

# Prophylactic Antibiotics to Prevent Surgical Site Infection After Breast Cancer Surgery

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## Objective

To determine whether prophylactic (pre- or perioperative) antibiotics affect the incidence of surgical site infection (SSI) in patients undergoing breast cancer surgery.

## Type of Review

This systematic review includes 11 randomized, controlled trials of mixed patient groups, including patients with or without breast cancer. Studies were included in the review only if data from patients with breast cancer could be separated from patients without breast cancer. The intervention included pre- or perioperative antibiotics used as prophylaxis for the surgery. A range of antibiotic regimens were assessed in the 11 studies, and 5 of the studies defined a similar antibiotic strategy. Five of the studies had similar choice of antibiotic, type of surgery, and length of follow-up. The reviewers excluded 27 studies because of design and data collection not matching the review requirements.

## Relevance for Nursing

Surgical treatment for breast cancer is very common, and infection of the surgical wound is often a complication of the surgery. The incidence of SSI in those being treated for breast cancer is from 3%–15%—a higher incidence of infection than the 3% SSI rate associated with other clean surgical procedures. The findings of the review suggest that antibiotic prophylaxis reduces the risk of SSI in patients undergoing breast cancer surgery. Administering antibiotics just before the operation reduces the chance

of developing an infection. The antibiotics should be administered according to current and relevant guidelines for prophylactic antibiotic administration in each hospital. The use of antibiotics should be discussed with the surgical team, and the timing and dose of antibiotic should be clearly documented.

Following surgery, assessment of the surgical wound is important. Ideally, the wound will be assessed by the nurse using a validated assessment tool—for example, the ASEPSIS score for wound infections.

## Characteristics of the Evidence

This is the third update of the review, and an additional two studies were included; in total, 11 studies met the inclusion criteria for review and included 2,867 participants (1,439 in treatment arms and 1,428 in control arms). Participants included patients with breast cancer and undergoing breast surgery, and the majority of participants were women. The primary outcomes in the review were the incidence of postoperative SSI and adverse reactions (e.g., anaphylaxis, gastrointestinal issues, skin rash) to the antibiotic regimen. Secondary outcomes proposed for assessment included death, delay in additional cancer treatment because of the breast wound infection, time to wound healing and time to infection, possible readmission to the hospital, and

the overall cost of care. The majority of the studies included were assessed as being at low risk of bias, meaning that the results of the review were unlikely to be seriously altered by bias.

## Summary of Key Evidence

Ten of the 11 studies evaluated a preoperative antibiotic compared with no antibiotic or placebo, and the remaining study evaluated perioperative antibiotic compared with no antibiotic. When the results were pooled, they showed that prophylactic antibiotics administered preoperatively significantly reduced the incidence of SSI for patients undergoing breast cancer surgery without reconstruction (pooled risk ratio [RR] 0.67, 95% confidence interval [CI] [0.53, 0.85]). However, the analysis of the single study comparing perioperative antibiotic with no antibiotic found no statistically significant effect of antibiotics on the incidence of SSI (RR 0.11, 95% CI [0.01, 1.95]). Overall, the data presented in this review suggest that antibiotic prophylaxis reduces the incidence of SSI in those undergoing nonreconstructive breast cancer surgeries.

## Best Practice Recommendations

This review indicates that preoperative prophylactic antibiotics reduce the

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