

# **Australasian College of Podiatric Surgeons**

## **National Audit Report 2013**



Prepared by the ACPS Audit Committee

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## Introduction

The constitutional objectives of the Australasian College of Podiatric Surgeons (ACPS) includes determining and maintaining the highest professional standards amongst its membership(1). One of the mechanisms utilised to support these objectives is clinical audit. The ACPS has been actively engaged in clinical audit since the late 1990's.

In 2010, the ACPS established its Audit Committee to assist in the maintenance of robust and contemporary audit practices(2). The Audit Committee facilitates effective surgical practice and provides surgical audit support to its members and registrars through its national audit program. The ACPS Continuing Professional Development and Professional Standards Board also requires all Fellows participate in surgical audit in order to maintain ACPS membership and accreditation(2). This means that Fellows must record every case of foot and ankle surgery for each calendar year using the ACPS Audit Tool. Failure to comply with this College accreditation requirement can lead to disciplinary action. Since 2012, there has been a 100% compliance with mandatory surgical audit requirements by ACPS accredited Fellows.

The 2013 ACPS National Audit reports on the service provision by 19 surgeons (ACPS Fellows) who admitted 1526 patients for foot and ankle surgery and performed 1944 procedures. The report examines outcome, process and structure of foot and ankle surgery provided. As such, this report provides data for the purpose of assessing safety and quality (efficacy and efficiency) of surgical outcomes by ACPS Fellows. Benchmarking against other specialist providers of foot and ankle surgery is one of the key drivers to the use of audit. In the context of podiatric surgery, the group of specialist surgeons generally regarded as the appropriate comparator are orthopaedic surgeons. A comparative analysis of grouped procedures provided most frequently by orthopaedic and podiatric surgeons is included in the reports section.

Comparisons have been made with similar data, where available, such as the Medicare Benefits Schedule database (scope of practice) and peer review literature for complications (infection and thromboembolic events). Reporting of other service outcomes, process and structure include; comorbidities, average length of stay (AVLOS) and selected ACPS data in Australian Council on Healthcare Standards (ACHS) clinical indicator format (3). However, for these service aspects there is no data available for comparison as no like data is available for other providers of foot and ankle surgery in the public domain.

The methodology used in this audit report has been reviewed as appropriate for the purpose of measuring the outcomes of foot and ankle surgery against available published benchmarks (4-9).

The 2013 ACPS National Audit results demonstrate that Fellows provide foot and ankle surgery that is appropriate in scope, safe, efficacious and efficient when compared to available benchmarks. These results are in relation to the peri operative period including up to 30 days post operatively.

## Methodology

The 2013 ACPS National Audit collected International Classification of Diseases (ICD)10 diagnosis and procedure codes in addition to a range of pre, intra and postoperative data for 30 days after discharge(10). The ACPS Audit Tool was used for all data capture. Data queries were then performed by an experienced Casemix analyst (11, 12). Reports were consequently generated for total and scope of practice, average length of stay, comorbidities, selected ACHS clinical indicators and complications. Data from the Medicare Australia Statistic database and peer review literature was used to produce comparative reports where applicable.

### Audit Tool

In 2010, the ACPS Audit Committee developed a tool for the purpose of monitoring the outcomes of foot and ankle surgery. In 2011, the tool was further developed using research outcomes from a Delphi survey of an international expert panel(13-20). Consensus derived from the Delphi survey directed the modification of an existing generic audit tool developed by the Royal Australasian College of Surgeons(21). The result has been the development and commissioning of an audit tool, which has been specifically designed for auditing and improving outcomes of foot and ankle surgery in the Australian healthcare system. Using the audit tool, surgeons collect data in seven categories of variable including:

- Identification;
- Comorbidities;
- Diagnosis;
- Procedure;
- Tourniquet;
- Prophylaxis, Anaesthesia, Complication; and
- Outcomes for Day surgery and inpatients.

Data collected in each of the above variable categories is then used to analyse structure, process and outcomes of foot and ankle surgery. An Excel spreadsheet (Microsoft Corporation) has been used for data collection and analysis. Surgeons were provided with guidelines to assist accurate data collection(22).

### Medicare Benefits Schedule Data

In order to benchmark the outcomes of ACPS Fellows against other providers of the same services, data was extracted from the Medicare Australia Statistic database(23).

Only publicly available data was obtained from the Medicare Benefits Schedule (MBS) database. This meant the extracted MBS data was limited in the following ways(24).

1. The MBS database does not record data generated by the following areas of healthcare:
  - Public patients in public hospitals;
  - Department of Veterans' Affairs;
  - Work Cover;
  - Transport Accident Commission; and
  - Podiatric surgeons.

2. Type of surgical providers are not delineated therefore directly separating surgeon type such as general practitioners, general and orthopaedic surgery could not be performed when extracting data.
3. Only procedure numbers could be determined because only individual item numbers are recorded by the MBS database. As foot and ankle surgery often involves more than one item number, patient numbers cannot be determined.
4. An underestimation of procedural numbers due to the use of item codes that are not exclusively for foot and ankle surgery.
5. Only descriptive statistics can be used when analysing and comparing the MBS database to ACPS audit data.

Considering the above limitations, MBS data can be broadly used to represent private patients in private and public hospitals who receive foot and ankle surgery from all current MBS funded providers. These include specialist surgeons such orthopaedic, general and plastic surgeons. Additionally, whilst it is not expected that general practitioners perform reconstructive procedures on a frequent basis, they do commonly provide toenail surgery which is a significant proportion of all foot and ankle procedures.

### Total practice data

Eight procedural groups were selected to represent total practice for foot and ankle surgery. These are described with associated MBS item numbers in the Table 1 below:

<b>Procedural group</b>	<b>MBS item number</b>
Toenail	44136, 47904, 47906, 47912, 47915, 47916, 47918
Lesser toes	44136, 47904, 47906, 47912, 47915, 47916, 47918
Lesser metatarsophalangeal joints (MPJs)	49860, 49863
Neuroma	49866
First metatarsophalangeal joint (1st MPJ)	49821, 49824, 49827, 49830, 49833, 49836, 49837, 49838, 49839, 49842, 49845, 49857, 49860, 49863
Heel, Rearfoot & Tarsal coalitions	49818, 49854, 49815, 50118
Ankle	49700, 49703, 49706, 49709, 49712, 49715, 49718, 49721, 49724, 49727, 50312
Amputation	44338, 44342, 44346, 44350, 44354, 44358, 44359, 44361, 44364

*Table 1: Total practice procedural groups and MBS Items numbers*

In addition to total practice reporting, benchmarking was undertaken by selecting grouped MBS item codes that are most frequently provided by MBS funded service providers (e.g. orthopaedic surgeons). This facilitated comparative analysis with podiatric surgeons.

## Comparative group procedure data

By only selecting grouped MBS item codes that are most frequently provided by MBS funded service providers (e.g. orthopaedic surgeons) and podiatric surgeons, a comparative descriptive statistical analysis can be performed. Therefore, for the purpose of comparative grouped procedure analysis, toenail and lesser metatarsophalangeal joint surgery was excluded. The following six procedural groups were then selected:

1<sup>st</sup> metatarso/phalangeal joint (MPJ), ankle, neuroma, lesser toe, rearfoot & heel, amputation.

To calculate the total number of procedures performed all item numbers pertaining to bilateral procedures were considered to represent two individual procedures for all descriptive statistical analysis.

## Reports

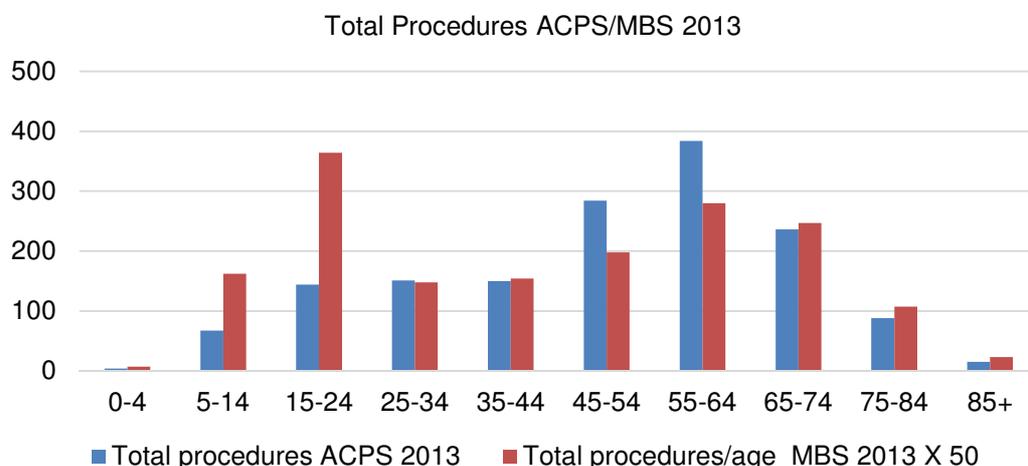
The following areas of practice are examined by the audit:

1. Total practice;
2. Cross-sectional analysis of selected procedural groups;
3. Benchmarking against MBS funded private healthcare providers of the same service;
4. Comorbidities;
5. Average length of stay;
6. Australian Council on Healthcare Standards (ACHS) clinical indicator reporting; and
7. Complications reporting and benchmarking.

## Total Practice Audit

In 2013, from January 1 to December 31, 19 ACPS Fellows admitted a total of 1526 patients for elective foot and ankle surgery. 1944 procedures were performed over the period of audit with an average of 1.3 procedures per admission. The majority of admissions occurred in private hospitals on a same day basis.

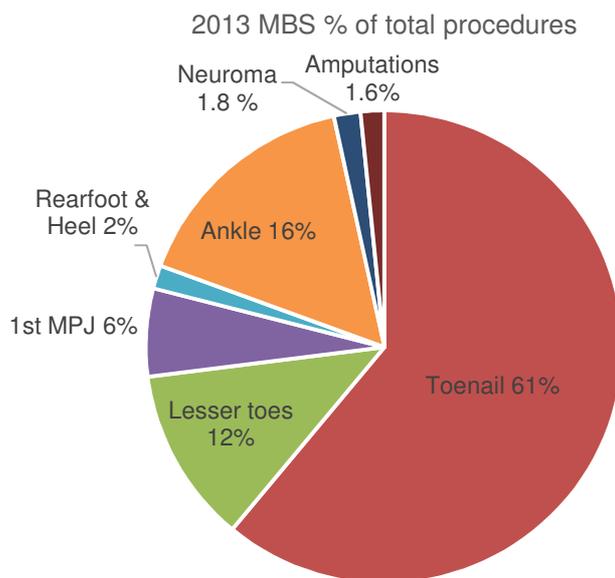
To compare ACPS audit data to MBS funded private providers of the same services, the eight procedure groups described in the methodology section were selected to represent total practice. Using this approach, MBS funded providers of foot and ankle surgery performed 82547 procedures. For the same procedural groups in 2013, ACPS providers performed 1119 (1%) procedures. The data was compared across age groups as shown below in Bar Chart 1:



*Bar Chart 1: Total Procedures comparing ACPS to MBS providers*

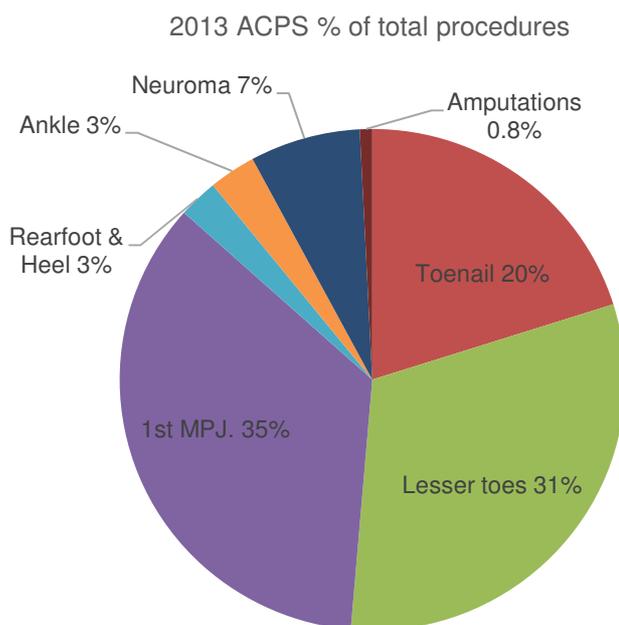
As seen in the above bar chart, a similar spread of age groups were serviced by both ACPS and MBS funded providers except for the 5 to 24 and 45 to 64 age groups. On the basis of this audit it is not possible to know why these differences exist especially within the 45 to 64 age group.

The proportional difference in provider groups in the 5 to 24 age group may be explained by a higher incidence of toenail surgery in this patient cohort. In addition, GP's may provide a high proportion of toenail surgery. However, GP's do not frequently provide reconstructive foot and ankle surgery like orthopaedic and podiatric surgeons. A proportional representation of the eight procedural groups for MBS funded providers is shown below in Pie Chart 1:



*Pie Chart 1: Proportion of procedure group for MBS funded providers*

In comparison a proportional representation of the eight procedural groups for ACPS providers is shown below in Pie Chart 2:



*Pie Chart 2: Proportion of procedure group for MBS funded providers*

As seen in pie charts 1 and 2, nail surgery comprises 61% of MBS funded and 20% of ACPS provider services. The total practice bar chart may be skewed by the proportion of toenail surgery provided by GP's for MBS funded services. In addition, GP's provide little or no other reconstructive foot and ankle surgery. Based on this justification, removing toenail surgery from both provider groups may control for bias and provide a better "like for like" comparison.

### Comparative grouped procedure analysis

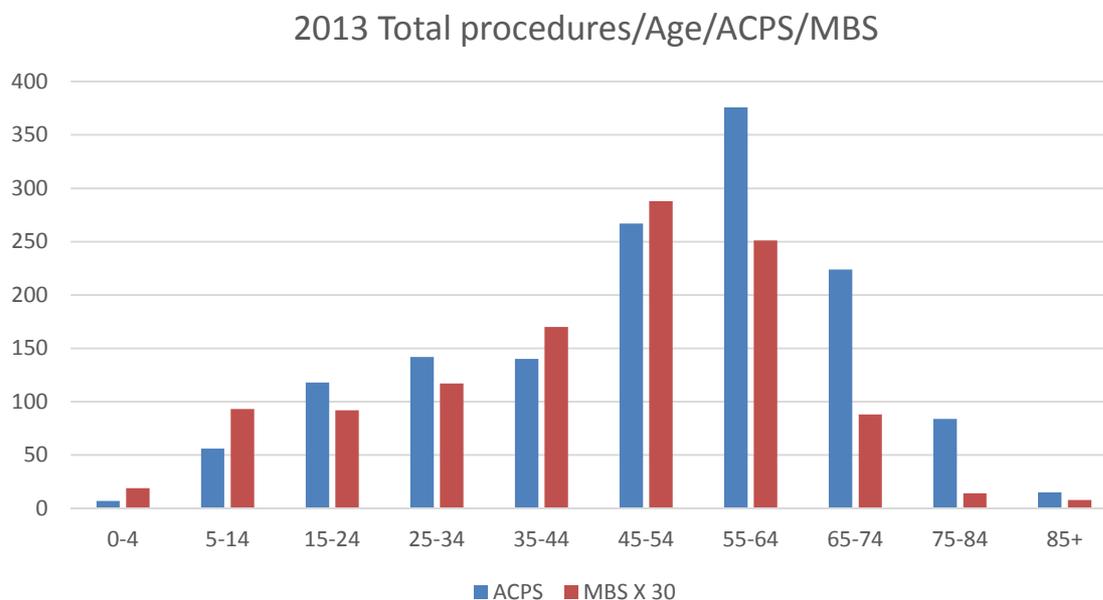
Considering the findings of the total practice audit and the limitations of the MBS online database, controlling for bias was required to provide a meaningful benchmarking of podiatric against orthopaedic surgery.

Toenail surgery data was excluded because it formed such a large portion of MBS funded services in the initial analysis. Toenail surgery is performed by many providers other than podiatric and orthopaedic surgeons e.g. general & plastic surgeons, G.P.s and general podiatrists. In addition, lesser metatarsophalangeal joint surgery comprises less than 1% of surgery activity by both ACPS Fellows and MBS funded providers and therefore was also excluded.

Based on the above premise the following six procedural groups were selected as representing the majority of foot and ankle surgical practice for both orthopaedic and podiatric surgeons:

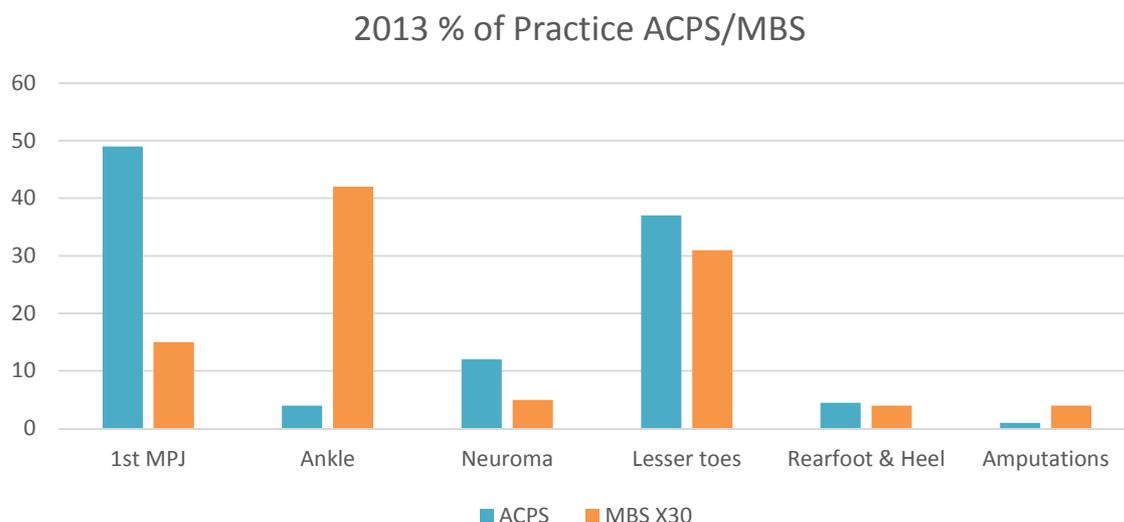
1<sup>st</sup> metatarso/phalangeal joint (MPJ), Lesser toe, Neuroma, Rearfoot & Heel, Ankle, Amputations.

Using the selected procedure groups to represent the majority of practice MBS funded providers performed 32145 procedures. ACPS Fellows performed 1062 (3%) of the analysed grouped procedures. Comparison of 2013 ACPS / MBS data demonstrates service provision to patient age groups of a similar spread by both orthopaedic and podiatric surgeons as seen in Bar Chart 2 below:



*Bar Chart 2: Service provision across age groups for ACPS and MBS funded providers*

Further comparison of the data indicates that while orthopaedic surgeons provide a larger percentage of ankle surgery podiatric surgeons provide a larger percentage of 1<sup>st</sup> metatarsophalangeal joint surgery. However, both orthopaedic and podiatric surgeons have a spread of services across all six procedural groups as seen in Bar Chart 3 shown below:



*Bar Chart 3: Procedure % of total practice for ACPS and MBS funded providers*

## Comorbidities

ACPS Fellows provide foot and ankle surgery to patients who may have comorbidities. As per routine peri operative team management, such patients may require co-management with a general practitioner or medical specialist. The frequency of comorbidities in ACPS audit data provides an indication of patient cohort health status. The frequency of comorbidities compared with complication rates also provides an assessment of safety and appropriateness of the model of care.

The ACPS Audit Committee developed a list of 25 comorbidities that should be collected when auditing foot and ankle surgery. These included 14 comorbidities for which patients were receiving medication at the time of admission, as seen in Table 2 below:

<b>Comorbidities</b>	
Diabetes Type 1 (insulin using)*	Back pain
Diabetes Type 2 (insulin using)*	Asthma
Diabetes Type 2 (non-insulin using)*	Gout
Hypertension *	Cardiac disease
Hyperlipidaemia *	Gastric reflux
Depression *	Renal disease
Hormone replacement therapy*	Osteoporosis
Ischemic Heart disease	Autoimmune disease (Excluding rheumatoid)
Endocrine (excluding diabetes e.g. hypothyroid, pituitary, pancreas, other)	Fibromyalgia
Neuromuscular (e.g. Charcot Marie Tooth, Polio, other)	DVT (Previous history requiring medical management)
Neuropathy	Smoker (currently active)
Osteoarthritis	Lung disease (Emphysema and all others)
Rheumatoid arthritis	
* Currently managed with medication	

*Table 2: Captured comorbidities*

The 10 most frequent comorbidities recorded over 2013 are shown below in Table 3 below:

<b>Comorbidity</b>	<b>% of 1526 admissions</b>
Hypertension *	10
Diabetes & other endocrine disorders	5
Osteoarthritis	5
Hyperlipidaemia *	5
Depression *	4
Asthma *	3
Gastric reflux *	3
Neuropathy & neuromuscular	2
Rheumatoid arthritis, autoimmune disease, fibromyalgia	2
Cardiac & ischaemic heart disease *	2
* Currently managed with medication	

*Table 3: 10 most frequent comorbidities*

For all 1526 admissions that occurred in 2013, a total of 727 comorbidities were recorded. More than a third (35% or 532 cases) of all admissions recorded at least one comorbidity. Hypertension comprised one tenth, hyperlipidaemia, osteoarthritis, diabetes & other endocrine disorders each less than a fifth. Depression, gastric reflux, asthma and endocrine disorders approximately a tenth of all recorded comorbidities. The frequency of all other comorbidities were a twentieth or less.

## ASA score

The America Society of Anaesthesiologists (ASA) classification system is used by anaesthetists to determine the physical status of patients who are to have anaesthesia(25). The ASA classification system is described in the Table 4 below:

<b>ASA physical status rating</b>	<b>Description of physical status</b>
1	A normal healthy patient
2	A patient with mild systemic disease
3	A patient with severe systemic disease
4	A patient with severe systemic disease that is a constant threat to life
5	A moribund patient who is not expected to survive without the operation
6	A declared brain-dead patient whose organs are being removed for donor purposes

*Table 4: ASA classification system*

The ASA classification system provides another method to categorise the medical status of patients who have foot and ankle surgery. From a safety view point, patients with an ASA rating of 4 or higher are not expected to be found in an audit of elective foot and ankle surgery. Equally audit outcomes with ASA ratings between 1 and 3 should indicate appropriate selection for foot and ankle surgery.

For all 1526 admissions that occurred in 2013, 70% (1069 admissions) were rated at ASA 1. 25% (388 admissions) of the cases were rated ASA 2 and 5% (68 admissions) were rated ASA 3. The 30% of admissions with ASA rated systemic disease is broadly similar with the audit data of 35% of admissions having at least one comorbidity.

Analysis of comorbidity audit data indicates over 2013 the majority of patients admitted for foot and ankle surgery by podiatric surgeons were healthy. Approximately one third of admitted patients had mild to severe systemic disease.

The above findings imply that elective surgery provided by ACPS accredited fellows is predominantly performed on individuals who are assessed as medically fit for elective surgery. This patient cohort may be related to active screening by podiatric surgeons or alternatively may represent the general epidemiologic parameters of individuals seeking foot and ankle surgery. In addition, less than 30% of admissions involve patients with systemic disease and may require co-management with a medical practitioner.

## Average length of stay

Day surgery comprised 85% and inpatient 15% of all admissions by ACPS Fellows during 2013. The AVLOS in 2013 for 1<sup>st</sup> metatarso/phalangeal joint (MPJ), Lesser toe, Neuroma, Rearfoot & Heel, Ankle was 1 day.

## ACPS data Reported in Australian Council on Healthcare Standards (ACHS) Clinical Indicator Format

The ACHS defines clinical indicators (C.I.s) as simply a measure of clinical management(3). They can assess the structure, process and outcome of a healthcare service. C.I.s can also be used to assess, compare and determine the potential to improve care. Therefore, C.I.s can be used as tools to assist in assessing whether or not a standard in patient care is being met.

Currently, no foot and ankle surgery C.I.s exist in Australia. In addition, no other providers of foot and ankle surgery in Australia have reported C.I.s for foot and ankle surgery. Therefore, it is not possible at this time to compare ACPS reported C.I.s to other providers of the same services. However, reporting ACPS audit data in ACHS C.I. format provides a method to measure and therefore improve service quality for foot and ankle surgery. Establishing a database of C.I.s generated by foot and ankle surgical outcomes may further assist performance management. Such a database will allow for comparison of ACPS audit data to other providers of the same service and the development of foot and ankle surgery C.I.s in the future.

ACPS audit data for 2013 was reported using the ACHS Day Surgery C.I.s (V4) and selected Hospital Wide C.I.s (V11) formats (26, 27). Both ACHS Day Surgery and Hospital Wide C.I.s have been developed based on data from a mix of all service providers in the public and private healthcare system. This means that ACPS audit data cannot currently be meaningfully benchmarked against ACHS Day Surgery and Hospital Wide C.I.s. However, the ACPS audit data is reported below in ACHS C.I. format.

### Day Surgery Outcomes

Day surgery outcomes were collected according to definitions provided by ACHS for Day Surgery Indicators version 4(26). Rates for ACPS data are shown below in Table 5:

<b>Day Surgery Clinical Indicators</b>	<b>ACPS Outcome</b>
1.1 Failure to arrive (L)	0.0
1.2 Cancellation of the procedure after arrival due to pre-existing medical condition (L)	0.0
1.3 Cancellation of the procedure after arrival due to acute medical condition (L)	0.0
1.4 Cancellation of the procedure after arrival due to administrative/organisational reasons (L)	0.0
2.1 Unplanned return to operating / procedure room(L)	0.001
3.1 Unplanned transfer or overnight admission (L)	0.0
4.1 Unplanned delayed discharge of more than 1 hour (L)	0.0

(L) – indicates low rates are desirable

*Table 5: 2013 Day Surgery outcomes for ACPS*

### Significance of ACPS Day Surgery outcomes

Clinical indicators 1.1, 1.2, 1.3, and 1.4 can provide a measure of the appropriateness of the booking system of both the day hospital and the surgeon's office. 1.2 to 1.4 also measure the appropriateness of patient selection by admitting surgeons.

Clinical indicator 2.1 and 3.1 may reflect problems in the performance of procedures. 3.1 and 4.1 may indicate problems with selection of patients for management in a day procedure facility. 4.1 can also indicate problems with administration of anaesthesia or sedation.

All of the day surgery clinical indicators should ideally be as low as possible. The ACPS data for day surgery demonstrate a zero rate for virtually all the chosen ACHS format clinical indicators.

The ACPS audit committee was also interested in measuring uneventful admissions. A clinical indicator labelled "Uneventful day surgery discharge" was proposed.

The denominator was defined as the total number of foot and ankle surgery admissions performed as day surgery. The numerator was defined as the number of admissions with an uneventful discharge. Such a clinical indicator should measure the overall appropriateness of day surgery admissions of a service and be as close to 1 as possible. For 2013, ACPS Fellows demonstrated an uneventful day surgery discharge clinical indicator of 0.99.

### Inpatient outcomes

Inpatient outcomes were collected according to definitions provided by ACHS for Hospital Wide Indicators version 11.1(27). Rates for ACPS data are shown below in Table 6:

<b>Inpatient Clinical Indicators</b>	<b>ACPS Outcome</b>
1.1 Unplanned and unexpected hospital readmissions within 28days (L)	0
1.2 Unplanned and unexpected hospital readmissions within 14 days (L)	0
2.1 Unplanned return to the operating room during the same admission (L)	0

(L) – indicates low rates are desirable

*Table 6: 2013 Inpatient Outcomes for ACPS*

### Significance of ACPS inpatient outcomes

The above inpatient clinical indicators may reflect less than optimal patient management and therefore rates should ideally be as low as possible. The ACPS data demonstrates a zero rate for all Hospital Wide clinical indicators.

## Complications

### Infection

The ACHS recommends reporting surgical site infections (SSI) if they occur while in hospital or within 30 days of discharge if readmission is required for management(28). Using these criteria the ACPS infection rate for 2013 is zero.

Data collected within 30 days of discharge in which no readmission is required to manage infection is defined by ACHS as *discharge surveillance* and is not required to be submitted to ACHS(28) for C.I reporting. In 2013, the ACPS audit reported 6 superficial forefoot infections in 1944 admission all of which were managed on outpatient basis. The rate of discharge surveillance infection was 0.39%.

In comparison, the University of Pittsburgh Medical Centre conducted a retrospective audit of 1000 orthopaedic foot and ankle cases in 2007(29). Of the patient cohort 19% had diabetes, outpatient managed infection rate was 3.1% with an inpatient managed infection rate of 1.7%. Butterworth reported on 1339 admissions by ACPS Fellows in 2007 in which an outpatient managed infection rate was 2.75% and inpatient managed infection rate of 0.25% was reported(30).

### Deep Vein Thrombosis (DVT)

The literature reports a DVT rate of between 0.3 to 4% for elective foot and ankle surgery (31-34). For 2013, the rate of DVT for ACPS fellows was 0.06%.

## Summary

The ACPS 2013 National Audit Report utilises data captured and reported based on international expert consensus and reports the activity of the majority of Australian podiatric surgeons. Compulsory participation in the ACPS National Audit is required for Fellows to maintain ACPS membership and accreditation. 100% of ACPS accredited Fellows participated in the ACPS 2013 national audit. From the end of 2014, audit data will be available for ACPS accredited podiatric surgeons in real time.

When analysing the spread of patient age groups and procedures, podiatric surgeons are comparable to orthopaedic surgeons. Thirty five percent (35%) of patients admitted for foot and ankle surgery during 2013 by podiatric surgeons had comorbidities which were under concurrent and ongoing medical co-management. Admissions by ACPS accredited Fellows reported complication rates lower than those established in Australian and international peer reviewed literature.

The above indicators of safe service provision are underpinned by efficacy and efficiency as virtually all admissions by podiatric surgeons are 1 day in length. In addition, reporting ACHS selected C.I.s provides good evidence of quality outcomes. This audit of ACPS National Audit data shows that ACPS Fellows continue to provide foot and ankle surgery with outcomes that compare favourably against available benchmarks.

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