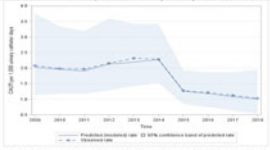
Figure-1. Trends in the incidence of catheter-associated urinary tract infections (CAUTI) in intensive care units, acute care hospitals, NHSN, 2009-2018



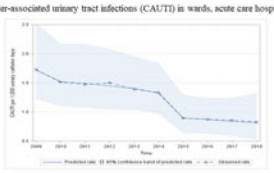
Summary of model coefficients, incidence rate ratios, and annual percent change of incidence of catheter-associated urinary tract infections

Effect of generalized linear mixed model[a]	Estimate	Standard Error	p-value	Incidence rate ratio (95%CI)	Percent change per year[b] (95%CI)
Time trend per year (2009-11) (β_1)	−0.004	0.014	0.7624	0.996 (0.969,1.023)	−0.42 (-3.09, 2.33)
Immediate effect of interruption at 2012 (β_2)	0.076	0.020	0.0002	1.079(1.036,1.123)	7.86 (3.62, 12.27)
Change in slope direction after 2012 (β_3)	0.059	0.015	0.0001	1.060 (1.029,1.092)	6.03 (2.92, 9.23)
Immediate effect of interruption at 2015 (β_4)	−0.493	0.016	<0.0001	0.611 (0.593,0.630)	−38.9 (-40.73, -37.01)
Change in slope direction after 2015 (β_5)	−0.148	0.008	<0.0001	0.863 (0.849,0.877)	−13.72 (-15.11, -12.31)
Time trend per year (2012-14) (β_1, β_3)	0.054	0.007	<0.0001	1.056 (1.042,1.070)	5.58 (4.23, 6.96)
Time trend per year (2015-18) (β_1, β_3 , β_5)	−0.093	0.006	<0.0001	0.911 (0.901,0.921)	−8.9 (-9.89, -7.91)

[a] Generalized linear mixed model adjusted for type of intensive care units and hospital characteristics, ie, facility type, teaching status, hospital bed size, total number of beds in intensive care units, average length of patient stay in a hospital, which were derived from annual hospital survey and may vary by calendar year.
[b] Percent change = (incidence rate ratio-1) x 100

Fig. 1.

Figure-2. Trends in the incidence of catheter-associated urinary tract infections (CAUTI) in wards, acute care hospitals, National Healthcare Safety Network, 2009-2018



Summary of model coefficients, incidence rate ratios, and annual percent change of incidence of catheter-associated urinary tract infections

Effect of generalized linear mixed model[a]	Estimate	Standard Error	p-value	Incidence rate ratio (95%CI)	Percent change per year[b] (95%CI)
Time trend per year (β_1)	−0.043	0.005	<.0001	0.958 (0.949, 0.966)	−4.25 (-5.11, -3.38)
Immediate effect of interruption at 2015 (β_2)	−0.325	0.016	<.0001	0.723 (0.701, 0.745)	−27.72 (-29.9, -25.48)

[a] Generalized linear mixed model adjusted for various types of wards and hospital characteristics, ie, facility type, teaching status, hospital bed size, total number of beds in intensive care units, average length of patient stay in a hospital, which were derived from annual hospital survey and may vary by calendar year. Note there was no significant change in slope direction before and after 2015.
[b] Percent change = (incidence rate ratio-1) x 100

Fig. 2.

positive cultures outside the RI period; (4) O-CAUTI 4, a positive culture with symptoms attributable to another source and no fever. Classifications were discussed with the medical and clinical leadership to determine appropriate opportunities for improvement. **Results:** Overall, 49 NHSN CAUTIs were identified with 11 of 49 (22%) being true CAUTIs and 38 of 49 (78%) O-CAUTI. O-CAUTI 1 was most common, with 17 of 38 (45%). The most frequent attributable source of fever for O-CAUTI 1 (infectious source) was respiratory (7 of 17, 59%) followed by gastrointestinal (6 of 17, 35%). Also, 14 of 38 (37%) were O-CAUTI 2. Central fever was the most frequent source of fever for the noninfectious source (9 of 14, 64%) followed by drug fever (2 of 14, 14%). Of 38 patients, 3 (8%) had both an infectious and noninfectious reason for fever (CAUTI 1 and 2); 4 patients had no fever. Furthermore, 2 were O-CAUTI 3 (repeat culture positive) and 2 were O-CAUTI 4 (1 with hematuria and renal cell carcinoma and 1 with dysuria without leukocytosis). **Conclusions:** NHSN CAUTI definitions capture UTIs and other events. In FY2018, there were no true CAUTIs in 5 of 12 months (42%). Also, 50% of CDC CAUTIs were not UTI but could lead to inappropriate antibiotic use. Reviewing only CAUTI reduction work in O-CAUTIs prevents the assessment of other appropriate opportunities for improvement.

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National Trends of Incidence of Catheter-Associated Urinary Tract Infections in Acute-Care Hospitals

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Background: An indwelling urinary catheter is used in ~12%–16% of adult hospital inpatients during their hospitalization, which poses risks for acquiring a catheter-associated urinary tract infection (CAUTI). CAUTI data have been reported to the NHSN since 2005, and national benchmarks are annually reported in NHSN progress reports. Trends analyses in the incidence of CAUTI reported to the NHSN over long time have not been previously assessed. **Objective:** We investigated the national trends of CAUTI incidence separately for intensive care units (ICUs) and wards in acute-care hospitals (ACHs) from 2009 through 2018. **Methods:** We analyzed CAUTI data from ACHs reported to NHSN in 2009–2018. To evaluate trends of CAUTI incidence (per 1,000 catheter days), we conducted interrupted time-series analysis using negative-binomial mixed-effects modeling, separately for ICUs (nonneonatal ICUs) and wards. Due to the reporting requirement for adult and pediatric ICUs in 2012, and medical, surgical, and medical-surgical wards in 2015 by the CMS and the institution of the NHSN CAUTI definitional changes in 2015, calendar years 2012 and 2015 were treated as interruptions to the outcome in ICU models, and year 2015 was treated as a single interruption in the ward models. Regression models were assessed and adjusted, as appropriate, for patient care location type and facility-level characteristics such as hospital type, teaching status, bed size, number (and percentage) of ICU beds, and average length of inpatient stay. Random intercept and slope models were evaluated with covariance tests and were included to account for differential baseline incidence and trends among reporting hospitals. **Results:** The volume of patient care locations and hospitals reporting to the NHSN increased over time. Among the ICUs, the CAUTI incidence rate did not change in 2009–2012 and increased at an average of 5.6% per year in 2012–2014 (Fig. 1). CAUTI incidence rate dropped nearly 40% in 2015; thereafter, it decreased at an average of 8.9% per year. Among the wards, CAUTI incidence rate decreased at an average of 4.3% per year beginning 2009 (Fig. 2). The CAUTI incidence rate dropped almost 28% in 2015 and then decreased at an average of 4.3% per year. **Conclusions:** CAUTI incidence decreased substantially in 2015 among both ICUs and wards, which was partially attributable to CAUTI definitional change (see also Fig. 7 at https://www.cdc.gov/hai/data/archive/data-summary-assessing-progress.html). The significant decline of CAUTI incidence in both location types since 2015 is encouraging, and continued efforts in prevention of CAUTI are vital to sustaining this decline in the future.

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