# Prospective Cohort Study on Timing of Antimicrobial Prophylaxis for Post-Cesarean Surgical Site Infections

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## Abstract

**Background:** Sepsis is the leading cause of maternal death in sub-Saharan Africa (SSA), a region that sees some of the highest rates of maternal death and morbidity in the world. As one of the most commonly performed surgical procedures in SSA and a proved risk factor for surgical site infection (SSI), cesarean section (CS) is an important operation to target because of its massive impact on maternal and neonatal health. There is currently insufficient published data available on the patient and facility-based context around SSI after CS to establish a true and clear understanding of this infectious category. The objective of this study was to collect accurate and valid data on the incidence of SSI after CS and the circumstances around SSI in two Kenyan hospitals.

**Hypothesis:** Our primary analysis focused on the consequences of timing of peri-operative antimicrobial prophylaxis. We hypothesized that patients who were given antibiotics pre-operatively would show lower SSI rates than those given the agents post-operatively.

**Methods:** This was an Institutional Review Board-approved observational study of 609 women who had CS operations at two Kenyan hospitals from September to December 2015. Thika provided antimicrobial prophylaxis prior to incision for all patients, and Kiambu provided only post-operative prophylaxis. It should be noted that this difference was the result of a previous intervention at Thika and not a part of this observational study.

**Results:** Patients at the two hospitals had similar pre-operative characteristics indicating a relatively healthy population. The median age was 26 ± 6 years (range 18–43) at Thika and 26 ± 5 (18–44) at Kiambu. Median parity was 1 ± 1 (range 0–7) at Thika and 1 ± 1 (0–10). Patients also went through a comparable number of antenatal care visits (median 4 ± 1 at both hospitals). The number of patients with prolonged rupture of the membranes was 103 (34.4%) at Thika and 99 (32.9%) at Kiambu. There was a slightly higher number of patients with meconium-stained liquor at Kiambu Hospital (115) than at Thika (74). The SSI rate was 4.0% (12/299; 11 superficial, 1 deep) at Thika and 9.3% (28/301; 18 superficial, 7 deep, 3 organ/space) at Kiambu.

**Conclusions:** The data show a striking difference between SSI rates in patients who were given properly timed pre-operative antibiotics and patients who were given only post-operative antibiotics. Administration of post-operative antibiotics is currently the norm in much of SSA, and there is strong evidence that many of the infectious problems encountered in this population would be reduced by the provision of antibiotic prophylaxis prior to the incision.

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cesarean section/cesarean delivery

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pre-operative prophylaxis

surgical site infection