



## The Possible Risks When Considering Pre-Operative Prophylaxis

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### Abstract

Despite the ongoing debate with regards to the use of antibiotic prophylaxis during surgical extractions and whether they should be administered at all, patients attending for surgical removal of teeth may receive antibiotics before and/or after surgery.

**Keywords:** Prostate Cancer; DNA repair; estrogen; ATM; p53; BRCA1

### Introduction

Dento-alveolar surgery and increased surgical trauma to tissues can result in a number of post-operative complications including the development of infections in the surgical site [1]. An oral surgeon who gives prophylaxis therapy may wish to do so bacterial load in the blood and therefore reduce the risk of post-operative complications such as pain, swelling as well as post-operative infections including a dry socket (alveolar osteitis). However there are no local or national guidelines that exist which support the use of pre-operative antibiotic prophylaxis. With the existence of conflicting evidence, the use of pre-operative and/or post-operative antibiotics remains controversial.

The aim of this systematic literature search was to determine the scientific evidence for the benefit, if any, for the use of antibiotic prophylaxis prior to surgical removal of teeth to prevent post-operative infections.

### Method

#### Clinical question

A PICO format (population/patient/problem, intervention, comparison/control, outcome) was used to structure the following question: For patient undergoing surgical removal of teeth (population) does pre-surgical antibiotic prophylaxis (intervention) compared to no antibiotic prophylaxis (comparison) reduce the incidence of post operative infections in the surgical site (outcome)?

#### Search strategy

A search strategy was created on PubMed using the designed PICO question (Table 1). The search included the following keywords and their respective MeSH terms which included pre – surgical antibiotic prophylaxis, pre – operative, antibiotic prophylaxis, surgical exodontias, surgical tooth removal, surgical tooth extraction, dry socket, alveolar osteitis and post-operative infection.

### Results

One randomized controlled trial by Bezerra et al. [3] conducted on fit and

healthy patients with ASA (American Society of Anaesthesiologists) classification I or II, showed no significant difference between the intervention and the control group. The study was carried out in Brazil on 34 subjects and used oral antibiotic prophylaxis; two amoxicillin tablets were given to patients one hour pre-operatively. The placebo group received matching placebo capsules. The procedures were carried out by the same oral surgeon under local anaesthetic in an outpatient clinic.

The results obtained showed that in the active treatment group, there were no AO or SSIs. However in the placebo group 5 subjects (8.5%) were diagnosed with SSIs ( $P = 0.03$ ) and no subjects were diagnosed with AO. The subjects who developed SSIs had surgical removal of impacted third molars with bone removal.

### Discussion

Although in the Bezerra et al. [3] trial the patients had at least one indication for the removal of all 4 third molar teeth, the study excluded patients who are at high risk of developing post-operative infections. Patients on the contraceptive pill, those with existing periodontal disease, smokers and medically compromised patients were excluded. Patients with a history of antibiotic allergy were also excluded. It is important to note that high risk patients or patients with poor oral hygiene are more likely to present with post-operative infections and may therefore benefit more from prophylaxis than healthy patients. A total of 38 from an initial cohort of 800 subjects enrolled for the trial met the inclusion criteria for the study. Therefore this sample size was too small to reach a conclusive conclusion.

The study is also specific to the surgical removal of third molars, and therefore we do not know if the same results may have been obtained if the authors studied the outcomes on the surgical removal of other teeth.

### Conclusion

As no substantial evidence was established from this search, it is essential to weigh the benefits of antibiotic use against the possible risks when considering pre-operative prophylaxis. As demonstrated in the two appraised articles, in young healthy adults pre-operative antibiotics presented no additional benefits and therefore the use of antibiotics routinely prior to surgical removal of third molar teeth is not indicated.

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