

Summary brief

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Overuse of post-operative antibiotics at the Bo regional hospital in Sierra Leone: a call for systematic monitoring and training to reduce the risk of antimicrobial resistance

Reference:

Carshon-Marsh, R.; Squire, J.S.; Kamara, K.N.; Sargsyan, A.; Delamou, A.; Camara, B.S.; Manzi, M.; Guth, J.A.; Khogali, M.A.; Reid, A.; et al. Incidence of Surgical Site Infection and Use of Antibiotics among Patients Who Underwent Caesarean Section and Herniorrhaphy at a Regional Referral Hospital, Sierra Leone. *Int. J. Environ. Res. Public Health* 2022, 19, 4048. <https://doi.org/10.3390/ijerph19074048>

Contact: email

naldoline@yahoo.com

Key Messages

- Surgical site infections are common complications after surgery at or near the surgical wound. Providing antibiotics before surgery can prevent wound infections after an operation.
- However, WHO guidelines advise against the use of antibiotics after surgery unless there is an infection and a specific antibiotic identified to treat it.
- At the Bo government hospital in 2019 and 2020, 85% of caesarean section patients and all the hernia operation patients incorrectly received antibiotics after surgery.
- Medical doctors and surgical community health officers should be better educated on the antibiotic treatment guidelines before and after operations to prevent overuse of antibiotics which contributes to antimicrobial resistance (AMR).
- Strengthening laboratory services would allow specimen culture and sensitivity tests to ensure that the right antibiotics are chosen.

What is the problem and why is it important?

Infections at the site of surgery account for about 15% of all infections acquired in the hospital. These can lead to longer hospitalisations, financial loss to the patient and, at times, death.

The correct use of antibiotics before an operation reduces the incidence of infection at the site of the operation. The World Health Organization (WHO) recommends against the use of antibiotics after surgery because of low benefit and high risk of prescribing the wrong antibiotic.

The main reasons for antibiotic misuse and overuse are the lack of knowledge and application of WHO antibiotic treatment guidelines, persistence of old prescribing practices, non-compliance with proper aseptic techniques and lack of national antibiotic guidelines before surgery.

How did we measure it?

We reviewed the clinical information of 681 patients (599 caesarean sections and 82 hernia operations) who had surgery at the Bo government hospital from November 2019 to October 2020. Surgical site infections from these surgeries were based on clinical assessment by the physician because

specimen microbiology testing was unavailable. Information was collected on the timing and type of antibiotics prescribed.

What did we find?

- Surgical site infections occurred in 7.5% of caesarean surgeries and 1.2% of hernia operations. These are fairly low because of improved water, sanitation, and hygiene infrastructure, and relatively clean surgical operations over the past decade, but they are still high enough to be of concern.
- Compliance rates with WHO guidelines were high with respect to using recommended antibiotics BEFORE surgery (84% of caesarean section and 70% of hernia operation patients).
- However, antibiotics were incorrectly given AFTER surgery to 85% of caesarean section patients and to all the hernia patients. The most commonly used antibiotics were ampicillin, metronidazole and amoxicillin. These drugs are readily available and are at a high risk of becoming resistant to bacteria if they are mis-used.

Implications

- Overuse of antibiotics after surgery promotes the development of antibiotic-resistant microbes. Post-operative antibiotics should only be used when there are surgical site infections.
- The surgeons, obstetricians and surgical community health officers prescribing post-surgical antibiotics are not up to date with the WHO guidelines. This has led to the misuse and overuse of antibiotics. They should be trained and updated on these guidelines so that patients will have better hospital care and spend less money.
- Further improving hospital infection prevention and control will likely reduce surgical site infections and build confidence among surgeons that postoperative antibiotics are not needed in most cases.
- A review of the National Antibiotic Treatment Guidelines with the correct method of administering antibiotics before an operation should be done. This will ensure that hospitals have updated guidelines to follow, thus improving patient care.
- The laboratories lacked the capacity for specimen culture and sensitivity, so in the majority of cases broad spectrum antibiotics were prescribed causing a high use of ineffective antibiotics which risks AMR. We need more capacity for microbiology tests to identify the right microorganism and the appropriate antibiotic the microbes are susceptible to.
- In line with WHO recommendations, surveillance should be increased for surgical site infections and antibiotic use over time to track trends.