Background
The increasing resistance among gram-negative bacteria associated with extended spectrum β-lactamase (ESBL) Bacteria production is a major concern. Infections caused by these pathogens have emerged in many countries around the globe and are a cause of increased mortality and higher hospital expenditures. Surgical site infections (SSIs) caused by resistant organisms are a major clinical challenge. The risk of mortality or morbidity in infections caused by ESBL gram-negative bacteria increases, and SSIs are particularly detrimental for immunocompromised cancer patients. The overall incidence of SSI at the National Cancer Institute of Mexico (INCan) has been steadily since 2008, but the proportion of SSI caused by ESBL E. coli has increased. Over half (56.4%) of all SSI occurring between 2008 and 2012 were caused by ESBL E. coli. Because of this increment in ESBL E. coli SSTI at the INCan, we conducted a case control study to examine risk factors associated with ESBL E. coli infection compared with antimicrobial susceptible E. coli among surgically treated cancer patients.

Methods

• Data obtained from medical records, surgical registry and HAI database.
• Price exposure data (demographics, risk factors present at admission and exposure history) were collected up to 3 months before surgery, with the exception of cancer treatment history which was obtained from chemotherapy and radiation records up to 1 year before surgery.
• Post exposures were collected between surgery and day of SSI onset of the SSI.

Results

• Approximately 50% of patients have advanced stages of cancer. Ongoing surveillance of antibiotic resistance patterns of organisms associated with SSI along a standardized program of interventions are essential.
• Prior hospital antibiotic use was independently associated with ESBL SSI (P <0.001) (Table 1).
• Patients surgically treated during 2008–2012 were exposed for over 24 hours in comparison to 29% of controls. More than half of cases (53%) were given prophylaxis outside the recommended window or were exposed for over 24 hours in comparison to 29% of controls.

Conclusions
The appropriate timing and duration of perioperative antimicrobial prophylaxis were associated with lower risk of ESBL E. coli in SSI. Even though compliance to antimicrobial prophylaxis guidelines is of utmost importance, reduced exposure to opioids may also potentially decrease risk of SSI.

STUDY POPULATION

• Retrospective Observational Case-Control Study

Table 1. Perioperative antimicrobial prophylaxis in cases and controls

Table 2. Antibiotic related factors probabilities

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• Defined as delayed, incorrect, incorrect or non-existent treatment for patients.
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