National Healthcare Safety Network (NHSN) Catheter-associated Urinary Tract Infection (CAUTI) Outcome Measure	
NQF #:	0754
Developer:	National Healthcare Safety Network (NHSN); Centers for Disease Control and Prevention (CDC)
Measure Steward:	Centers for Disease Control and Prevention
Data Source:	CMS Hospital Compare
Description:	Standardized Infection Ratio (SIR) of healthcare-associated, catheter-associated urinary tract infections (CAUTI) will be calculated among patients in the following patient care locations: • Intensive Care Units (ICUs) (excluding patients in neonatal ICUs [NICUs: Level II/III and Level III nurseries]) • Specialty Care Areas (SCAs) - adult and pediatric: long term acute care, bone marrow transplant, acute dialysis, hematology/oncology, and solid organ transplant locations • other inpatient locations (excluding Level I and Level II nurseries). • Data from these locations are reported from acute care general hospitals (including specialty hospitals), freestanding long term acute care hospitals, rehabilitation hospitals, and behavioral health hospitals. This scope of coverage includes but is not limited to all Inpatient Rehabilitation Facilities (IRFs), both freestanding and located as a separate unit within an acute care general hospital. Only locations where patients reside overnight are included, i.e., inpatient locations.
Rationale:	CAUTI is the most common type of healthcare-associated infection, accounting for more than 30% of acute care hospital infections. 13,000 deaths are associated with UTIs each year. There are estimated to be 449,334 CAUTI events per year. Each CAUTI is associated with the medical cost of $758. And, a total of over $340 million spent in health care is attributable to the incident of CAUTI in the U.S. each year. CAUTI rates vary considerably when stratified by location type and in some instances, by location bed size and type of medical school affiliation of the facility. According to the cited NHSN Report, CAUTI rates range from low of 0.0 per 1000 catheter days to high of 35.2 per 1000 catheter days between location types and in some instances, location bed size and type of medical school affiliation of the facility. CAUTI SIRs are relevant to patient populations because prevention recommendations have been published to reduce the incidence of CAUTI. A high SIR indicates an opportunity for improvement. It is envisioned that the use of this measure will promote CAUTI prevention

	activities, which will lead to improved patient outcomes. Such activities include reducing the number of unnecessary indwelling catheters inserted; removing indwelling catheters at their earliest, clinically-appropriate time; avoiding patient exposures to antibiotics; reducing avoidable medical costs; and, patient morbidity and mortality.
Evidence for Rationale:	1. Klevens RM, Edwards JR, et al. Estimating healthcare-associated infection and deaths in U.S. hospitals, 2002. Public Health Reports 2007; 122:160-166. 2. Scott, RD. The Direct Medical Costs of Healthcare-Associated Infections in U.S. Hospitals and the Benefits of Prevention. http://www.cdc.gov/ncidod/dhqp/pdf/Scott_CostPaper.pdf accessed April 12, 2010. 3. Edwards JR, Peterson KD, et al. National Healthcare Safety Network (NHSN) report: Data summary for 2006 through 2008, issued December, 2009. American Journal of Infection Control 2009; 37:783-805.
Numerator:	Total number of observed healthcare-associated CAUTI among inpatients in ICUs (excluding patients in NICUs), SCAs, and other inpatient locations (excluding Level I and Level II nurseries).
Denominator:	Total number of expected CAUTIs, which is calculated by multiplying the number of urinary catheter days for each location under surveillance for CAUTI during the period by the CAUTI rate for the same types of locations obtained from the standard population. These expected numbers are summed across locations and used as the denominator of this measure (see also 2a.8). *Denominator Exclusions:* Non-indwelling catheters by NHSN definitions: 1. Suprapubic catheters 2. Condom catheters 3. "In and out" catheterization
Impact:	• CAUTI is the most common type of healthcare-associated infection, accounting for more than 30% of acute care hospital infections • 13,000 deaths associated with UTIs each year • 449,334 estimated CAUTIs/yr • $758 medical cost/CAUTI • Total >$340 million attributable to CAUTI in U.S. each year
Evidence of High Impact:	1. Klevens RM, Edwards JR, et al. Estimating healthcare-associated infection and deaths in U.S. hospitals, 2002. Public Health Reports 2007; 122:160-166. 2. Scott, RD. The Direct Medical Costs of Healthcare-Associated Infections in U.S. Hospitals and the Benefits of Prevention. http://www.cdc.gov/ncidod/dhqp/pdf/Scott_CostPaper.pdf accessed April 12, 2010
Opportunity:	It is envisioned that the use of this measure will promote CAUTI prevention

	activities which will lead to improved patient outcomes. Such activities include reducing the number of unnecessary indwelling catheters inserted, removing indwelling catheters at their earliest, clinically-appropriate time; avoiding patient exposures to antibiotics; reducing avoidable medical costs, and patient morbidity and mortality.
Evidence:	The evidence supporting CAUTI as a measure includes: evidence-based guideline; randomized controlled trial; expert opinion; systematic synthesis of research; and, meta-analysis. The Guideline for Prevention of Catheter-associated Urinary Tract Infections, 2009 published by the Healthcare Infection Control Practices and Advisory Committee (HICPAC) retrieved over 1050 published studies from the scientific literature for consideration into the development of the recommendations. The CAUTI data used in this measure have been endorsed by the NQF in 2 other measure sets. The SMR, upon which the SIR is based, is a widely accepted method for summarizing mortality experience. The SIR measure has inherent face validity. However, the measure's steward is undertaking validity studies beginning in July 2010. The standard population's CAUTI rates used in the SIR calculations are from 15 different types of ICUs, 5 different types of SCAs, and 18 types of other inpatient locations. The numerators of these location-specific rates range from approximately 1 to 2100 CAUTI for the ICU locations, from 1 to 695 for the SCA locations, and from 0-4200 in other inpatient locations while the denominators range from approximately 2,000 to 676,000 urinary catheter days in the ICU locations, 870 to 124,500 in the SCA locations, and 300 to 717,000 in other inpatient locations. 11 of the 15 ICU locations have >200,000 urinary catheter days, but only 2 of the SCA or other inpatient locations do. We conclude for most of the locations, the standard population's rates are robust enough to use for determining the expected number of CAUTI. While CAUTI reporting is greatest in ICUs there are a number of facilities reporting CAUTI data in SCA and other inpatient locations and the number is growing. In 2010, over 570 acute care facilities reported at least one month's CAUTI data in a non-ICU/SCA location and 60 of those locations were new for NHSN CAUTI reporting in 2010. 49 long-term acute care facilities reported at least one month of CAUTI data in 2010 and 7 of those locations were new for NHSN CAUTI reporting in that year.
Citations for Evidence:	1. http://www.qualityforum.org/QPS/0138 2. http://www.cdc.gov/HAI/ca_uti/uti.html 3. http://www.cdc.gov/hicpac/pdf/CAUTI/CAUTIguideline2009final.pdf 4. National Healthcare Safety Network (NHSN) report: Data summary for 2006 through 2008, issued December 2009, Am J of Infect Control 2009;

37: 783-805.

The Guideline for Prevention of Catheter-associated Urinary Tract Infections, 2009, HICPAC: http://www.cdc.gov/hicpac/pdf/cauti/cautiguideline2009final.pdf.