

# Abstract

## Title

The incidence and characteristics of Extended-Spectrum Beta-Lactamases producing *Escherichia coli* and *Klebsiella* species among urinary isolates in a tertiary care hospital

## Introduction

Urinary tract infections (UTIs) are among the most common conditions causing individuals to seek medical care. Enterobacteriaceae including *E.coli* and *Klebsiellae* are the leading cause of UTIs. Increasing drug resistance among these uropathogens has caused difficulties in choosing empirical treatment leading to inappropriate antibiotic use.

Extended-spectrum beta-lactamases (ESBLs) production has been implicated as a major cause of drug resistance in Gram-negative bacteria. ESBLs are a worldwide problem in hospitalized patients and now it is being reported from the community as well.

In Sri Lanka relatively high prevalence of ESBLs has been reported from clinical isolates, but no data exist regarding uropathogens or community acquired infections.

## General objective

To detect and describe some relevant characteristics of ESBL producing urinary isolates of *Escherichia coli* and *Klebsiella* species in a tertiary care hospital in Colombo.

## Method

Study design - Descriptive cross sectional study

Study period - January 2009 to April 2009

*E.coli* and *Klebsiella* urinary isolates from hospitalized and non-hospitalized patients of Colombo South Teaching Hospital (CSTH) were included. Presence or absence of identified risk factors in these patients was recorded and community acquired infections were identified.

Antibiotic susceptibility testing and the ESBL phenotype detection test performed according to the clinical laboratory standard institute guidelines (2008).

## Results

A total of 286 isolates were studied and 32.87% produced ESBLs.

In the intensive care unit, 90.90% and in the genitor-urinary unit 75% of the isolates were ESBL producers. ESBL rate in general wards and the out-patient department was 33.17% and 14.28% respectively.

Out of the 181 community acquired isolates 12.70% produced ESBLs.

Resistance to multiple drugs was considerably higher in ESBL positives compared to ESBL negatives.

Urinary catheters, diabetes mellitus, previous antibiotic use, urinary tract abnormalities and recurrent UTIs were associated with high risk of acquiring ESBL producing organisms ( $P < 0.001$ ).

## Conclusions

1. The incidence of ESBL phenotype among urinary isolates of *E.coli* and *Klebsiella* species from adult patients in CSTH was 32.87% during the study period.
2. Marked differences in the proportions of ESBL producers causing UTIs exist between different units.
3. There are very high resistance rates exist among common uropathogens to multiple antibiotics commonly used for UTIs.
4. The rate of ESBL production in community acquired *E.coli* and *Klebsiella* spp. causing UTIs is 12.70%.