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Incidence and risk factors for catheter-associated urinary tract infection in 623 intensive care units throughout 37 Asian, African, Eastern European, Latin American, and Middle Eastern nations: A multinational prospective research of INICC

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Abstract

Objective: To identify urinary catheter (UC)-associated urinary tract infection (CAUTI) incidence and risk factors. **Design:** A prospective cohort study. **Setting:** The study was conducted across 623 ICUs of 224 hospitals in 114 cities in 37 African, Asian, Eastern European, Latin American, and Middle Eastern countries. **Participants:** The study included 169,036 patients hospitalized for 1,166,593 patient days. **Methods:** Data collection took place from January 1, 2014, to February 12, 2022. We identified CAUTI rates per 1,000 UC days and UC device utilization (DU) ratios stratified by country, by ICU type, by facility ownership type, by World Bank country classification by income level, and by UC type. To estimate CAUTI risk factors, we analyzed 11 variables using multiple logistic regression. **Results:** Participant patients acquired 2,010 CAUTIs. The pooled CAUTI rate was 2.83 per 1,000 UC days. The highest CAUTI rate was associated with the use of suprapubic catheters (3.93 CAUTIs per 1,000 UC days); with patients hospitalized in Eastern Europe (14.03) and in Asia (6.28); with patients hospitalized in trauma (7.97), neurologic (6.28), and neurosurgical ICUs (4.95); with patients hospitalized in lower-middle-income countries (3.05); and with patients in public hospitals (5.89). The following variables were independently associated with CAUTI: Age (adjusted odds ratio [aOR], 1.01; $P < .0001$), female sex (aOR, 1.39; $P < .0001$), length of stay (LOS) before CAUTI-acquisition (aOR, 1.05; $P < .0001$), UC DU ratio (aOR, 1.09; $P < .0001$), public facilities (aOR, 2.24; $P < .0001$), and neurologic ICUs (aOR, 11.49; $P < .0001$). **Conclusions:** CAUTI rates are higher in patients with suprapubic catheters, in middle-income countries, in public hospitals, in trauma and neurologic ICUs, and in Eastern European and Asian facilities. Based on findings regarding risk factors for CAUTI, focus on reducing LOS and UC utilization is warranted, as well as implementing evidence-based CAUTI-prevention recommendations. © The Author(s), 2024. Published by Cambridge University Press on behalf of The Society for Healthcare Epidemiology of America.

Index Keywords

adult, African, Article, Asian, catheter associated urinary tract infection, cohort analysis, controlled study, Eastern Europe, Eastern European, female, human, incidence, income, infection prevention, intensive care, intensive care unit, length of stay, low income country, major clinical study, male, middle aged, middle income country, multicenter study, multinational corporation, prospective study, risk factor, catheter infection, cross infection, East African, incidence, intensive care unit, public hospital, South and Central America, urinary tract infection; Catheter-Related Infections, Catheters, Cross Infection, East African People, Female, Hospitals, Public, Humans, Incidence, Intensive Care Units, Latin America, Prospective Studies, Urinary Tract Infections

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