**Supplementary information**

APPENDIX 1:Components of catheter bundle

1. Education about appropriate indications for urinary catheter use, training and competencies of insertion and maintenance of catheters.
2. Daily review of need for catheterization and a nurse-directed catheter removal with bladder scan-guided voiding protocol.
3. Random weekly catheter care bundle audits by Infection Control in all ICU units\*. Audits of the urinary catheter-care bundle included the following:
4. catheter seal intact
5. catheter secured
6. catheter with no dependent loop
7. urinary bag below bladder
8. urinary bag with less than 400 ml of urine

\*In 2015, audits were performed manually on paper; in 2016, an electronic on-line survey tool on a tablet computer was implemented for ease of use and to facilitate real-time reporting of audit results on the quality dashboard.

APPENDIX 2:

The education program was conducted using a slide presentation. In addition the CAUTI dashboard was utilized to demonstrate the metrics and trends in specific ICU units. The core elements of the presentation included the following

1. Review of guidelines for assessment of fever in the ICU (reference 7) emphasizing pyelonephritis is an uncommon cause of fever in the ICU setting.
2. Discuss the lack of specificity of urine analysis and urine cultures for the diagnosis of UTI in a catheterized patient.
3. Review the appropriate clinical assessment of potential etiology of fever and emphasize the avoidance of “pan-cultures”.
4. Discuss the importance of catheter-bundle on prevention of CAUTI.
5. Explanation of quality metrics for CAUTI.
6. Feedback and positive reinforcement of these interventions on CAUTI rates in ICUs using the interactive CAUTI dashboard.

APPENDIX 3:

ICD codes for urinary infection

ICD-9: 590, 595

ICD-10: N10, N30

APPENDIX 4:Dashboard design and utilization

To design the dashboard, computer programming script was written to extract data from the database of the electronic medical records. All data were trended by date and unit and the dataset was linked to a PowerPivot Excel© database (Microsoft Corporation, Redmond WA, USA) to create an interactive user-friendly interface. (See supplementary data - figure S1). Henry Ford Health System electronic health record system is EPIC © (Epic Systems Corporation, Verona, WI, USA). Data that was used to generate the dashboard was obtained using SQL and the script pulled from the EPIC database known as Clarity. An Infection control specific module within EPIC called Bugzy, allowed for program extraction of the infection cases. Line days, denominators, were also pulled programmatically, via Lines Drains and Airways table within Clarity.  Rates were developed simply using Excel formulas within the dashboard.

At launch of the dashboard the major stakeholders (unit medical and nursing directors, nurse educators) were initially trained at Infection Control staff meetings. The dashboard was commonly used and referred to at unit collaborative rounds and during staff and leadership meetings where HAI data was reviewed. In addition the dashboard was used during the monthly educational program.

-The dashboard was easily accessible on the intranet. It was designed to be interactive as one could filter down to a specific hospital, ICU and non-ICU locations or individual units and specific time periods. This feature was useful during meetings to promote engagement, discussion and accountability and to assess comparative unit data and trends. Screenshots of the dashboard data was also utilized for formal presentations.

FIGURE S1: Sample Screenshot of Interactive Unit-Level CAUTI Dashboard

