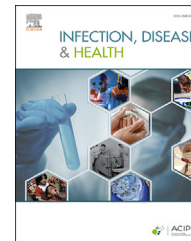


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Research paper

# The use of prophylactic antibiotics in podiatric foot and ankle surgery

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## KEYWORDS

Ankle;  
Foot;  
Infection;  
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**Abstract** *Objective:* Infection is a common and serious complication following surgery. Whether antibiotic prophylaxis reduces infection rates in podiatric foot and ankle surgery is unclear. The aim of this prospective cohort study therefore, was to determine the impact of antibiotic use on infection rates following podiatric foot and ankle surgery.

*Methods:* Data from 4238 patients who underwent foot and ankle surgery between January 2014 and January 2016 were analysed. Infections within the first 30 days following surgery were recorded according to the Australasian College of Podiatric Surgeons national audit descriptors. Logistic regression analyses were undertaken to determine whether antibiotic prophylaxis decreased the rate of surgical site infection.

*Results:* Of the 4238 patient records, 4140 records (98%) provided complete data (aged 2–92 years, mean 48.9 ± SD 19.6, 1124 males, and 3016 females). A total of 79 infections (1.9% infection rate) were reported. More experienced surgeons documented a lower rate of infection (OR 0.36, 95% CI 0.17–0.72,  $P < 0.01$ ) and the use of perioperative antibiotics was associated with lower infection rates than those that received no antibiotics (OR 0.42, 95% CI 0.22–0.81,  $P = 0.01$ ). There was no significant association found between age, sex, and ASA score with infection. The use of postoperative antibiotics alone and in addition to perioperative antibiotics was not associated with reduced surgical site infection rates.

*Conclusion:* Surgeon experience may influence infection rates in podiatric foot and ankle surgical practice, and the use of perioperative antibiotics may reduce the risk of infection. The use or addition of postoperative antibiotics does not reduce infection rates, and should be used by podiatric surgeons with caution.

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### Highlights

- The use of prophylactic antibiotic therapy has not been evaluated in the Australian podiatry community.
- Surgeon experience may influence infection rates in podiatric foot and ankle surgical practice.
- Perioperative antibiotics may reduce the risk of infection, however the use or addition of postoperative antibiotics does not.

## Introduction

Infection is the most frequent and costly complication of elective surgical procedures [1]. Surgical site infections (SSI) can result in permanent disability, reduced quality of life [2], and increased mortality rates [3]. Such infections also increase the use and cost of health care services [4]. In Australia, infection within 30 days following joint arthroplasty contributed \$97 million in health care associated costs [1]. Thus, the prevention of SSI in elective surgery remains a priority.

A previous audit of records from podiatric surgeons in Australia found an infection rate of 3.1% in those who underwent a foot or ankle procedure [5]. Although this is well within acceptable ranges [6], this may be further reduced by examining factors that predict infection in this population. This information can be used in preoperative risk stratification and guide prophylactic antibiotic use, which remains a controversial topic in the foot and ankle literature [7].

Although current evidence based guidelines support a cautious approach to the use of prophylactic antibiotics in surgery, there is no evidence from Australia that specifically evaluates the use of antibiotics in the podiatry profession. Therefore, the aim of this prospective cohort study was to determine the impact of antibiotic use on infection rates following podiatric foot and ankle surgery.

## Methods

### Study population

The Australasian College of Podiatric Surgeons (ACPS) Surgical Audit Tool is the only Australian audit tool developed to assess the outcomes of foot and ankle surgery. The ACPS Surgical Audit Tool [8] used in this study was developed from a Delphi survey of an international panel of experts, experienced or associated with foot and ankle surgery. The international panel was comprised of podiatric and orthopaedic surgeons from Australia, the UK and the USA, and plastic and general surgeons from Australia. Also included in the panel were members from academia, nursing, general podiatry, healthcare executive management and the legal profession. The expert panel was surveyed using a modified Delphi technique. The Delphi survey derived consensus informed modification of a generic audit data set from the Royal Australasian College of Surgeons. Based on the Delphi survey findings, the ACPS Surgical Audit Tool was

developed. The ACPS National Audit Tool provides an online web-based secure method of capturing and reporting surgical outcome data in real time. Surgeons are able to monitor their outcomes and compare them to the de-identified national aggregate. The study methods described are consistent with the principles of audit activity as defined by the National Research Ethics Service [9].

The patients included in the ACPS audit were not allocated to specific treatment groups. Patients elected to have the procedures performed on the basis of guidance from their primary surgeon, following discussion on the surgical and non-surgical options available for the presenting condition(s). The pre, peri and postoperative patient management protocols therefore, did not differ from standard practice. Ethical approval was obtained from the ACPS Research Committee to access the College's de-identified audit database and was also provided by the Southern Cross University Higher Research Ethics Committee (ECN-15-337).

### Data collection

Data from patients who underwent foot and ankle surgery were entered into the ACPS Surgical Audit Tool, by 19 podiatric surgeons Australia wide, over a two year period (January 2014 to January 2016). These 19 surgeons represent 73% of ACPS fellows (26 in total). The ACPS Surgical Audit Tool has been shown to generate valid and reliable data entry, and is associated with improved usability compared with other surgical audit methods, due to its online (real time) capabilities [8].

The American Society of Anaesthesiologists (ASA) score was recorded by surgeons according to previously published methods [10]. The ASA score provides an assessment of patients' physical status prior to surgery, with the following scores possible: 1. normal healthy patient; 2. mild systemic disease; 3. severe systemic disease; 4. severe systemic disease that is a constant threat to life; 5. Moribund patient not expected to survive. Surgeon category at the time of each procedure was documented as either: (i) experienced teaching fellow (minimum of five years' experience), or; (ii) non-teaching fellow (practising for less than 5 years or with a lower caseload, that does not qualify the surgeon to progress to being a teaching fellow).

Infections were recorded by individual surgeons according to guidelines recommended by the ACPS Clinical Audit Committee, and were classified as either superficial or deep, and treated as either outpatient or readmission (Table 1). Infection indicators have been developed and

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