to decrease Post-Operative Catheter Associated Urinary Tract Infections

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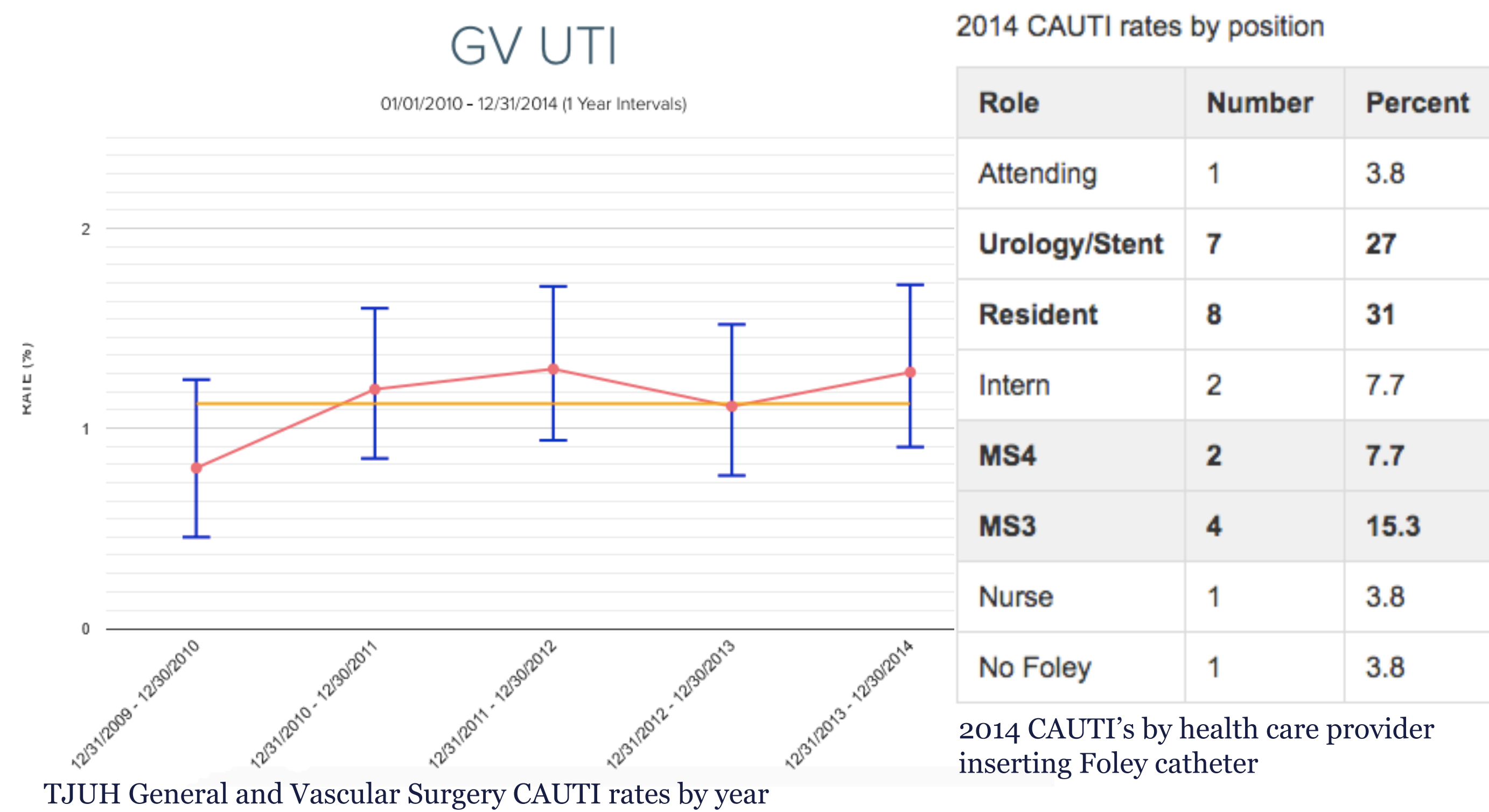


# Medical student and resident Foley catheterization training program to decrease post-operative catheter associated urinary tract infections

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## Background

Catheter Associated Urinary Tract Infections (CAUTI's) are a leading cause of nosocomial infections, representing greater than 30% of hospital acquired infections. CAUTI rates are estimated at > 560,000 incidences per year, and are associated with significant increases in patient morbidity and mortality, increased length of hospital stay by 2-4 days, and a nationwide economic burden estimated at \$400-500 million per year. At Thomas Jefferson University Hospitals, CAUTI rates have increased progressively from 2010-2014, from a rate of 0.99% in 2010 to 2.11% in 2014. In 2014, TJUH fell in the 10<sup>th</sup> decile in the National Surgery Quality Improvement Process (NSQIP) database for CAUTIs.



Protocols designed to reduce unnecessary catheterization, decrease duration of catheterization and improve aseptic technique on insertion have demonstrated efficacy in decreasing post-operative CAUTI rates. The impact of medical student competency in reducing rates of CAUTIs, however, has been largely unstudied. Yang, et al (2012) demonstrated the development of a more comprehensive medical student training curriculum decreased CAUTI rates of student-placed catheters to that of the rest of the hospital staff. In an attempt to assist in reducing CAUTI rates at TJUH, we have developed a more formal training curriculum for Foley catheter insertion for 3rd year SKMC students at the onset of their general surgery clinical rotation.

## Objective

Determine whether a more comprehensive medical student urinary catheter training curriculum can be successful in decreasing post-operative CAUTI rates in general and vascular surgery patient populations

### Primary target:

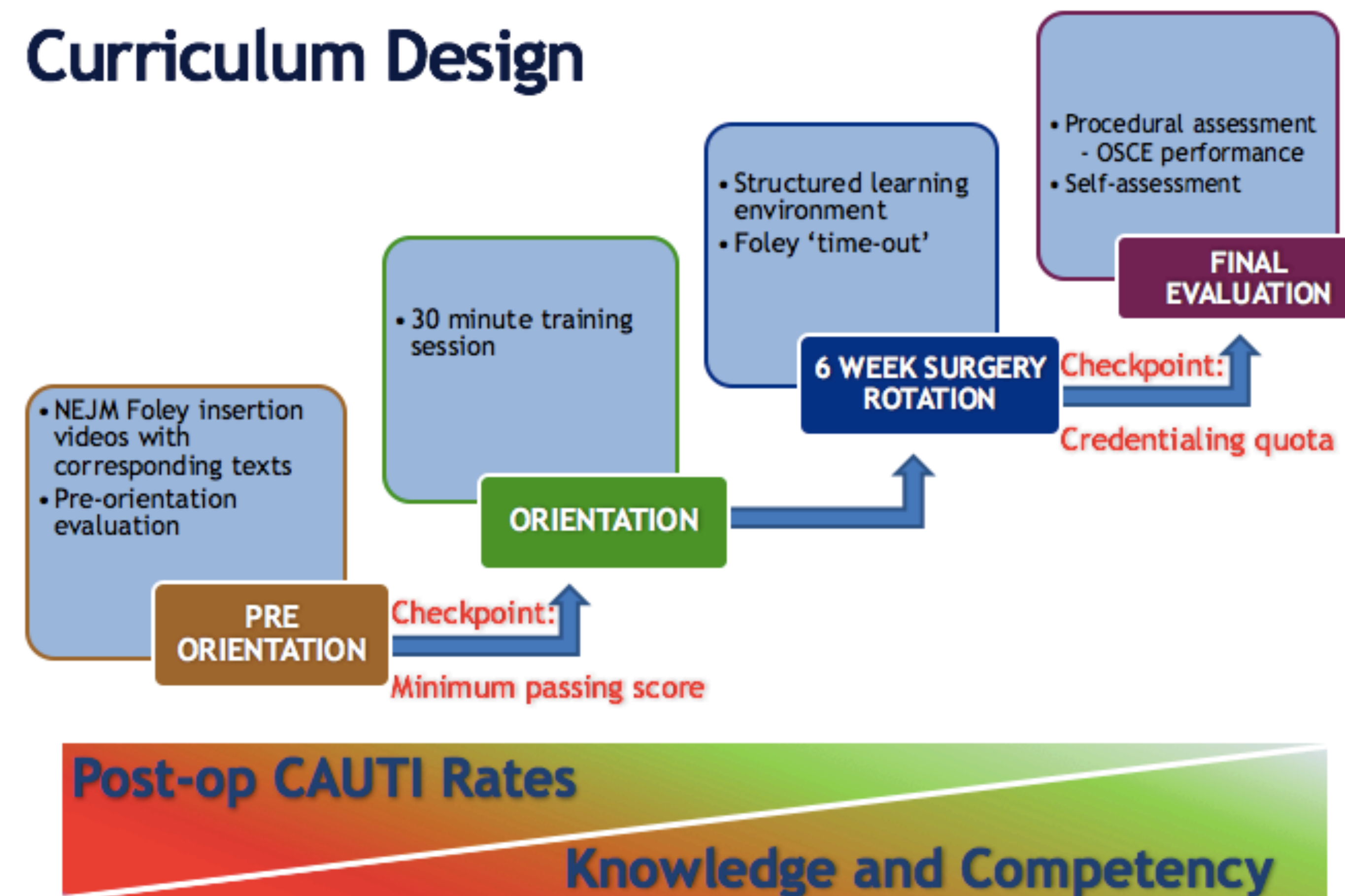
- Reduce post-operative UTI rates by 0.5% over 6 months

### Secondary targets:

- Achieve 100% medical student confidence in Foley catheter placement, understanding indications and contraindications to urinary catheterization
- Improve objective performance of urinary catheterization skills as determined by objective clinical skills exam (OSCE) scores

## Intervention

### Curriculum Design



- Prior to general surgery clinical skills orientation
  - Pre-orientation assessment
  - NEJM urinary catheterization articles/videos
  - Pre-orientation reassessment, self-assessment of urinary catheterization knowledge/competency
- General Surgery clinical skills orientation
  - Reiteration of urinary catheterization principles
  - Interactive urinary catheterization module with student feedback
- General surgery clerkship
  - Foley 'time-out'
    - Daily critical assessment of Foley catheter status by medical student during team rounds
  - Foley catheter reference card to be carried by student throughout rotation
- End of general surgery clerkship
  - Post-clerkship self-assessment of urinary catheterization knowledge and competency
  - Evaluation of student performance on Foley catheterization module of Objective Clinical Skills Exam (OSCE)

Indications for Foley placement	STEPS FOR URETHRAL CATHETER PLACEMENT
<ol style="list-style-type: none"> <li>Case expected longer than 2-3 hours</li> <li>Clinical preference</li> <li>Close monitoring of urine output, urine less than 0.5-1 cc/kg/hour (expected fluid shifts or blood loss)</li> <li>Decompression of bladder or manipulation of the urinary tract</li> </ol>	<ol style="list-style-type: none"> <li>REVIEW ALLERGIES (inc. latex) and indication for placement</li> <li>Wash hands, don clean gloves</li> <li>EXPOSE/POSITION PATIENT and identify/open 16 French catheter kit</li> <li>OPEN FOLEY KIT and wipes-cleanse patient's periurethral area</li> <li>REMOVE GLOVES, wash hands with hand sanitizer gel (if provided)</li> <li>GLOVE IN STERILE FASHION and DRAPE FIELD w/ 'SHINY' SIDE DOWN</li> <li>LUBRICATE CATH TIP and ATTACH H2O SYRINGE TO BALLOON PORT</li> <li>OPEN IODINE SWABS and REMOVE UNNEC. MATERIALS FROM FIELD</li> <li>IODINE SWAB x 3 TO PREP FIELD                             <ol style="list-style-type: none"> <li>Male: begin at meatus, swab glans in circular fashion outward</li> <li>Female: swipe downward along labia minora</li> </ol> </li> <li>EXPOSE URETHRAL MEATUS and INSERT CATHETER                             <ol style="list-style-type: none"> <li>Male: to hub of catheter and urine returns / Female: until urine returns</li> </ol> </li> <li>INFLATE BALLOON and gently pull catheter back until resistance is met</li> <li>DISPOSE KIT</li> </ol> <p>***REMEMBER THE 'HARD STOPS' - ASK FOR ASSISTANCE!***</p>
<p><b>FOLEY TIME-OUT</b> To be assessed post-op with daily re-evaluation</p> <ol style="list-style-type: none"> <li>How long has the catheter been in place?</li> <li>What was the indication for placement?</li> <li>What is the indication for maintenance?</li> <li>Does the patient continue to meet these requirements?</li> <li>Have we restarted any required BPH or urinary meds?</li> </ol> <p>Foley catheterization reference card</p>	

## Next steps and barriers

### Data collection

- Time-matched comparison of CAUTI rates in general and vascular surgery patients
  - Pre-intervention vs. post-intervention CAUTI incidence in student-placed Foley catheter
- Student knowledge and understanding of urinary catheterization
  - Pre-orientation assessment and reassessment of performance
- Student proficiency in Foley catheter insertion
  - Time-matched surgery clerkship OSCE results
- Student confidence in Foley catheter placement, understanding of indications and contraindications to urinary catheterization

### Barriers

- Determination of influence of Foley catheterization training program in presence of other protocols/interventions targeted to decrease CAUTIs
- Reliable evaluation of use and utility of Foley 'time-out'
- Standardization of instruction from residents to students during orientation and throughout clerkship

### Curriculum evolution

- Program optimization through data analysis, medical student and resident feedback
- Standardization of Foley catheterization training program in accordance with TJUH urinary catheterization protocol
- Integration of Foley catheterization training program into TJUH urinary catheterization protocol
- Addition of just-in-time simulation as an objective measure of skills competency prior to patient catheterization
- Development of mobile app to replace reference card
- Maintain program durability and expand model to other clinical skills

## Discussion

The Foley catheterization training program integrates educational curriculum development into quality improvement initiatives. This provides a method for improving patient care through creation of a sound fund of knowledge and understanding of the importance of quality initiatives early in medical education from which to build.

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