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## Color-Changing Device to Improve Adherence to Foley Catheter Replacement Protocols and Reduce Urinary Tract Infection Frequency

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**Project Title:** Color-Changing Device to Improve Adherence to Foley Catheter Replacement Protocols and Reduce Urinary Tract Infection Frequency

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**Background:** Foley catheter-associated UTI's (CAUTI's) represent a driving cause of cystitis, bacteremia and sepsis in the hospital setting. Accordingly, the CDC has identified prolonged indwelling time as the foremost risk factor for CAUTI's. However, the fundamental design of the Foley has remained unchanged for over eighty years. Hospital-specific protocols do currently exist for the removal of infection-prone catheters; however, in practice it remains commonplace for catheters to be ignored, increasing the risk of life-threatening infection. Our design process addressed this by creating a color-changing alarm device that would alert providers when a catheter has been left in beyond protocol, is at risk for infection, and should be assessed for removal.

**Methods:** In-depth interviewing with the goal of collecting end-user feedback was conducted during our design process. Working with an infectious disease case manager, two physicians (urology and EM), and the CAUTI nursing chair, we targeted two primary aspects of CAUTI use: procedures currently used to determine infection risk of indwelling catheters, and potential strategies for alerting and preventing CAUTI's. "Design Thinking" framework allowed us to incorporate stakeholder feedback, iterate ideas for, and prototype our color-changing alarm device.

**Results:** Interviews suggest that despite current protocols, providers continue to leave catheters indwelling beyond suggested time limits. End-user feedback also indicated an urgent need for an innovative strategy to assist in the recognition of infection-prone catheters and to limit CAUTI's.

**Conclusions:** Currently, the color-indicator alarm system is within the prototyping phase of the iterative design process. We will incorporate end-user expert feedback (such as the five-to-eight day "critical window" suggested by our experts for catheter assessment and removal) into the product

design. Future hospital trials will test whether the device improves the recognition of infection-prone catheters, effectively notifies providers of catheters left indwelling, and decreases the incidence of CAUTI's.

**Word Count:** 295