

Background. There is limited data on incidence of MDROs colonization and outcome in patients undergoing elective orthopedic surgery.

Methods. We performed MDROs surveillance screening (swabs from nose, throat, groins, and rectum) in patients undergoing elective orthopedic surgery at the Thammastat University Hospital between March and August 2016. MDROs were defined as Gram-negative bacteria (GNB) possessing extended-spectrum β -lactamases (ESBLs), Carbapenem-resistant Enterobacteriaceae (CRE), and non-lactose fermenting GNB resistant to at least 3 antibiotic classes, methicillin-resistant *Staphylococcus aureus* (MRSA), and vancomycin resistant enterococci (VRE). MDROs were identified by the Vitek² automated system. Antimicrobial susceptibility testing (disk diffusion test) was performed using the CLSI Interpretive Guidelines. Incidence of MDROs colonization upon admission was determined. Patient's clinical characteristics, risk factors for MDROs infection, procedure types and antibiotic prophylaxis were prospectively collected. Surgical sites infections (SSIs) and complications up to 6 months after surgery among the patients with and without MDROs colonization were compared.

Results. Of 384 swabs tested from 96 patients (median age, 58 years), ESBL-producing *Escherichia coli* (ESBL-*E. coli*) was identified in 31 rectal swabs (32.3%) and 7 groin swabs (7.3%). Seven patients (7.3%) were diagnosed with SSIs. A higher rate of SSIs was found among patients with ESBL-*E. coli* colonization (6/31, 19.4%) compared with patient without ESBL-*E. coli* colonization (1/65, 1.5%; $P = 0.004$, OR 15.4, 95% CI 1.7–356.3). From the multivariate logistic regression analysis, SSIs were significantly associated with ESBL-*E. coli* colonization ($P = 0.009$, adjusted OR 18.3, 95% CI 2.1–162.9). In addition, from the multivariate logistic regression analysis, ESBL-*E. coli* was a significantly risk factor associated with SSIs (6/7, 85.7%, $P = 0.014$, adjusted OR 16.5, 95% CI 1.8–153.4).

Conclusion. We found a high incidence of ESBL-*E. coli* colonization and rate of SSIs in patients who had elective orthopedic surgery. These patients did not have any other risk factors for MDROs infection. Active screening for colonization of ESBL-producing pathogens may be necessary to guide appropriate antibiotic prophylaxis to reduce rates of SSIs.

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2203. *Serratia* and Surgical Site Infections: Risk factors and Epidemiology

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Background. *Serratia* spp. have been associated with surgical site infection (SSI) outbreaks associated with specific providers, topical creams and contaminated saline products. Patient risk factors for developing infection with this organism have not been extensively studied. We sought to evaluate risk factors for *Serratia* SSI.

Methods. Cases of *Serratia* SSI occurring between 2012 and 2016 were identified via an infection control surveillance program. SSI was defined by National Healthcare Safety Network (NHSN) criteria. Controls were randomly selected individuals undergoing similar procedures during the same time frame without identified *Serratia* SSI. Data was analyzed using partitioning, student T test and chi-square analysis to identify risk factors for *Serratia* SSI.

Results. During the study period, 17 cases and 34 controls were identified, all of whom were cardiac or vascular surgery patients. Males were afflicted far more often than females (Relative risk 4.9, 95% CI 0.72–33.37, $P = 0.04$). Cases were older (mean age [standard error] 55.1[3.40] vs. 66.3[4.92] years, $P = 0.04$), had longer operative times (238.1[19.1] vs. 212.5[28.2] minutes, $P = 0.04$), and a similar American Society of Anesthesiologist preoperative risk score (3.8[0.07] vs. 3.1[0.1], $P = 0.83$). We did not observe significant differences in body mass index, cardiopulmonary comorbidities, preoperative catheterization, or malignancy. In partition analysis, gender, (incision time >180 minutes and age >62) was all highly predictive of *Serratia* SSI risk (receiver operator characteristic 0.81). Other risk factors screened, including types of vascular access, specific surgeon(s) performing procedures, reoperation, open chest procedures and antecedent cardiac catheterization, were not significantly associated with an increased risk of *Serratia* SSI's. *Serratia* SSI's were associated with a 29% 30-day mortality rate, compared with 5.8% seen in controls ($P = 0.02$).

Conclusion. Gender, operative time and age are associated with an increase in *Serratia* SSI risk. *Serratia* SSI is associated with a high mortality rate. Providers should be vigilant for this organism, particularly in older male patients undergoing complex cardiovascular surgical procedures.

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2204. The Relationship Between Payer and Risk of Surgical Site Infection Following Cesarean Delivery

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Background. Both Medicaid and private health insurance support important access to care for many pregnant women in the United States. The role of health insurance on many outcomes, such as surgical site infection (SSI) following Cesarean delivery (CD), has not been adequately investigated.

Methods. This retrospective cohort study investigated SSI risk following CDs performed in California hospitals in 2011 among women covered by Medicaid or private health insurance. All CDs were obtained from identifiable state inpatient discharge (SID) data and linked with National Healthcare Safety Network (NHSN) data to ascertain post-delivery SSI. Characteristics including age, race/ethnicity, BMI, prior CD planned admission, emergency CD, active labor and labor duration, ASA physical status, general anesthesia, wound class, hospital ownership, hospital annual CD count, intern/resident-to-bed ratio, case mix index, disproportionate share adjustment, urban location, and area wage index were obtained from CMS facility, NHSN, and SID data. Potential effect modification of the payer-SSI relationship was assessed using a multivariable logistic regression model.

Results. 90% of eligible NHSN records linked with a SID record. The analytic dataset consisted of 387 SSIs following 57,143 CDs performed in 196 hospitals. Payer distribution across CDs was 49% Medicaid, 51% private insurer. SSIs were reported following 0.74% of CDs among Medicaid recipients and 0.62% among those privately insured (unadjusted risk ratio: 1.2, 95% confidence interval: 1.0–1.5, $P = 0.09$). In for-profit hospitals women with Medicaid had a 2.6-fold (95% CI: 1.2–5.4, $P = 0.01$) increase in adjusted SSI risk compared with women with private insurance. There were no differences in adjusted SSI risk by payer in government (RR: 1.1, 95% CI 0.7–1.8, $P = 0.92$) or not-for-profit hospitals (RR: 0.9, 95% CI 0.7–1.2, $P = 0.52$).

Conclusion. Despite accounting for various patient and facility-level factors, Medicaid-insured women experienced higher SSI risk than privately-insured women in for-profit hospitals, but not in government owned or not-for-profit hospitals. Additional studies to understand underlying causes may help target efforts to prevent SSIs following CDs among vulnerable patients.

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2205. Should Cefazolin Be the First-line Antimicrobial Prophylaxis Choice in Patients Undergoing Hysterectomy? A Systematic Review and Meta-analysis

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Background. Current practice guidelines non-preferentially recommend cefazolin, cefoxitin, cefotetan, or ampicillin-sulbactam as first line choices for antibiotic prophylaxis in hysterectomy. We undertook a systematic review to determine whether cefazolin, with no anti-anaerobic activity, is as effective as β -lactam antibiotics with anti-anaerobic activity at preventing surgical site-infection (SSI) after abdominal or vaginal hysterectomy.

Methods. We searched PubMed, Scopus, Web of Science, Cochrane Central, and conference proceedings for randomized controlled trials (RCT) in any language up to May 16, 2016. Main search terms included cephalosporins, antibiotic prophylaxis, hysterectomy, surgical wound infection, clinical trials, and random allocation. We included only RCT that measured SSI – our primary outcome – defined as superficial, deep, or organ space. We excluded trials of β -lactams no longer in clinical use. We used predefined data extraction templates, including bias assessment indicators, and performed meta-analyses with random-effects models.

Results. Fourteen RCTs met inclusion criteria. There were 98 (5%) SSI among 1,903 patients in the cefazolin group, and 78 (4%) SSI among 1,772 patients in the comparator β -lactam (cefoxitin, cefotetan, cefotaxime, ceftriaxone, ampicillin, amoxicillin/clavulanate, or penicillin) group. The summary estimate showed no significant benefit for cefazolin vs. other β -lactam in reducing SSI (Risk Ratio 1.19; 95% CI 0.88 – 1.62, $P = 0.23$). Cefazolin had a higher SSI risk when compared with cefoxitin or cefotetan (Risk Ratio 1.67; 95% CI 1.03–2.72, $P = 0.04$), and a trend for higher SSI risk when compared with cefoxitin, cefotetan, or amoxicillin/clavulanate (Risk Ratio 1.56; 95% CI 0.99–2.49, $P = 0.06$). Most studies were limited to hysterectomies for benign indications, had variability in prophylaxis duration (single vs. multiple doses) and had unclear or high risk of bias.

Conclusion. β -lactam antibiotics with good anti-anaerobic spectrum may be preferable to cefazolin for SSI prevention post-abdominal or vaginal hysterectomy. Antimicrobial prophylaxis for hysterectomy in the setting of advanced malignancy deserves further study.

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2206. Surgical Site Infections after Colon Surgery: What the SIR Doesn't Tell You

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