BACKGROUND

• Bloodstream infection (BSI) is the seventh leading cause of death in the USA.
• Inappropriate empirical antimicrobial therapy has been associated with increased mortality in patients with BSI.
• Increasing rates of fluoroquinolone resistance (FQ-R) among gram-negative bacilli have limited empirical antimicrobial treatment options, particularly in patients with severe beta-lactam allergy.

AIMS AND METHODS

• This nested case-control study aims to develop a clinical risk score to predict FQ-R at the time of initial presentation with suspected gram-negative BSI.
• Adults patients with first episodes of gram-negative BSI at Palmetto Health Richland and Baptist Hospitals in Columbia, SC, USA from January 1, 2010 to December 31, 2013 were identified.
• Multivariate logistic regression was used to identify independent risk factors for FQ-R.
• Fluoroquinolone resistance score (FQRS) was developed by adding points allocated for each predictor of FQ-R based on regression coefficients in final logistic regression model.
• Area under receiver operating characteristic curve was calculated to determine model discrimination.

RESULTS

• Among 824 patients with gram-negative BSI, 143 (17%) had BSI due to FQ-R organisms.
• Overall, Escherichia coli was the most common bloodstream isolate and the urinary tract was the most common source of infection [Figures 1 & 2].
• Baseline demographics and clinical characteristics of patients with BSI due to FQ-R and fluoroquinolone-susceptible (FQ-S) gram-negative bacilli are shown in Table 1.
• Predictors of FQ-R include male sex, diabetes mellitus, residence at skilled nursing facility, recent outpatient procedures and fluoroquinolone use.
• The FQRS is the cumulative number of points for each individual from their risk factors and ranges in value from 0 to 12 [Table 2].
• The estimated probability of FQ-R increases as FQRS increases [Figure 3].
• Area under receiver operating characteristic curve for FORS model was 0.73.

CONCLUSIONS

• FQRS estimates patient-specific risk of FQ-R with good discrimination at the time of initial presentation with suspected gram-negative BSI.
• Once prospectively validated, FQRS may improve the selection of empirical antimicrobial therapy in patients with serious gram-negative infections, including BSI, particularly those with severe or undocumented beta-lactam allergies.
• It may also simplify antimicrobial management in patients with gram-negative infections who do not otherwise require hospitalization such as some patients with acute pyelonephritis and diverticulitis.